

| Oswald optimal colours (o) of maximum (m) C <sub>AB</sub> for D65, Y <sub>w</sub> =100, Y <sub>m</sub> =520_770, LINYAB data          |                                 |                  |                  |                  |                 |        |         |                 |                                 |                                 |         |         |     |   | % |
|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------|------------------|------------------|-----------------|--------|---------|-----------------|---------------------------------|---------------------------------|---------|---------|-----|---|---|
| i <sub>1</sub> , λ <sub>1</sub>                                                                                                       | i <sub>2</sub> , λ <sub>2</sub> | Y <sub>100</sub> | A <sub>100</sub> | B <sub>100</sub> | C <sub>AB</sub> | a      | b       | h <sub>AB</sub> | i <sub>d</sub> , λ <sub>d</sub> | i <sub>c</sub> , λ <sub>c</sub> | Code    |         |     | % |   |
| 0                                                                                                                                     | 405                             | 32               | 561              | 58.2             | -22.74          | -17.89 | 28.94   | 0.5596          | -0.743                          | 218.1                           | 16 483  | 37 589  | Cm  | % |   |
| 6                                                                                                                                     | 435                             | 32               | 562              | 58.79            | -26.78          | -9.88  | 28.55   | 0.4948          | -0.6036                         | 200.2                           | 17 486  | 42 610  |     | % |   |
| 10                                                                                                                                    | 450                             | 32               | 563              | 59.42            | -33.54          | 4.93   | 33.9    | 0.3859          | -0.3525                         | 171.6                           | 19 496  | -1 496c |     | % |   |
| 12                                                                                                                                    | 460                             | 33               | 565              | 60.32            | -36.45          | 12.66  | 38.58   | 0.3461          | -0.2256                         | 160.8                           | 21 505  | -1 505c |     | % |   |
| 12                                                                                                                                    | 465                             | 33               | 567              | 61.66            | -36.65          | 13.24  | 38.97   | 0.356           | -0.2207                         | 160.1                           | 21 506  | -1 506c |     | % |   |
| 14                                                                                                                                    | 470                             | 33               | 569              | 62.72            | -38.14          | 19.32  | 42.76   | 0.3422          | -0.1274                         | 153.1                           | 24 520  | -1 520c |     | % |   |
| 15                                                                                                                                    | 475                             | 34               | 573              | 65.29            | -38.28          | 22.47  | 44.39   | 0.364           | -0.0913                         | 149.5                           | 25 528  | -1 528c | Gm  | % |   |
| 16                                                                                                                                    | 480                             | 36               | 580              | 69.95            | -37.48          | 26.04  | 45.64   | 0.4146          | -0.0632                         | 145.2                           | 27 537  | -1 537c |     | % |   |
| 17                                                                                                                                    | 485                             | 39               | 595              | 78.75            | -32.73          | 31.0   | 45.09   | 0.5347          | -0.0418                         | 136.5                           | 29 548  | -1 548c |     | % |   |
| 18                                                                                                                                    | 490                             | -1               | 490c             | 93.8             | -12.06          | 38.4   | 40.25   | 0.8218          | -0.0261                         | 107.4                           | 33 565  | 11 459  | max | % |   |
| 19                                                                                                                                    | 495                             | -1               | 495c             | 92.3             | -10.68          | 38.39  | 39.85   | 0.8346          | -0.0195                         | 105.5                           | 33 566  | 12 462  |     | % |   |
| 20                                                                                                                                    | 500                             | -1               | 500c             | 90.42            | -8.91           | 38.07  | 39.1    | 0.8518          | -0.0144                         | 103.1                           | 33 567  | 12 464  |     | % |   |
| 22                                                                                                                                    | 510                             | -1               | 510c             | 85.27            | -4.15           | 36.48  | 36.72   | 0.9016          | -0.0076                         | 96.5                            | 33 569  | 13 469  |     | % |   |
| 23                                                                                                                                    | 520                             | -1               | 519c             | 81.98            | -1.26           | 35.24  | 35.26   | 0.935           | -0.0056                         | 92.0                            | 34 570  | 14 471  | Ym  | % |   |
| 25                                                                                                                                    | 530                             | -1               | 529c             | 74.04            | 5.15            | 32.02  | 32.43   | 1.0201          | -0.0031                         | 80.8                            | 34 573  | 15 475  |     | % |   |
| 27                                                                                                                                    | 540                             | -1               | 539c             | 64.9             | 11.57           | 28.16  | 30.44   | 1.1288          | -0.0016                         | 67.6                            | 35 577  | 15 478  |     | % |   |
| 28                                                                                                                                    | 545                             | -1               | 544c             | 60.13            | 14.5            | 26.11  | 29.87   | 1.1917          | -0.0012                         | 60.9                            | 35 579  | 15 479  |     | % |   |
| 29                                                                                                                                    | 550                             | -1               | 549c             | 55.26            | 17.18           | 24.01  | 29.53   | 1.2613          | -0.0009                         | 54.4                            | 36 582  | 16 480  |     | % |   |
| 30                                                                                                                                    | 555                             | -1               | 554c             | 50.4             | 19.49           | 21.91  | 29.33   | 1.3372          | -0.0007                         | 48.3                            | 36 584  | 16 481  |     | % |   |
| 32                                                                                                                                    | 560                             | -1               | 560c             | 41.0             | 22.8            | 17.83  | 28.95   | 1.5064          | -0.0005                         | 38.0                            | 37 589  | 16 483  |     | % |   |
| 380                                                                                                                                   | 770                             | 100.0            | 0.0              | 0.0              | 0.01            | 0.9504 | -0.4355 | 0.0             |                                 |                                 |         |         |     | % |   |
| Oswald optimal colours (o) of maximum (m) C <sub>AB</sub> for D65, Y <sub>w</sub> =100, Y <sub>m</sub> =770_520, LINYAB complementary |                                 |                  |                  |                  |                 |        |         |                 |                                 |                                 |         |         |     |   | % |
| i <sub>1</sub> , λ <sub>1</sub>                                                                                                       | i <sub>2</sub> , λ <sub>2</sub> | Y <sub>100</sub> | A <sub>100</sub> | B <sub>100</sub> | C <sub>AB</sub> | a      | b       | h <sub>AB</sub> | i <sub>d</sub> , λ <sub>d</sub> | i <sub>c</sub> , λ <sub>c</sub> | Code    |         |     | % |   |
| 32                                                                                                                                    | 561                             | 0                | 405              | 41.79            | 22.74           | 17.89  | 28.94   | 1.4946          | -0.0072                         | 38.1                            | 37 589  | 16 483  | Rm  | % |   |
| 32                                                                                                                                    | 562                             | 6                | 435              | 41.2             | 26.78           | 9.88   | 28.55   | 1.6006          | -0.1956                         | 20.2                            | 42 610  | 17 486  |     | % |   |
| 32                                                                                                                                    | 563                             | 10               | 450              | 40.57            | 33.54           | -4.93  | 33.9    | 1.7771          | -0.557                          | 351.6                           | -1 496c | 19 496  |     | % |   |
| 33                                                                                                                                    | 565                             | 12               | 460              | 39.67            | 36.45           | -12.66 | 38.58   | 1.8691          | -0.7547                         | 340.8                           | -1 505c | 21 505  |     | % |   |
| 33                                                                                                                                    | 567                             | 12               | 465              | 38.33            | 36.65           | -13.24 | 38.97   | 1.9064          | -0.781                          | 340.1                           | -1 506c | 21 506  |     | % |   |
| 33                                                                                                                                    | 569                             | 14               | 470              | 37.27            | 38.14           | -19.32 | 42.76   | 1.9738          | -0.954                          | 333.1                           | -1 520c | 24 520  |     | % |   |
| 34                                                                                                                                    | 573                             | 15               | 475              | 34.7             | 38.28           | -22.47 | 44.39   | 2.0536          | -1.083                          | 329.5                           | -1 528c | 25 528  | Mm  | % |   |
| 36                                                                                                                                    | 580                             | 16               | 480              | 30.04            | 37.48           | -26.04 | 45.64   | 2.1982          | -1.3026                         | 325.2                           | -1 537c | 27 537  |     | % |   |
| 39                                                                                                                                    | 595                             | 17               | 485              | 21.24            | 32.73           | -31.0  | 45.09   | 2.4914          | -1.8952                         | 316.5                           | -1 548c | 29 548  |     | % |   |
| -1                                                                                                                                    | 490c                            | 18               | 490              | 6.19             | 12.06           | -38.4  | 40.25   | 2.899           | -6.6372                         | 287.4                           | 11 459  | 33 565  | min | % |   |
| -1                                                                                                                                    | 495c                            | 19               | 495              | 7.69             | 10.68           | -38.39 | 39.85   | 2.3392          | -5.4245                         | 285.5                           | 12 462  | 33 566  |     | % |   |
| -1                                                                                                                                    | 500c                            | 20               | 500              | 9.57             | 8.91            | -38.07 | 39.1    | 1.8814          | -4.4105                         | 283.1                           | 12 464  | 33 567  |     | % |   |
| -1                                                                                                                                    | 510c                            | 22               | 510              | 14.72            | 4.15            | -36.48 | 36.72   | 1.2328          | -2.9143                         | 276.5                           | 13 469  | 33 569  |     | % |   |
| -1                                                                                                                                    | 519c                            | 23               | 520              | 18.01            | 1.26            | -35.24 | 35.26   | 1.0204          | -2.3925                         | 272.0                           | 14 471  | 34 570  | Bm  | % |   |
| -1                                                                                                                                    | 529c                            | 25               | 530              | 25.95            | -5.15           | -32.02 | 32.43   | 0.7516          | -1.6693                         | 260.8                           | 15 475  | 34 573  |     | % |   |
| -1                                                                                                                                    | 539c                            | 27               | 540              | 35.09            | -11.57          | -28.16 | 30.44   | 0.6205          | -1.238                          | 247.6                           | 15 478  | 35 577  |     | % |   |
| -1                                                                                                                                    | 544c                            | 28               | 545              | 39.86            | -14.5           | -26.11 | 29.87   | 0.5865          | -1.0906                         | 240.9                           | 15 479  | 35 579  |     | % |   |
| -1                                                                                                                                    | 549c                            | 29               | 550              | 44.73            | -17.18          | -24.01 | 29.53   | 0.5663          | -0.9725                         | 234.4                           | 16 480  | 36 582  |     | % |   |
| -1                                                                                                                                    | 554c                            | 30               | 555              | 49.59            | -19.49          | -21.91 | 29.33   | 0.5572          | -0.8774                         | 228.3                           | 16 481  | 36 584  |     | % |   |
| -1                                                                                                                                    | 560c                            | 32               | 560              | 58.99            | -22.8           | -17.83 | 28.95   | 0.5638          | -0.7379                         | 218.0                           | 16 483  | 37 589  |     | % |   |
| 380                                                                                                                                   | 770                             | 100.0            | 0.0              | 0.0              | 0.01            | 0.9504 | -0.4355 | 0.0             |                                 |                                 |         |         |     | % |   |

| rgb <sub>AB</sub> and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65                                                                                                         |      |       |       |       |        |       |      |      |      |       |      |                 |       |       |       |      |                 |                   |      |                    |      |      |      |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|-------|-------|--------|-------|------|------|------|-------|------|-----------------|-------|-------|-------|------|-----------------|-------------------|------|--------------------|------|------|------|------|
| Yxy <sub>AB</sub> abc <sub>AB</sub> ABC <sub>AB</sub> LabC <sub>AB</sub> a <sub>hAB</sub> data for relative spacing of elementary hue a <sub>hAB</sub> of L <sup>1</sup> Y <sup>1</sup> N <sup>1</sup> AB for CIE 2 degree observer |      |       |       |       |        |       |      |      |      |       |      |                 |       |       |       |      |                 |                   |      |                    |      |      |      |      |
| Elementary hue circle with 4 intended elementary hue angles: h <sub>AB</sub> = 17.7, 93.3, 159.1, 270.8 of L <sup>1</sup> Y <sup>1</sup> N <sup>1</sup> AB, 90 intended hue angles:                                                 |      |       |       |       |        |       |      |      |      |       |      |                 |       |       |       |      |                 |                   |      |                    |      |      |      |      |
| 00.001, ..., 089, L <sup>1</sup> Y <sup>1</sup> N <sup>1</sup> AB data of CIE test colours 9 (R): 11.2 9.9 3.1, 10 (Y): 59.0 -1.2 20.9, 11 (G): 20.3 -7.2 12.7, 12 (B): 6.4 0.1 -8.2                                                |      |       |       |       |        |       |      |      |      |       |      |                 |       |       |       |      |                 |                   |      |                    |      |      |      |      |
| no.                                                                                                                                                                                                                                 | AB   | X     | Y     | a     | b      | c     | AB   | A    | B    | C     | AB   | h <sub>AB</sub> | L*    | a*    | b*    | C*   | h <sub>AB</sub> | rgb <sub>AB</sub> | AB   | Code <sub>AB</sub> |      |      |      |      |
| 000                                                                                                                                                                                                                                 | 40.7 | 0.447 | 0.259 | 1.727 | -0.453 | 0.777 | 31.6 | -0.7 | 31.6 | 358.7 | 70.0 | 81.6            | -1.9  | 81.7  | 359.6 | 1.00 | 0.00            | 0.39              | 0.00 | 0.00               | 0.39 | 0.00 | 0.00 | 0.39 |
| 001                                                                                                                                                                                                                                 | 40.8 | 0.45  | 0.261 | 1.72  | -0.44  | 0.77  | 31.4 | -0.1 | 31.4 | 359.6 | 70.0 | 81.1            | -0.5  | 81.1  | 359.6 | 1.00 | 0.00            | 0.37              | 0.00 | 0.00               | 0.37 | 0.00 | 0.00 | 0.37 |
| 002                                                                                                                                                                                                                                 | 40.8 | 0.453 | 0.264 | 1.714 | -0.427 | 0.764 | 31.1 | 0.3  | 31.2 | 0.6   | 70.0 | 80.6            | 0.9   | 80.6  | 0.6   | 1.00 | 0.00            | 0.35              | 0.00 | 0.00               | 0.35 | 0.00 | 0.00 | 0.35 |
| 003                                                                                                                                                                                                                                 | 40.8 | 0.456 | 0.267 | 1.708 | -0.414 | 0.758 | 30.9 | 0.8  | 30.9 | 1.6   | 70.0 | 80.0            | 2.4   | 80.1  | 1.7   | 1.00 | 0.00            | 0.33              | 0.00 | 0.00               | 0.33 | 0.00 | 0.00 | 0.33 |
| 004                                                                                                                                                                                                                                 | 40.8 | 0.459 | 0.269 | 1.701 | -0.4   | 0.752 | 30.7 | 1.4  | 30.7 | 2.6   | 70.0 | 79.5            | 4.0   | 79.6  | 2.9   | 1.00 | 0.00            | 0.3               | 0.00 | 0.00               | 0.3  | 0.00 | 0.00 | 0.3  |
| 005                                                                                                                                                                                                                                 | 40.8 | 0.462 | 0.272 | 1.695 | -0.387 | 0.746 | 30.4 | 1.9  | 30.5 | 3.6   | 70.1 | 78.9            | 5.6   | 79.1  | 4.0   | 1.00 | 0.00            | 0.28              | 0.00 | 0.00               | 0.28 | 0.00 | 0.00 | 0.28 |
| 006                                                                                                                                                                                                                                 | 40.9 | 0.465 | 0.275 | 1.689 | -0.374 | 0.741 | 30.2 | 2.4  | 30.3 | 4.7   | 70.1 | 78.4            | 7.2   | 78.7  | 5.2   | 1.00 | 0.00            | 0.26              | 0.00 | 0.00               | 0.26 | 0.00 | 0.00 | 0.26 |
| 007                                                                                                                                                                                                                                 | 40.9 | 0.469 | 0.278 | 1.682 | -0.361 | 0.736 | 29.9 | 3.0  | 30.1 | 5.7   | 70.1 | 77.8            | 8.9   | 78.3  | 6.5   | 1.00 | 0.00            | 0.24              | 0.00 | 0.00               | 0.24 | 0.00 | 0.00 | 0.24 |
| 008                                                                                                                                                                                                                                 | 40.9 | 0.471 | 0.281 | 1.676 | -0.348 | 0.731 | 29.7 | 3.5  | 29.8 | 6.8   | 70.1 | 77.3            | 10.6  | 78.0  | 7.8   | 1.00 | 0.00            | 0.22              | 0.00 | 0.00               | 0.22 | 0.00 | 0.00 | 0.22 |
| 009                                                                                                                                                                                                                                 | 40.9 | 0.475 | 0.284 | 1.67  | -0.335 | 0.726 | 29.4 | 4.1  | 29.7 | 7.9   | 70.1 | 76.7            | 12.3  | 77.7  | 9.1   | 1.00 | 0.00            | 0.19              | 0.00 | 0.00               | 0.19 | 0.00 | 0.00 | 0.19 |
| 010                                                                                                                                                                                                                                 | 40.9 | 0.479 | 0.288 | 1.663 | -0.322 | 0.722 | 29.2 | 4.6  | 29.6 | 9.0   | 70.1 | 76.1            | 14.1  | 77.5  | 10.5  | 1.00 | 0.00            | 0.17              | 0.00 | 0.00               | 0.17 | 0.00 | 0.00 | 0.17 |
| 011                                                                                                                                                                                                                                 | 41.0 | 0.483 | 0.291 | 1.657 | -0.309 | 0.718 | 28.9 | 5.1  | 29.4 | 10.1  | 70.1 | 75.6            | 15.9  | 77.3  | 11.9  | 1.00 | 0.00            | 0.15              | 0.00 | 0.00               | 0.15 | 0.00 | 0.00 | 0.15 |
| 012                                                                                                                                                                                                                                 | 41.0 | 0.486 | 0.294 | 1.65  | -0.296 | 0.714 | 28.7 | 5.6  | 29.3 | 11.2  | 70.2 | 75.0            | 17.8  | 77.1  | 13.3  | 1.00 | 0.00            | 0.12              | 0.00 | 0.00               | 0.12 | 0.00 | 0.00 | 0.12 |
| 013                                                                                                                                                                                                                                 | 41.0 | 0.49  | 0.298 | 1.644 | -0.283 | 0.71  | 28.5 | 6.2  | 29.1 | 12.3  | 70.2 | 74.5            | 19.7  | 77.0  | 14.8  | 1.00 | 0.00            | 0.1               | 0.00 | 0.00               | 0.1  | 0.00 | 0.00 | 0.1  |
| 014                                                                                                                                                                                                                                 | 41.0 | 0.493 | 0.301 | 1.638 | -0.271 | 0.707 | 28.2 | 6.7  | 29.0 | 13.4  | 70.2 | 73.9            | 21.6  | 77.0  | 16.3  | 1.00 | 0.00            | 0.08              | 0.00 | 0.00               | 0.08 | 0.00 | 0.00 | 0.08 |
| 015                                                                                                                                                                                                                                 | 41.0 | 0.497 | 0.304 | 1.632 | -0.258 | 0.704 | 28.0 | 7.2  | 28.9 | 14.5  | 70.2 | 73.4            | 23.6  | 77.1  | 17.8  | 1.00 | 0.00            | 0.06              | 0.00 | 0.00               | 0.06 | 0.00 | 0.00 | 0.06 |
| 016                                                                                                                                                                                                                                 | 41.1 | 0.501 | 0.308 | 1.626 | -0.246 | 0.701 | 27.7 | 7.7  | 28.8 | 15.6  | 70.2 | 72.8            | 25.7  | 77.2  | 19.4  | 1.00 | 0.00            | 0.04              | 0.00 | 0.00               | 0.04 | 0.00 | 0.00 | 0.04 |
| 017                                                                                                                                                                                                                                 | 41.1 | 0.505 | 0.311 | 1.619 | -0.234 | 0.699 | 27.5 | 8.2  | 28.7 | 16.7  | 70.2 | 72.3            | 27.7  | 77.4  | 21.0  | 1.00 | 0.00            | 0.01              | 0.00 | 0.00               | 0.01 | 0.00 | 0.00 | 0.01 |
| 018                                                                                                                                                                                                                                 | 41.1 | 0.509 | 0.315 | 1.613 | -0.222 | 0.697 | 27.3 | 8.7  | 28.6 | 17.8  | 70.2 | 71.7            | 29.9  | 77.7  | 22.6  | 1.00 | 0.00            | 0.00              | 0.00 | 0.00               | 0.00 | 0.00 | 0.00 | 0.00 |
| 019                                                                                                                                                                                                                                 | 41.1 | 0.513 | 0.319 | 1.607 | -0.21  | 0.695 | 27.0 | 9.2  | 28.6 | 18.9  | 70.3 | 71.2            | 32.0  | 78.1  | 24.2  | 1.00 | 0.01            | 0.00              | 0.00 | 0.01               | 0.00 | 0.00 | 0.01 | 0.00 |
| 020                                                                                                                                                                                                                                 | 41.1 | 0.517 | 0.322 | 1.602 | -0.198 | 0.693 | 26.8 | 9.7  | 28.5 | 19.9  | 70.3 | 70.7            | 34.2  | 78.5  | 25.8  | 1.00 | 0.02            | 0.00              | 0.00 | 0.02               | 0.00 | 0.00 | 0.02 | 0.00 |
| 021                                                                                                                                                                                                                                 | 41.2 | 0.521 | 0.327 | 1.594 | -0.184 | 0.691 | 26.5 | 10.3 | 28.5 | 21.3  | 70.3 | 70.0            | 37.1  | 79.2  | 27.9  | 1.00 | 0.04            | 0.00              | 0.00 | 0.04               | 0.00 | 0.00 | 0.04 | 0.00 |
| 022                                                                                                                                                                                                                                 | 41.2 | 0.527 | 0.332 | 1.586 | -0.169 | 0.689 | 26.2 | 10.9 | 28.4 | 22.7  | 70.3 | 69.3            | 40.1  | 80.1  | 30.1  | 1.00 | 0.05            | 0.00              | 0.00 | 0.05               | 0.00 | 0.00 | 0.05 | 0.00 |
| 023                                                                                                                                                                                                                                 | 41.3 | 0.532 | 0.337 | 1.578 | -0.155 | 0.687 | 25.9 | 11.5 | 28.4 | 24.0  | 70.4 | 68.6            | 43.3  | 81.1  | 32.2  | 1.00 | 0.07            | 0.00              | 0.00 | 0.07               | 0.00 | 0.00 | 0.07 | 0.00 |
| 024                                                                                                                                                                                                                                 | 41.3 | 0.537 | 0.341 | 1.57  | -0.141 | 0.686 | 25.6 | 12.1 | 28.4 | 25.3  | 70.4 | 67.9            | 46.5  | 82.3  | 34.4  | 1.00 | 0.08            | 0.00              | 0.00 | 0.08               | 0.00 | 0.00 | 0.08 | 0.00 |
| 025                                                                                                                                                                                                                                 | 41.4 | 0.542 | 0.346 | 1.563 | -0.128 | 0.685 | 25.3 | 12.7 | 28.4 | 26.5  | 70.4 | 67.2            | 49.8  | 83.7  | 36.5  | 1.00 | 0.09            | 0.00              | 0.00 | 0.09               | 0.00 | 0.00 | 0.09 | 0.00 |
| 026                                                                                                                                                                                                                                 | 41.4 | 0.546 | 0.351 | 1.556 | -0.115 | 0.685 | 25.1 | 13.2 | 28.4 | 27.8  | 70.5 | 66.6            | 53.1  | 85.2  | 38.5  | 1.00 | 0.1             | 0.00              | 0.00 | 0.1                | 0.00 | 0.00 | 0.1  | 0.00 |
| 027                                                                                                                                                                                                                                 | 41.5 | 0.551 | 0.355 | 1.549 | -0.103 | 0.685 | 24.8 | 13.7 | 28.4 | 28.9  | 70.5 | 66.0            | 56.6  | 86.9  | 40.6  | 1.00 | 0.12            | 0.00              | 0.00 | 0.12               | 0.00 | 0.00 | 0.12 | 0.00 |
| 028                                                                                                                                                                                                                                 | 41.5 | 0.556 | 0.36  | 1.543 | -0.092 | 0.685 | 24.6 | 14.2 | 28.4 | 30.0  | 70.5 | 65.4            | 60.1  | 88.8  | 42.6  | 1.00 | 0.13            | 0.00              | 0.00 | 0.13               | 0.00 | 0.00 | 0.13 | 0.00 |
| 029                                                                                                                                                                                                                                 | 41.5 | 0.56  | 0.364 | 1.537 | -0.081 | 0.685 | 24.3 | 14.7 | 28.4 | 31.1  | 70.5 | 64.8            | 63.8  | 91.0  | 44.5  | 1.00 | 0.14            | 0.00              | 0.00 | 0.14               | 0.00 | 0.00 | 0.14 | 0.00 |
| 030                                                                                                                                                                                                                                 | 41.6 | 0.565 | 0.369 | 1.531 | -0.071 | 0.685 | 24.1 | 15.1 | 28.5 | 32.1  | 70.6 | 64.3            | 67.6  | 93.3  | 46.4  | 1.00 | 0.16            | 0.00              | 0.00 | 0.16               | 0.00 | 0.00 | 0.16 | 0.00 |
| 031                                                                                                                                                                                                                                 | 41.6 | 0.569 | 0.373 | 1.525 | -0.061 | 0.686 | 23.9 | 15.5 | 28.5 | 33.0  | 70.6 | 63.7            | 71.5  | 95.8  | 48.2  | 1.00 | 0.17            | 0.00              | 0.00 | 0.17               | 0.00 | 0.00 | 0.17 | 0.00 |
| 032                                                                                                                                                                                                                                 | 41.6 | 0.573 | 0.377 | 1.52  | -0.052 | 0.686 | 23.7 | 15.9 | 28.6 | 33.9  | 70.6 | 63.2            | 75.7  | 98.6  | 50.1  | 1.00 | 0.18            | 0.00              | 0.00 | 0.18               | 0.00 | 0.00 | 0.18 | 0.00 |
| 033                                                                                                                                                                                                                                 | 41.7 | 0.577 | 0.381 | 1.515 | -0.043 | 0.687 | 23.5 | 16.3 | 28.6 | 34.7  | 70.6 | 62.8            | 80.8  | 101.7 | 51.8  | 1.00 | 0.2             | 0.00              | 0.00 | 0.2                | 0.00 | 0.00 | 0.2  | 0.00 |
| 034                                                                                                                                                                                                                                 | 41.7 | 0.581 | 0.384 | 1.51  | -0.035 | 0.688 | 23.3 | 16.7 | 28.7 | 35.5  | 70.6 | 62.3            | 84.6  | 105.1 | 53.6  | 1.00 | 0.21            | 0.00              | 0.00 | 0.21               | 0.00 | 0.00 | 0.21 | 0.00 |
| 035                                                                                                                                                                                                                                 | 41.7 | 0.584 | 0.388 | 1.506 | -0.027 | 0.689 | 23.2 | 17.0 | 28.7 | 36.2  | 70.7 | 61.9            | 89.6  | 109.0 | 55.3  | 1.00 | 0.22            | 0.00              | 0.00 | 0.22               | 0.00 | 0.00 | 0.22 | 0.00 |
| 036                                                                                                                                                                                                                                 | 41.7 | 0.588 | 0.391 | 1.502 | -0.02  | 0.69  | 23.0 | 17.3 | 28.8 | 36.9  | 70.7 | 61.6            | 95.2  | 113.4 | 57.0  | 1.00 | 0.24            | 0.00              | 0.00 | 0.24               | 0.00 | 0.00 | 0.24 | 0.00 |
| 037                                                                                                                                                                                                                                 | 41.7 | 0.591 | 0.394 | 1.498 | -0.014 | 0.691 | 22.9 | 17.6 | 28.8 | 37.5  | 70.7 | 61.2            | 101.5 | 118.5 | 58.8  | 1.00 | 0.25            | 0.00              | 0.00 | 0.25               | 0.00 | 0.00 | 0.25 | 0.00 |
| 038                                                                                                                                                                                                                                 | 41.7 | 0.594 | 0.397 | 1.495 | -0.008 | 0.692 | 22.7 | 17.8 | 28.9 | 38.0  | 70.7 | 60.9            | 108.2 | 124.2 | 60.6  | 1.00 | 0.26            | 0.00              | 0.00 | 0.26               | 0.00 | 0.00 | 0.26 | 0.00 |
| 039                                                                                                                                                                                                                                 | 41.6 | 0.598 | 0.401 | 1.491 | 0.0    | 0.694 | 22.5 | 18.1 | 28.9 | 38.7  | 70.6 | 60.5            | 121.1 | 135.4 | 63.4  | 1.00 | 0.28            | 0.00              | 0.00 | 0.28               | 0.00 | 0.00 | 0.28 | 0.00 |
| 040                                                                                                                                                                                                                                 | 42.4 | 0.595 | 0.403 | 1.475 | 0.0    | 0.682 | 22.2 | 18.4 | 28.9 | 39.6  | 71.1 | 59.3            | 122.2 | 135.9 | 64.1  | 1.00 | 0.29            | 0.00              | 0.00 | 0.29               | 0.00 | 0.00 | 0.29 | 0.00 |
| 041                                                                                                                                                                                                                                 | 43.3 | 0.593 | 0.406 | 1.458 | 0.0    | 0.669 | 22.0 | 18.8 | 28.9 | 40.5  | 71.7 | 58.0            | 123.3 | 136.3 | 64.8  | 1.00 | 0.3             | 0.00              | 0.00 | 0.3                | 0.00 | 0.00 | 0.3  | 0.00 |
| 042                                                                                                                                                                                                                                 | 44.2 | 0.59  | 0.409 | 1.44  | 0.0    | 0.655 | 21.6 | 19.2 | 29.0 | 41.5  | 72.3 | 56.6            | 124.4 | 136.7 | 65.5  | 1.00 | 0.32            | 0.00              | 0.00 | 0.32               | 0.00 | 0.00 | 0.32 | 0.00 |
| 043                                                                                                                                                                                                                                 | 45.1 | 0.587 | 0.412 | 1.423 | 0.0    | 0.642 | 21.3 | 19.6 | 29.0 | 42.6  | 73.0 | 55.2            | 125.4 | 137.0 | 66.2  | 1.00 | 0.33            | 0.00              | 0.00 | 0.33               | 0.00 | 0.00 | 0.33 | 0.00 |
| 044                                                                                                                                                                                                                                 | 46.1 | 0.584 | 0.415 | 1.405 | 0.0    | 0.63  | 21.0 | 20.0 | 29.0 | 43.6  | 73.6 | 53.8            | 126.4 | 137.4 | 66.9  | 1.00 | 0.34            | 0.00              | 0.00 | 0.34               | 0.00 | 0.00 | 0.34 | 0.00 |
| 045                                                                                                                                                                                                                                 | 47.1 | 0.581 | 0.418 | 1.388 | 0.0    | 0.617 | 20.6 | 20.5 | 29.1 | 44.7  | 74.2 | 52.4            | 127.3 | 137.7 | 67.6  | 1.00 | 0.36            | 0.00              | 0.00 | 0.36               | 0.00 | 0.00 | 0.36 | 0.00 |
| 046                                                                                                                                                                                                                                 | 48.1 | 0.578 | 0.421 | 1.372 | 0.0    | 0.606 | 20.3 | 20.9 | 29.1 | 45.8  | 74.9 | 51.0            | 128.2 | 138.0 | 68.2  | 1.00 | 0.37            | 0.00              | 0.00 | 0.37               | 0.00 | 0.00 | 0.37 | 0.00 |
| 047                                                                                                                                                                                                                                 | 49.1 | 0.575 | 0.424 | 1.356 | 0.0    | 0.595 | 19.9 | 21.3 | 29.2 | 46.9  | 75.5 | 49.7            |       |       |       |      |                 |                   |      |                    |      |      |      |      |

| rgb <sub>AB</sub> and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65                                                                                           |      |       |       |       |        |       |                 |      |      |                 |                 |       |       |         |       |                 |                   |                  |                  |                  |                    |      |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|-------|-------|--------|-------|-----------------|------|------|-----------------|-----------------|-------|-------|---------|-------|-----------------|-------------------|------------------|------------------|------------------|--------------------|------|--|--|
| Yxy <sub>AB</sub> c <sub>AB</sub> AB ABC <sub>AB</sub> LabC <sub>AB</sub> a <sub>hAB</sub> data for relative spacing of elementary hue a <sub>hAB</sub> of L <sub>1</sub> Y <sub>1</sub> AB for CIE 2 degree observer |      |       |       |       |        |       |                 |      |      |                 |                 |       |       |         |       |                 |                   |                  |                  |                  |                    |      |  |  |
| Elementary hue circle with 4 intended elementary hue angles: h <sub>AB</sub> = 17.7, 93.3, 159.1, 270.8 of L <sub>1</sub> Y <sub>1</sub> AB, and 90 intended hue angles:                                              |      |       |       |       |        |       |                 |      |      |                 |                 |       |       |         |       |                 |                   |                  |                  |                  |                    |      |  |  |
| 090, 091, ..., 179, L <sub>1</sub> Y <sub>1</sub> AB data of CIE test colours 9 (R): 11.2 9.9 3.1, 10 (Y): 59.0 -1.2 20.9, 11 (G): 20.3 -7.2 12.7, 12 (B): 6.4 0.1 -8.2                                               |      |       |       |       |        |       |                 |      |      |                 |                 |       |       |         |       |                 |                   |                  |                  |                  |                    |      |  |  |
| no                                                                                                                                                                                                                    | AB   | Y     | x     | y     | a      | b     | c <sub>AB</sub> | A    | B    | C <sub>AB</sub> | h <sub>AB</sub> | L*    | a*    | b*      | C*    | h <sub>AB</sub> | rgb <sub>AB</sub> | a <sub>hAB</sub> | b <sub>hAB</sub> | c <sub>hAB</sub> | Code <sub>AB</sub> |      |  |  |
| 090                                                                                                                                                                                                                   | 80.7 | 0.483 | 0.511 | 0.947 | -0.005 | 0.43  | -0.2            | 34.7 | 34.7 | 90.4            | 92.0            | -0.4  | 143.5 | 143.5   | 90.1  | 1.00            | 0.95              | 0.00             | 0.00             | 0.00             | 0.00               | R95Y |  |  |
| 091                                                                                                                                                                                                                   | 81.3 | 0.481 | 0.511 | 0.941 | -0.005 | 0.43  | -0.7            | 35.0 | 35.0 | 91.2            | 92.3            | -1.5  | 143.2 | 143.2   | 90.6  | 1.00            | 0.96              | 0.00             | 0.00             | 0.00             | 0.00               | R96Y |  |  |
| 092                                                                                                                                                                                                                   | 81.9 | 0.479 | 0.512 | 0.935 | -0.005 | 0.43  | -1.2            | 35.2 | 35.2 | 92.0            | 92.5            | -2.4  | 143.0 | 143.0   | 90.9  | 1.00            | 0.98              | 0.00             | 0.00             | 0.00             | 0.00               | R98Y |  |  |
| 093                                                                                                                                                                                                                   | 82.8 | 0.477 | 0.515 | 0.926 | -0.005 | 0.43  | -1.9            | 35.5 | 35.6 | 93.2            | 92.9            | -3.9  | 142.8 | 142.8   | 91.6  | 1.00            | 0.99              | 0.00             | 0.00             | 0.00             | 0.00               | R99Y |  |  |
| 094                                                                                                                                                                                                                   | 83.6 | 0.474 | 0.516 | 0.918 | -0.006 | 0.43  | -2.6            | 35.8 | 35.9 | 94.2            | 93.2            | -5.2  | 142.4 | 142.5   | 92.1  | 0.98            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y01G |  |  |
| 095                                                                                                                                                                                                                   | 84.2 | 0.472 | 0.518 | 0.911 | -0.006 | 0.43  | -3.2            | 36.1 | 36.2 | 95.1            | 93.5            | -6.4  | 141.8 | 141.9   | 92.6  | 0.97            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y02G |  |  |
| 096                                                                                                                                                                                                                   | 84.9 | 0.47  | 0.519 | 0.905 | -0.007 | 0.43  | -3.8            | 36.3 | 36.5 | 96.0            | 93.8            | -7.6  | 140.8 | 141.0   | 93.1  | 0.95            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y04G |  |  |
| 097                                                                                                                                                                                                                   | 85.6 | 0.468 | 0.521 | 0.897 | -0.008 | 0.43  | -4.5            | 36.6 | 36.8 | 97.8            | 94.1            | -8.9  | 139.4 | 139.7   | 93.6  | 0.94            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y05G |  |  |
| 098                                                                                                                                                                                                                   | 86.4 | 0.465 | 0.522 | 0.889 | -0.008 | 0.43  | -5.2            | 36.8 | 37.2 | 98.6            | 94.5            | -10.3 | 138.0 | 138.4   | 94.2  | 0.92            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y06G |  |  |
| 099                                                                                                                                                                                                                   | 87.2 | 0.462 | 0.523 | 0.881 | -0.009 | 0.43  | -5.9            | 37.1 | 37.6 | 99.1            | 94.8            | -11.7 | 136.5 | 137.0   | 94.9  | 0.91            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y08G |  |  |
| 100                                                                                                                                                                                                                   | 88.0 | 0.459 | 0.525 | 0.874 | -0.011 | 0.431 | -6.7            | 37.3 | 37.9 | 100.2           | 95.1            | -13.1 | 135.1 | 135.8   | 95.5  | 0.89            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y10G |  |  |
| 101                                                                                                                                                                                                                   | 88.8 | 0.456 | 0.527 | 0.866 | -0.012 | 0.431 | -7.4            | 37.6 | 38.3 | 101.2           | 95.5            | -14.5 | 133.8 | 134.6   | 96.2  | 0.88            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y11G |  |  |
| 102                                                                                                                                                                                                                   | 89.6 | 0.454 | 0.528 | 0.859 | -0.013 | 0.432 | -8.1            | 37.8 | 38.7 | 102.1           | 95.8            | -15.9 | 132.5 | 133.5   | 96.8  | 0.86            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y13G |  |  |
| 103                                                                                                                                                                                                                   | 90.3 | 0.451 | 0.529 | 0.852 | -0.014 | 0.432 | -8.8            | 38.0 | 39.0 | 103.0           | 96.1            | -17.1 | 131.3 | 132.4   | 97.4  | 0.85            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y14G |  |  |
| 104                                                                                                                                                                                                                   | 91.2 | 0.447 | 0.53  | 0.843 | -0.016 | 0.432 | -9.7            | 38.2 | 39.4 | 104.2           | 96.5            | -18.8 | 129.1 | 130.4   | 98.3  | 0.83            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y16G |  |  |
| 105                                                                                                                                                                                                                   | 92.0 | 0.444 | 0.53  | 0.837 | -0.018 | 0.432 | -10.4           | 38.3 | 39.7 | 105.0           | 96.8            | -20.1 | 126.7 | 128.3   | 99.0  | 0.82            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y17G |  |  |
| 106                                                                                                                                                                                                                   | 92.8 | 0.443 | 0.529 | 0.833 | -0.019 | 0.433 | -10.3           | 38.6 | 40.0 | 106.0           | 97.0            | -21.2 | 125.2 | 126.9   | 99.2  | 0.82            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y19G |  |  |
| 107                                                                                                                                                                                                                   | 94.3 | 0.44  | 0.527 | 0.836 | -0.024 | 0.426 | -10.7           | 38.8 | 40.2 | 105.4           | 97.7            | -20.4 | 122.1 | 122.9   | 99.5  | 0.79            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y20G |  |  |
| 108                                                                                                                                                                                                                   | 93.6 | 0.434 | 0.53  | 0.818 | -0.026 | 0.43  | -12.3           | 38.3 | 40.2 | 107.9           | 97.4            | -23.8 | 118.7 | 121.1   | 101.3 | 0.77            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y22G |  |  |
| 109                                                                                                                                                                                                                   | 93.2 | 0.431 | 0.532 | 0.811 | -0.026 | 0.432 | -12.9           | 38.1 | 40.2 | 108.8           | 97.3            | -25.1 | 118.2 | 120.8   | 102.0 | 0.76            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y23G |  |  |
| 110                                                                                                                                                                                                                   | 92.8 | 0.429 | 0.534 | 0.803 | -0.027 | 0.434 | -13.6           | 37.9 | 40.2 | 109.7           | 97.1            | -26.5 | 117.6 | 120.6   | 102.6 | 0.74            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y25G |  |  |
| 111                                                                                                                                                                                                                   | 92.3 | 0.426 | 0.536 | 0.796 | -0.027 | 0.436 | -14.2           | 37.6 | 40.3 | 110.7           | 96.9            | -27.9 | 117.1 | 120.4   | 103.4 | 0.73            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y26G |  |  |
| 112                                                                                                                                                                                                                   | 91.9 | 0.424 | 0.538 | 0.788 | -0.027 | 0.438 | -14.9           | 37.4 | 40.3 | 111.7           | 96.8            | -29.4 | 116.5 | 120.2   | 104.1 | 0.71            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y28G |  |  |
| 113                                                                                                                                                                                                                   | 91.5 | 0.421 | 0.54  | 0.779 | -0.028 | 0.44  | -15.6           | 37.2 | 40.3 | 112.7           | 96.6            | -30.9 | 115.9 | 119.8   | 104.9 | 0.7             | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y30G |  |  |
| 114                                                                                                                                                                                                                   | 91.0 | 0.418 | 0.542 | 0.771 | -0.028 | 0.44  | -16.2           | 37.0 | 40.4 | 113.7           | 96.6            | -32.5 | 115.4 | 119.9   | 105.8 | 0.68            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y31G |  |  |
| 115                                                                                                                                                                                                                   | 90.5 | 0.415 | 0.544 | 0.762 | -0.029 | 0.447 | -16.9           | 36.7 | 40.5 | 114.7           | 96.2            | -34.2 | 114.7 | 119.7   | 106.5 | 0.67            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y32G |  |  |
| 116                                                                                                                                                                                                                   | 90.0 | 0.412 | 0.547 | 0.753 | -0.029 | 0.451 | -17.7           | 36.5 | 40.6 | 115.8           | 96.0            | -35.9 | 114.1 | 119.6   | 107.4 | 0.65            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y34G |  |  |
| 117                                                                                                                                                                                                                   | 89.5 | 0.409 | 0.549 | 0.744 | -0.03  | 0.454 | -18.4           | 36.3 | 40.7 | 116.9           | 95.8            | -37.6 | 113.5 | 119.6   | 108.3 | 0.64            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y35G |  |  |
| 118                                                                                                                                                                                                                   | 89.0 | 0.405 | 0.551 | 0.735 | -0.03  | 0.458 | -19.1           | 36.0 | 40.8 | 118.0           | 95.6            | -39.4 | 112.9 | 119.6   | 109.2 | 0.62            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y37G |  |  |
| 119                                                                                                                                                                                                                   | 88.5 | 0.402 | 0.554 | 0.725 | -0.031 | 0.462 | -19.9           | 35.8 | 40.9 | 119.0           | 95.3            | -41.3 | 112.2 | 119.6   | 110.2 | 0.6             | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y39G |  |  |
| 120                                                                                                                                                                                                                   | 88.0 | 0.398 | 0.557 | 0.715 | -0.031 | 0.467 | -20.6           | 35.5 | 41.1 | 120.1           | 95.1            | -43.2 | 111.6 | 119.7   | 111.1 | 0.59            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y40G |  |  |
| 121                                                                                                                                                                                                                   | 87.4 | 0.394 | 0.559 | 0.705 | -0.032 | 0.472 | -21.4           | 35.2 | 41.2 | 121.2           | 94.9            | -45.2 | 110.9 | 119.8   | 112.1 | 0.57            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y42G |  |  |
| 122                                                                                                                                                                                                                   | 86.9 | 0.391 | 0.562 | 0.695 | -0.032 | 0.477 | -22.1           | 35.0 | 41.4 | 122.3           | 94.7            | -47.2 | 110.2 | 119.1   | 113.1 | 0.56            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y43G |  |  |
| 123                                                                                                                                                                                                                   | 86.3 | 0.387 | 0.565 | 0.684 | -0.033 | 0.482 | -22.9           | 34.7 | 41.6 | 123.4           | 94.4            | -49.3 | 109.6 | 120.1   | 114.2 | 0.54            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y45G |  |  |
| 124                                                                                                                                                                                                                   | 85.8 | 0.383 | 0.568 | 0.674 | -0.033 | 0.487 | -23.7           | 34.4 | 41.8 | 124.5           | 94.2            | -51.4 | 108.9 | 120.4   | 115.2 | 0.53            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y46G |  |  |
| 125                                                                                                                                                                                                                   | 85.2 | 0.379 | 0.571 | 0.663 | -0.034 | 0.493 | -24.4           | 34.2 | 42.0 | 125.5           | 93.9            | -53.5 | 108.2 | 120.7   | 116.3 | 0.51            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y48G |  |  |
| 126                                                                                                                                                                                                                   | 84.6 | 0.374 | 0.574 | 0.652 | -0.034 | 0.499 | -25.2           | 33.9 | 42.2 | 126.6           | 93.7            | -55.7 | 107.5 | 121.1   | 117.3 | 0.5             | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y49G |  |  |
| 127                                                                                                                                                                                                                   | 84.1 | 0.37  | 0.577 | 0.641 | -0.035 | 0.505 | -25.9           | 33.6 | 42.5 | 127.6           | 93.5            | -57.9 | 106.8 | 121.5   | 118.4 | 0.48            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y51G |  |  |
| 128                                                                                                                                                                                                                   | 83.5 | 0.366 | 0.581 | 0.63  | -0.036 | 0.511 | -26.7           | 33.3 | 42.7 | 128.7           | 93.2            | -60.2 | 106.1 | 122.0   | 119.5 | 0.47            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y52G |  |  |
| 129                                                                                                                                                                                                                   | 82.9 | 0.361 | 0.584 | 0.619 | -0.036 | 0.518 | -27.4           | 33.0 | 43.0 | 129.7           | 93.0            | -62.5 | 105.4 | 122.5   | 120.6 | 0.45            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y54G |  |  |
| 130                                                                                                                                                                                                                   | 82.3 | 0.357 | 0.587 | 0.608 | -0.037 | 0.525 | -28.2           | 32.8 | 43.2 | 130.7           | 92.8            | -64.8 | 104.7 | 123.1   | 121.7 | 0.44            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y55G |  |  |
| 131                                                                                                                                                                                                                   | 81.8 | 0.352 | 0.591 | 0.596 | -0.038 | 0.532 | -28.9           | 32.5 | 43.5 | 131.6           | 92.5            | -67.1 | 104.0 | 123.8   | 122.8 | 0.42            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y57G |  |  |
| 132                                                                                                                                                                                                                   | 81.2 | 0.348 | 0.594 | 0.585 | -0.038 | 0.539 | -29.6           | 32.2 | 43.8 | 132.5           | 92.2            | -69.5 | 103.3 | 124.5   | 123.9 | 0.41            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y58G |  |  |
| 133                                                                                                                                                                                                                   | 80.7 | 0.343 | 0.597 | 0.574 | -0.039 | 0.546 | -30.3           | 31.9 | 44.0 | 133.5           | 92.0            | -71.9 | 102.6 | 125.3   | 125.0 | 0.39            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y60G |  |  |
| 134                                                                                                                                                                                                                   | 80.1 | 0.338 | 0.601 | 0.563 | -0.04  | 0.553 | -31.0           | 31.7 | 44.3 | 134.4           | 91.7            | -74.3 | 101.8 | 126.1   | 126.1 | 0.38            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y61G |  |  |
| 135                                                                                                                                                                                                                   | 79.6 | 0.333 | 0.604 | 0.551 | -0.04  | 0.561 | -31.7           | 31.4 | 44.6 | 135.2           | 91.5            | -76.7 | 101.1 | 127.0   | 127.1 | 0.36            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y63G |  |  |
| 136                                                                                                                                                                                                                   | 79.0 | 0.328 | 0.608 | 0.54  | -0.041 | 0.568 | -32.3           | 31.1 | 44.9 | 136.1           | 91.2            | -79.1 | 100.4 | 127.9   | 128.2 | 0.35            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y64G |  |  |
| 137                                                                                                                                                                                                                   | 78.1 | 0.321 | 0.612 | 0.524 | -0.042 | 0.575 | -33.2           | 30.7 | 45.2 | 137.2           | 90.8            | -82.7 | 99.7  | 128.1   | 129.1 | 0.33            | 1.00              | 0.00             | 0.00             | 0.00             | 0.00               | Y66G |  |  |
| 138                                                                                                                                                                                                                   | 76.9 | 0.311 | 0.618 | 0.504 | -0.044 | 0.593 | -34.3           | 30.0 | 45.6 | 138.8           | 90.2            | -87.2 | 97.2  | 130.6</ |       |                 |                   |                  |                  |                  |                    |      |  |  |

| rgb* <sub>AB</sub> and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65                                                                                       |      |       |       |       |        |       |                 |       |      |                 |                 |        |       |       |                  |                 |                    |      |      |    |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|-------|-------|--------|-------|-----------------|-------|------|-----------------|-----------------|--------|-------|-------|------------------|-----------------|--------------------|------|------|----|--|--|--|--|
| Yxy, c <sub>AB</sub> <sub>AB</sub> ABC <sub>AB</sub> LabC* <sub>ab</sub> h <sub>ab</sub> data for relative spacing of elementary hue h <sub>AB</sub> of L <sub>1</sub> Y <sub>1</sub> AB for CIE 2 degree observer |      |       |       |       |        |       |                 |       |      |                 |                 |        |       |       |                  |                 |                    |      |      |    |  |  |  |  |
| Elementary hue circle with 4 intended elementary hue angles: h <sub>AB</sub> = 17.7, 93.3, 159.1, 270.8 of L <sub>1</sub> Y <sub>1</sub> AB, and 90 intended hue angles:                                           |      |       |       |       |        |       |                 |       |      |                 |                 |        |       |       |                  |                 |                    |      |      |    |  |  |  |  |
| 180, 181, ..., 269, L <sub>1</sub> Y <sub>1</sub> AB data of CIE test colours 9 (R): 11.2 9.9 3.1, 10 (Y): 59.0 29.1 1.2 20.9, 11 (G): 20.3 -7.2 12.7, 12 (B): 6.4 0.1 -8.2                                        |      |       |       |       |        |       |                 |       |      |                 |                 |        |       |       |                  |                 |                    |      |      |    |  |  |  |  |
| no.                                                                                                                                                                                                                | AB   | Y     | x     | y     | a      | b     | c <sub>AB</sub> | A     | B    | C <sub>AB</sub> | h <sub>AB</sub> | L*     | a*    | b*    | C* <sub>ab</sub> | h <sub>ab</sub> | rgb* <sub>AB</sub> | AB   | Code | AB |  |  |  |  |
| 180                                                                                                                                                                                                                | 59.2 | 0.167 | 0.404 | 0.415 | -0.423 | 0.535 | -31.6           | 0.7   | 31.6 | 178.7           | 81.4            | -101.1 | 1.5   | 181.1 | 179.7            | 1.00            | 1.00               | 0.37 | G180 |    |  |  |  |  |
| 181                                                                                                                                                                                                                | 59.1 | 0.167 | 0.399 | 0.419 | -0.432 | 0.531 | -31.4           | 0.1   | 31.4 | 179.6           | 81.4            | -100.0 | 1.4   | 180.1 | 179.7            | 1.00            | 1.00               | 0.39 | G181 |    |  |  |  |  |
| 182                                                                                                                                                                                                                | 59.1 | 0.167 | 0.395 | 0.423 | -0.441 | 0.527 | -31.1           | -0.3  | 31.2 | 180.6           | 81.3            | -99.2  | -0.7  | 99.2  | 180.4            | 0.00            | 1.00               | 0.4  | G208 |    |  |  |  |  |
| 183                                                                                                                                                                                                                | 59.1 | 0.167 | 0.391 | 0.427 | -0.45  | 0.523 | -30.9           | -0.8  | 30.9 | 181.6           | 81.3            | -98.2  | -1.8  | 98.2  | 181.0            | 0.00            | 1.00               | 0.42 | G218 |    |  |  |  |  |
| 184                                                                                                                                                                                                                | 59.1 | 0.167 | 0.387 | 0.431 | -0.459 | 0.52  | -30.7           | -1.4  | 30.7 | 182.6           | 81.3            | -97.2  | -3.0  | 97.2  | 181.7            | 0.00            | 1.00               | 0.44 | G228 |    |  |  |  |  |
| 185                                                                                                                                                                                                                | 59.1 | 0.166 | 0.383 | 0.434 | -0.468 | 0.516 | -30.4           | -1.9  | 30.5 | 183.6           | 81.3            | -96.2  | -4.1  | 96.3  | 182.4            | 0.00            | 1.00               | 0.46 | G238 |    |  |  |  |  |
| 186                                                                                                                                                                                                                | 59.0 | 0.166 | 0.379 | 0.438 | -0.477 | 0.513 | -30.2           | -2.4  | 30.3 | 184.7           | 81.3            | -95.2  | -5.2  | 95.3  | 183.1            | 0.00            | 1.00               | 0.48 | G248 |    |  |  |  |  |
| 187                                                                                                                                                                                                                | 59.0 | 0.166 | 0.375 | 0.442 | -0.486 | 0.505 | -29.9           | -3.0  | 30.1 | 185.7           | 81.3            | -94.2  | -6.3  | 94.4  | 183.8            | 0.00            | 1.00               | 0.49 | G258 |    |  |  |  |  |
| 188                                                                                                                                                                                                                | 59.0 | 0.166 | 0.372 | 0.445 | -0.495 | 0.507 | -29.7           | -3.6  | 30.2 | 186.9           | 81.3            | -93.2  | -7.4  | 93.7  | 184.5            | 0.00            | 1.00               | 0.51 | G268 |    |  |  |  |  |
| 189                                                                                                                                                                                                                | 59.0 | 0.166 | 0.368 | 0.45  | -0.505 | 0.504 | -29.4           | -4.1  | 29.7 | 187.9           | 81.3            | -92.2  | -8.4  | 92.6  | 185.2            | 0.00            | 1.00               | 0.53 | G268 |    |  |  |  |  |
| 190                                                                                                                                                                                                                | 59.0 | 0.166 | 0.364 | 0.454 | -0.514 | 0.501 | -29.2           | -4.6  | 29.6 | 189.0           | 81.2            | -91.3  | -9.5  | 91.8  | 185.9            | 0.00            | 1.00               | 0.55 | G278 |    |  |  |  |  |
| 191                                                                                                                                                                                                                | 58.9 | 0.165 | 0.361 | 0.458 | -0.523 | 0.499 | -28.9           | -5.1  | 29.4 | 190.1           | 81.2            | -90.3  | -10.5 | 90.9  | 186.6            | 0.00            | 1.00               | 0.57 | G288 |    |  |  |  |  |
| 192                                                                                                                                                                                                                | 58.9 | 0.165 | 0.357 | 0.462 | -0.532 | 0.497 | -28.7           | -5.6  | 29.3 | 191.2           | 81.2            | -89.3  | -11.5 | 90.1  | 187.3            | 0.00            | 1.00               | 0.58 | G298 |    |  |  |  |  |
| 193                                                                                                                                                                                                                | 58.9 | 0.165 | 0.354 | 0.466 | -0.541 | 0.495 | -28.5           | -6.2  | 29.1 | 192.3           | 81.2            | -88.4  | -12.5 | 89.3  | 188.0            | 0.00            | 1.00               | 0.6  | G308 |    |  |  |  |  |
| 194                                                                                                                                                                                                                | 58.9 | 0.165 | 0.351 | 0.47  | -0.55  | 0.493 | -28.2           | -6.7  | 29.0 | 193.4           | 81.2            | -87.4  | -13.5 | 88.5  | 188.8            | 0.00            | 1.00               | 0.62 | G318 |    |  |  |  |  |
| 195                                                                                                                                                                                                                | 58.8 | 0.165 | 0.348 | 0.474 | -0.558 | 0.491 | -28.0           | -7.2  | 28.8 | 194.5           | 81.2            | -86.5  | -14.5 | 87.7  | 189.5            | 0.00            | 1.00               | 0.64 | G328 |    |  |  |  |  |
| 196                                                                                                                                                                                                                | 58.8 | 0.165 | 0.345 | 0.48  | -0.567 | 0.488 | -27.7           | -7.7  | 28.8 | 195.6           | 81.2            | -85.5  | -15.4 | 87.9  | 190.2            | 0.00            | 1.00               | 0.65 | G338 |    |  |  |  |  |
| 197                                                                                                                                                                                                                | 58.8 | 0.165 | 0.342 | 0.482 | -0.576 | 0.481 | -27.5           | -8.2  | 28.7 | 196.7           | 81.2            | -84.7  | -16.3 | 86.3  | 190.9            | 0.00            | 1.00               | 0.67 | G338 |    |  |  |  |  |
| 198                                                                                                                                                                                                                | 58.8 | 0.164 | 0.339 | 0.486 | -0.584 | 0.487 | -27.3           | -8.7  | 28.6 | 197.8           | 81.2            | -83.8  | -17.2 | 85.6  | 191.6            | 0.00            | 1.00               | 0.69 | G348 |    |  |  |  |  |
| 199                                                                                                                                                                                                                | 58.8 | 0.164 | 0.336 | 0.49  | -0.593 | 0.486 | -27.0           | -9.2  | 28.6 | 198.9           | 81.1            | -82.9  | -18.1 | 84.9  | 192.3            | 0.00            | 1.00               | 0.71 | G358 |    |  |  |  |  |
| 200                                                                                                                                                                                                                | 58.8 | 0.164 | 0.333 | 0.493 | -0.601 | 0.485 | -26.8           | -9.7  | 28.5 | 199.9           | 81.1            | -82.1  | -19.0 | 84.2  | 193.0            | 0.00            | 1.00               | 0.73 | G368 |    |  |  |  |  |
| 201                                                                                                                                                                                                                | 58.7 | 0.164 | 0.33  | 0.498 | -0.611 | 0.485 | -26.5           | -10.3 | 28.5 | 201.3           | 81.1            | -81.0  | -20.0 | 83.4  | 193.9            | 0.00            | 1.00               | 0.74 | G378 |    |  |  |  |  |
| 202                                                                                                                                                                                                                | 58.7 | 0.164 | 0.326 | 0.502 | -0.622 | 0.484 | -26.2           | -10.9 | 28.4 | 202.7           | 81.1            | -79.9  | -21.1 | 82.6  | 194.8            | 0.00            | 1.00               | 0.76 | G388 |    |  |  |  |  |
| 203                                                                                                                                                                                                                | 58.6 | 0.164 | 0.323 | 0.507 | -0.633 | 0.484 | -25.9           | -11.5 | 28.4 | 204.0           | 81.1            | -78.8  | -22.2 | 81.9  | 195.7            | 0.00            | 1.00               | 0.78 | G398 |    |  |  |  |  |
| 204                                                                                                                                                                                                                | 58.6 | 0.164 | 0.32  | 0.512 | -0.643 | 0.484 | -25.6           | -12.1 | 28.4 | 205.3           | 81.0            | -77.8  | -23.2 | 81.2  | 196.5            | 0.00            | 1.00               | 0.8  | G408 |    |  |  |  |  |
| 205                                                                                                                                                                                                                | 58.5 | 0.164 | 0.317 | 0.516 | -0.652 | 0.484 | -25.3           | -12.7 | 28.4 | 206.6           | 81.0            | -76.8  | -24.1 | 80.5  | 197.4            | 0.00            | 1.00               | 0.82 | G418 |    |  |  |  |  |
| 206                                                                                                                                                                                                                | 58.5 | 0.164 | 0.314 | 0.521 | -0.661 | 0.485 | -25.1           | -13.2 | 28.4 | 207.8           | 81.0            | -75.9  | -25.0 | 79.9  | 198.2            | 0.00            | 1.00               | 0.83 | G418 |    |  |  |  |  |
| 207                                                                                                                                                                                                                | 58.4 | 0.164 | 0.312 | 0.525 | -0.67  | 0.486 | -24.8           | -13.7 | 28.4 | 208.9           | 81.0            | -75.0  | -25.9 | 79.3  | 199.0            | 0.00            | 1.00               | 0.85 | G428 |    |  |  |  |  |
| 208                                                                                                                                                                                                                | 58.4 | 0.163 | 0.309 | 0.529 | -0.679 | 0.486 | -24.6           | -14.2 | 28.4 | 210.0           | 80.9            | -74.1  | -26.7 | 78.8  | 199.8            | 0.00            | 1.00               | 0.87 | G438 |    |  |  |  |  |
| 209                                                                                                                                                                                                                | 58.4 | 0.163 | 0.307 | 0.532 | -0.687 | 0.487 | -24.3           | -14.7 | 28.4 | 211.1           | 80.9            | -73.3  | -27.4 | 78.2  | 200.5            | 0.00            | 1.00               | 0.89 | G448 |    |  |  |  |  |
| 210                                                                                                                                                                                                                | 58.3 | 0.163 | 0.305 | 0.536 | -0.695 | 0.488 | -24.1           | -15.1 | 28.5 | 212.1           | 80.9            | -72.5  | -28.1 | 77.8  | 201.2            | 0.00            | 1.00               | 0.91 | G458 |    |  |  |  |  |
| 211                                                                                                                                                                                                                | 58.3 | 0.163 | 0.303 | 0.539 | -0.702 | 0.489 | -23.9           | -15.5 | 28.5 | 213.0           | 80.9            | -71.7  | -28.8 | 77.3  | 201.9            | 0.00            | 1.00               | 0.92 | G468 |    |  |  |  |  |
| 212                                                                                                                                                                                                                | 58.3 | 0.163 | 0.301 | 0.543 | -0.709 | 0.49  | -23.7           | -15.9 | 28.6 | 214.0           | 80.9            | -71.0  | -29.5 | 76.9  | 202.6            | 0.00            | 1.00               | 0.94 | G478 |    |  |  |  |  |
| 213                                                                                                                                                                                                                | 58.2 | 0.163 | 0.299 | 0.546 | -0.716 | 0.492 | -23.5           | -16.3 | 28.6 | 214.7           | 80.9            | -70.3  | -30.1 | 76.5  | 203.1            | 0.00            | 1.00               | 0.96 | G488 |    |  |  |  |  |
| 214                                                                                                                                                                                                                | 58.2 | 0.163 | 0.298 | 0.549 | -0.722 | 0.493 | -23.3           | -16.7 | 28.7 | 215.5           | 80.8            | -69.7  | -30.6 | 76.1  | 203.7            | 0.00            | 1.00               | 0.98 | G498 |    |  |  |  |  |
| 215                                                                                                                                                                                                                | 58.2 | 0.163 | 0.296 | 0.552 | -0.727 | 0.494 | -23.2           | -17.0 | 28.7 | 216.2           | 80.8            | -69.1  | -31.1 | 75.8  | 204.2            | 0.00            | 1.00               | 0.99 | G508 |    |  |  |  |  |
| 216                                                                                                                                                                                                                | 58.2 | 0.163 | 0.295 | 0.554 | -0.733 | 0.495 | -23.0           | -17.3 | 28.8 | 216.9           | 80.8            | -68.6  | -31.6 | 75.5  | 204.7            | 0.00            | 1.00               | 0.98 | G508 |    |  |  |  |  |
| 217                                                                                                                                                                                                                | 58.2 | 0.163 | 0.293 | 0.557 | -0.737 | 0.496 | -22.9           | -17.6 | 28.8 | 217.5           | 80.8            | -68.1  | -32.0 | 75.2  | 205.2            | 0.00            | 1.00               | 0.96 | G518 |    |  |  |  |  |
| 218                                                                                                                                                                                                                | 58.2 | 0.163 | 0.292 | 0.559 | -0.742 | 0.497 | -22.7           | -17.8 | 28.9 | 218.0           | 80.8            | -67.6  | -32.4 | 75.0  | 205.6            | 0.00            | 1.00               | 0.94 | G528 |    |  |  |  |  |
| 219                                                                                                                                                                                                                | 58.3 | 0.164 | 0.291 | 0.563 | -0.746 | 0.496 | -22.5           | -18.1 | 28.9 | 218.7           | 80.9            | -66.8  | -32.8 | 74.4  | 206.2            | 0.00            | 1.00               | 0.92 | G538 |    |  |  |  |  |
| 220                                                                                                                                                                                                                | 57.5 | 0.162 | 0.289 | 0.562 | -0.756 | 0.503 | -22.3           | -18.4 | 28.9 | 219.4           | 80.9            | -66.6  | -33.3 | 74.6  | 206.7            | 0.00            | 1.00               | 0.91 | G548 |    |  |  |  |  |
| 221                                                                                                                                                                                                                | 56.6 | 0.161 | 0.287 | 0.562 | -0.768 | 0.511 | -22.0           | -18.8 | 28.9 | 220.5           | 80.0            | -66.4  | -34.4 | 74.8  | 207.4            | 0.00            | 0.89               | 1.00 | G558 |    |  |  |  |  |
| 222                                                                                                                                                                                                                | 55.7 | 0.159 | 0.284 | 0.561 | -0.78  | 0.52  | -21.6           | -19.2 | 29.0 | 221.5           | 79.4            | -66.2  | -35.3 | 75.0  | 208.0            | 0.00            | 0.87               | 1.00 | G568 |    |  |  |  |  |
| 223                                                                                                                                                                                                                | 54.8 | 0.158 | 0.281 | 0.56  | -0.794 | 0.529 | -21.3           | -19.6 | 29.0 | 222.6           | 78.9            | -65.9  | -36.2 | 75.3  | 208.8            | 0.00            | 0.85               | 1.00 | G578 |    |  |  |  |  |
| 224                                                                                                                                                                                                                | 53.8 | 0.156 | 0.279 | 0.56  | -0.808 | 0.54  | -21.0           | -20.0 | 29.0 | 223.6           | 78.3            | -65.7  | -37.2 | 75.5  | 209.5            | 0.00            | 0.83               | 1.00 | G588 |    |  |  |  |  |
| 225                                                                                                                                                                                                                | 52.8 | 0.154 | 0.276 | 0.559 | -0.823 | 0.551 | -20.6           | -20.5 | 29.1 | 224.7           | 77.7            | -65.4  | -38.2 | 75.8  | 210.2            | 0.00            | 0.82               | 1.00 | G598 |    |  |  |  |  |
| 226                                                                                                                                                                                                                | 51.8 | 0.152 | 0.273 | 0.558 | -0.839 | 0.562 | -20.3           | -20.9 | 29.1 | 225.8           | 77.2            | -65.2  | -39.2 | 76.1  | 211.0            | 0.00            | 0.8                | 1.00 | G598 |    |  |  |  |  |
| 227                                                                                                                                                                                                                | 50.7 | 0.15  | 0.27  | 0.557 | -0.855 | 0.573 | -20.0           | -21.3 | 29.2 | 226.9           | 76.6            | -64.9  | -40.2 | 76.4  | 211.8            | 0.00            | 0.78               | 1.00 | G608 |    |  |  |  |  |
| 228                                                                                                                                                                                                                | 49.9 | 0.149 | 0.267 | 0.557 | -0.871 | 0.587 | -19.6           | -21.7 | 29.3 | 227.9           | 76.0            | -64.6  | -41.2 | 76.6  | 212.5            | 0.00            | 0.76               | 1.00 | G618 |    |  |  |  |  |
| 229                                                                                                                                                                                                                | 48.9 | 0.147 | 0.264 | 0.557 | -0.889 | 0.6   | -19.2           | -22.3 | 29.3 | 229.1           | 75.4            | -64.1  | -42.3 | 76.8  | 213.4            | 0.00            | 0.74               | 1.00 | G628 |    |  |  |  |  |
| 230                                                                                                                                                                                                                | 48.0 | 0.146 | 0.261 | 0.558 | -0.906 | 0.612 | -18.8           | -22.6 | 29.4 | 230.2           | 74.8            | -63.6  | -43.3 | 76.9  | 214.2            | 0.00            | 0.73               | 1.00 | G638 |    |  |  |  |  |
| 231                                                                                                                                                                                                                | 47.1 | 0.144 | 0.258 | 0.559 | -0.922 | 0.624 | -18.4           | -22.9 | 29.4 | 231.2           | 74.3            | -63.0  | -44.2 | 76.9  | 215.0            | 0.00            | 0.71               | 1.00 | G648 |    |  |  |  |  |
| 232                                                                                                                                                                                                                | 46.4 | 0.143 | 0.256 | 0.561 | -0.937 | 0.635 | -18.0           | -23.2 | 29.4 | 232.1           | 73.8            | -62.3  | -45.0 | 76.9  | 215.8.           |                 |                    |      |      |    |  |  |  |  |

**rgb<sub>AB</sub>** and CIE data of a elementary hue circle according to CIE R1-47 for *Ostwald* colours for CIE illuminant D65

**Xyy<sub>AB</sub>**, **cab<sub>AB</sub>**, **ABC<sub>AB</sub>**, **LabC<sub>AB</sub>**, **h<sub>AB</sub>** data for relative spacing of elementary hue circle for CIE 2 degree observer

Elementary hue circle with 4 intended elementary hue angles: **h<sub>AB</sub>** = 17.7, 93.3, 159.1, 270.8 of **LIN<sub>YAB</sub>** for CIE 2 degree observer

270, 271, ..., 360, LIN<sub>YAB</sub> data of CIE test colours 9 (R): 11.2 9.9 3.1, 10 (Y): 59.0 1-2 20.9, 11 (G): 20.3 -7.2 12.7, 12 (B): 6.4 0.1 -8.2

| no. | AB <sub>Y</sub> | x     | y     | a     | b      | cab <sub>AB</sub> | A    | B     | C <sub>AB</sub> | h <sub>AB</sub> | L*   | a*    | b*     | C* <sub>AB</sub> | h <sub>AB</sub> | rgb <sub>AB</sub> | Code <sub>AB</sub> |      |        |
|-----|-----------------|-------|-------|-------|--------|-------------------|------|-------|-----------------|-----------------|------|-------|--------|------------------|-----------------|-------------------|--------------------|------|--------|
| 276 | 19.2            | 0.127 | 0.132 | 0.963 | -2.244 | 1.889             | 0.2  | -34.7 | 34.7            | 270.4           | 50.9 | 1.2   | -83.9  | 83.9             | 270.8           | 0.00              | 0.01               | 1.00 | % G99B |
| 271 | 18.6            | 0.127 | 0.128 | 0.99  | -2.316 | 1.881             | 0.7  | -35.0 | 35.0            | 271.2           | 50.2 | 4.0   | -85.1  | 85.2             | 272.6           | 0.0               | 0.0                | 1.00 | % B00R |
| 272 | 18.0            | 0.127 | 0.125 | 1.019 | -2.389 | 1.954             | 1.2  | -35.2 | 35.2            | 272.0           | 49.5 | 6.6   | -86.2  | 86.5             | 274.4           | 0.02              | 0.00               | 1.00 | % B01R |
| 273 | 17.1            | 0.127 | 0.119 | 1.066 | -2.512 | 2.08              | 1.9  | -35.5 | 35.6            | 273.2           | 48.4 | 10.8  | -88.1  | 88.8             | 277.0           | 0.04              | 0.00               | 1.00 | % B02R |
| 274 | 16.3            | 0.128 | 0.115 | 1.111 | -2.627 | 2.197             | 2.6  | -35.8 | 35.9            | 274.2           | 47.4 | 14.6  | -89.7  | 90.9             | 279.2           | 0.05              | 0.00               | 1.00 | % B02R |
| 275 | 15.7            | 0.128 | 0.111 | 1.156 | -2.736 | 2.309             | 3.2  | -36.1 | 36.2            | 275.1           | 46.6 | 18.2  | -91.1  | 93.0             | 281.3           | 0.07              | 0.00               | 1.00 | % B03R |
| 276 | 15.0            | 0.129 | 0.107 | 1.205 | -2.85  | 2.428             | 3.8  | -36.3 | 36.5            | 276.0           | 45.7 | 21.9  | -92.6  | 95.1             | 283.3           | 0.09              | 0.00               | 1.00 | % B04R |
| 277 | 14.3            | 0.129 | 0.102 | 1.254 | -2.969 | 2.575             | 4.5  | -36.6 | 36.8            | 277.0           | 44.7 | 26.1  | -94.2  | 97.7             | 285.5           | 0.11              | 0.00               | 1.00 | % B05R |
| 278 | 13.5            | 0.13  | 0.097 | 1.304 | -3.08  | 2.726             | 5.2  | -36.8 | 37.0            | 278.0           | 43.5 | 30.9  | -96.0  | 100.9            | 287.8           | 0.13              | 0.00               | 1.00 | % B06R |
| 279 | 12.7            | 0.131 | 0.092 | 1.414 | -3.249 | 2.951             | 5.9  | -37.1 | 37.6            | 279.1           | 42.3 | 36.0  | -99.7  | 104.3            | 290.1           | 0.15              | 0.00               | 1.00 | % B07R |
| 280 | 11.9            | 0.132 | 0.087 | 1.513 | -3.567 | 3.182             | 6.7  | -37.3 | 37.9            | 280.2           | 41.1 | 41.3  | -99.9  | 108.1            | 292.4           | 0.17              | 0.00               | 1.00 | % B08R |
| 281 | 11.1            | 0.133 | 0.082 | 1.619 | -3.899 | 3.44              | 7.4  | -37.6 | 38.3            | 281.2           | 39.8 | 46.7  | -102.0 | 112.2            | 294.6           | 0.19              | 0.00               | 1.00 | % B09R |
| 282 | 10.3            | 0.134 | 0.077 | 1.734 | -4.075 | 3.723             | 8.1  | -37.8 | 38.7            | 282.1           | 38.5 | 52.1  | -104.0 | 116.4            | 296.6           | 0.2               | 0.00               | 1.00 | % B10R |
| 283 | 9.6             | 0.135 | 0.072 | 1.858 | -4.357 | 4.025             | 8.8  | -38.0 | 39.0            | 283.0           | 37.3 | 57.5  | -106.0 | 120.6            | 298.4           | 0.22              | 0.00               | 1.00 | % B11R |
| 284 | 8.7             | 0.136 | 0.066 | 1.988 | -4.831 | 4.535             | 9.7  | -38.2 | 39.4            | 284.2           | 35.4 | 65.5  | -109.0 | 127.2            | 301.0           | 0.24              | 0.00               | 1.00 | % B12R |
| 285 | 7.9             | 0.137 | 0.061 | 2.125 | -5.235 | 4.919             | 10.4 | -38.3 | 39.7            | 285.0           | 33.9 | 71.7  | -111.0 | 132.3            | 302.8           | 0.26              | 0.00               | 1.00 | % B13R |
| 286 | 7.0             | 0.138 | 0.052 | 2.268 | -5.622 | 5.068             | 10.3 | -38.6 | 40.0            | 286.0           | 32.9 | 76.9  | -113.6 | 138.0            | 305.0           | 0.28              | 0.00               | 1.00 | % B14R |
| 287 | 5.6             | 0.128 | 0.045 | 2.848 | -7.295 | 7.117             | 10.7 | -38.8 | 40.2            | 285.8           | 28.5 | 84.7  | -115.6 | 146.5            | 305.3           | 0.3               | 0.00               | 1.00 | % B15R |
| 288 | 6.3             | 0.144 | 0.05  | 2.887 | -6.421 | 6.291             | 12.3 | -38.2 | 40.2            | 287.9           | 30.4 | 89.6  | -115.1 | 146.6            | 307.6           | 0.32              | 0.00               | 1.00 | % B16R |
| 289 | 6.7             | 0.15  | 0.052 | 2.866 | -6.055 | 5.937             | 12.9 | -38.1 | 40.2            | 288.8           | 31.3 | 90.6  | -114.5 | 146.0            | 308.3           | 0.34              | 0.00               | 1.00 | % B17R |
| 290 | 7.1             | 0.157 | 0.055 | 2.846 | -5.713 | 5.697             | 13.6 | -37.9 | 40.2            | 289.7           | 32.2 | 91.7  | -112.8 | 145.4            | 309.0           | 0.35              | 0.00               | 1.00 | % B17R |
| 291 | 7.6             | 0.163 | 0.057 | 2.826 | -5.395 | 5.362             | 14.2 | -37.6 | 40.3            | 290.9           | 33.1 | 92.7  | -111.2 | 144.8            | 309.8           | 0.37              | 0.00               | 1.00 | % B18R |
| 292 | 8.0             | 0.169 | 0.06  | 2.887 | -5.099 | 5.02              | 14.9 | -37.4 | 40.3            | 291.7           | 34.0 | 93.7  | -109.6 | 144.2            | 310.5           | 0.39              | 0.00               | 1.00 | % B19R |
| 293 | 8.6             | 0.175 | 0.063 | 2.788 | -4.826 | 4.56              | 15.6 | -37.2 | 40.3            | 292.6           | 34.9 | 94.7  | -108.0 | 143.7            | 311.2           | 0.41              | 0.00               | 1.00 | % B20R |
| 294 | 9.0             | 0.182 | 0.065 | 2.77  | -4.572 | 4.52              | 16.2 | -37.0 | 40.4            | 293.7           | 35.9 | 95.8  | -106.4 | 143.1            | 311.9           | 0.43              | 0.00               | 1.00 | % B21R |
| 295 | 9.4             | 0.188 | 0.068 | 2.753 | -4.338 | 4.298             | 16.9 | -36.7 | 40.5            | 294.7           | 36.8 | 96.7  | -104.8 | 142.6            | 312.7           | 0.45              | 0.00               | 1.00 | % B22R |
| 296 | 9.9             | 0.194 | 0.071 | 2.736 | -4.12  | 4.095             | 17.7 | -36.5 | 40.6            | 295.8           | 37.7 | 97.7  | -103.2 | 142.1            | 313.4           | 0.47              | 0.00               | 1.00 | % B23R |
| 297 | 10.4            | 0.201 | 0.073 | 2.72  | -3.919 | 3.997             | 18.4 | -36.3 | 40.7            | 296.9           | 38.6 | 98.7  | -101.6 | 141.4            | 314.1           | 0.48              | 0.00               | 1.00 | % B24R |
| 298 | 10.9            | 0.207 | 0.076 | 2.704 | -3.733 | 3.735             | 19.1 | -36.0 | 40.8            | 298.0           | 39.9 | 99.6  | -100.0 | 141.2            | 314.8           | 0.5               | 0.00               | 1.00 | % B25R |
| 299 | 11.4            | 0.213 | 0.079 | 2.689 | -3.56  | 3.576             | 19.9 | -35.8 | 40.9            | 299.0           | 40.3 | 100.6 | -98.5  | 140.8            | 315.6           | 0.52              | 0.00               | 1.00 | % B26R |
| 300 | 11.9            | 0.219 | 0.082 | 2.675 | -3.4   | 3.429             | 20.6 | -35.5 | 41.1            | 300.1           | 41.2 | 101.5 | -96.9  | 140.4            | 316.3           | 0.54              | 0.00               | 1.00 | % B27R |
| 301 | 12.5            | 0.225 | 0.084 | 2.661 | -3.251 | 3.294             | 21.4 | -35.2 | 41.2            | 301.2           | 42.0 | 102.4 | -95.4  | 140.0            | 316.9           | 0.56              | 0.00               | 1.00 | % B28R |
| 302 | 13.0            | 0.231 | 0.087 | 2.647 | -3.113 | 3.17              | 22.1 | -35.0 | 41.4            | 302.3           | 42.8 | 103.2 | -94.0  | 139.0            | 317.6           | 0.58              | 0.00               | 1.00 | % B29R |
| 303 | 13.6            | 0.237 | 0.09  | 2.634 | -2.985 | 3.055             | 22.9 | -34.7 | 41.6            | 303.4           | 43.7 | 104.1 | -92.9  | 139.3            | 318.3           | 0.6               | 0.00               | 1.00 | % B30R |
| 304 | 14.1            | 0.243 | 0.092 | 2.622 | -2.865 | 2.949             | 23.7 | -34.4 | 41.8            | 304.5           | 44.5 | 104.9 | -91.1  | 138.9            | 319.0           | 0.62              | 0.00               | 1.00 | % B31R |
| 305 | 14.7            | 0.248 | 0.095 | 2.61  | -2.754 | 2.851             | 24.4 | -34.1 | 42.0            | 305.5           | 45.3 | 105.7 | -89.7  | 138.6            | 319.6           | 0.63              | 0.00               | 1.00 | % B31R |
| 306 | 15.3            | 0.254 | 0.097 | 2.598 | -2.65  | 2.761             | 25.2 | -33.9 | 42.2            | 306.6           | 46.0 | 106.5 | -88.3  | 138.3            | 320.3           | 0.65              | 0.00               | 1.00 | % B32R |
| 307 | 15.8            | 0.259 | 0.1   | 2.586 | -2.554 | 2.677             | 25.9 | -33.8 | 42.5            | 307.6           | 46.8 | 107.2 | -86.9  | 138.0            | 320.9           | 0.67              | 0.00               | 1.00 | % B33R |
| 308 | 16.4            | 0.264 | 0.102 | 2.575 | -2.464 | 2.599             | 26.7 | -33.3 | 42.7            | 308.7           | 47.5 | 107.9 | -85.6  | 137.8            | 321.5           | 0.69              | 0.00               | 1.00 | % B34R |
| 309 | 17.0            | 0.269 | 0.105 | 2.565 | -2.379 | 2.527             | 27.4 | -33.0 | 43.0            | 309.7           | 48.2 | 108.6 | -84.3  | 137.5            | 322.1           | 0.71              | 0.00               | 1.00 | % B35R |
| 310 | 17.5            | 0.274 | 0.107 | 2.554 | -2.291 | 2.456             | 28.1 | -32.7 | 43.3            | 310.7           | 49.0 | 109.3 | -83.0  | 137.3            | 322.7           | 0.73              | 0.00               | 1.00 | % B36R |
| 311 | 18.1            | 0.279 | 0.109 | 2.544 | -2.227 | 2.398             | 28.9 | -32.5 | 43.5            | 311.6           | 49.6 | 109.9 | -81.8  | 137.0            | 323.3           | 0.75              | 0.00               | 1.00 | % B37R |
| 312 | 18.7            | 0.283 | 0.111 | 2.534 | -2.158 | 2.34              | 29.6 | -32.2 | 43.8            | 312.6           | 50.3 | 110.5 | -80.6  | 136.8            | 323.9           | 0.77              | 0.00               | 1.00 | % B38R |
| 313 | 19.2            | 0.288 | 0.114 | 2.524 | -2.093 | 2.286             | 30.3 | -31.9 | 44.0            | 313.5           | 51.0 | 111.1 | -79.4  | 136.6            | 324.4           | 0.78              | 0.00               | 1.00 | % B39R |
| 314 | 19.8            | 0.292 | 0.116 | 2.515 | -2.033 | 2.236             | 31.0 | -31.7 | 44.3            | 314.4           | 51.6 | 111.7 | -78.2  | 136.4            | 324.9           | 0.8               | 0.00               | 1.00 | % B40R |
| 315 | 20.3            | 0.296 | 0.118 | 2.505 | -1.976 | 2.189             | 31.7 | -31.4 | 44.6            | 315.2           | 52.2 | 112.2 | -77.1  | 136.2            | 325.4           | 0.82              | 0.00               | 1.00 | % B41R |
| 316 | 20.9            | 0.3   | 0.12  | 2.496 | -1.923 | 2.145             | 32.3 | -31.1 | 44.9            | 316.1           | 52.8 | 112.7 | -76.0  | 136.0            | 325.9           | 0.84              | 0.00               | 1.00 | % B42R |
| 317 | 21.8            | 0.306 | 0.123 | 2.474 | -1.841 | 2.073             | 33.2 | -30.7 | 45.2            | 317.2           | 53.8 | 113.0 | -74.3  | 135.2            | 326.6           | 0.86              | 0.00               | 1.00 | % B43R |
| 318 | 23.0            | 0.313 | 0.128 | 2.436 | -1.736 | 1.974             | 34.3 | -30.0 | 45.6            | 318.0           | 55.1 | 113.0 | -71.8  | 135.0            | 327.5           | 0.88              | 0.00               | 1.00 | % B44R |
| 319 | 24.2            | 0.319 | 0.133 | 2.399 | -1.646 | 1.888             | 35.1 | -29.4 | 45.5            | 319.0           | 56.3 | 112.7 | -69.5  | 132.5            | 328.3           | 0.9               | 0.00               | 1.00 | % B45R |
| 320 | 25.3            | 0.324 | 0.137 | 2.363 | -1.57  | 1.812             | 35.8 | -28.7 | 45.9            | 322.2           | 57.4 | 112.3 | -67.5  | 131.0            | 329.5           | 0.91              | 0.00               | 1.00 | % B46R |
| 321 | 26.4            | 0.328 | 0.141 | 2.328 | -1.504 | 1.744             | 36.4 | -28.0 | 46.0            | 322.2           | 58.4 | 111.6 | -66.5  | 129.5            | 329.5           | 0.93              | 0.00               | 1.00 | % B46R |
| 322 | 27.3            | 0.332 | 0.144 | 2.295 | -1.446 | 1.682             | 36.8 | -27.6 | 46.0            | 323.0           | 59.3 | 110.9 | -63.8  | 127.9            | 330.0           | 0.95              | 0.00               | 1.00 | % B47R |
| 323 | 28.2            | 0.335 | 0.148 | 2.263 | -1.395 | 1.626             | 37.1 | -27.1 | 45.9            | 323.8           | 60.1 | 110.0 | -62.2  | 126.4            | 330.5           | 0.97              | 0.00               | 1.00 | % B48R |
| 324 | 29.1            | 0.337 | 0.151 | 2.232 | -1.35  | 1.575             | 37.3 | -26.6 | 45.8            | 324.4           | 60.8 | 109.1 | -60.7  | 124.8            | 330.9           | 1.00              | 0.00               | 1.00 | % B49R |
| 325 | 29.9            | 0.34  | 0.154 | 2.203 | -1.31  | 1.528             | 37.4 | -26.1 | 45.6            | 325.0           | 61.5 | 108.1 | -59.3  | 123.3            | 331.2           | 1.00              | 0.00               | 0.98 | % B50R |
| 326 | 31.1            | 0.344 | 0.159 | 2.165 | -1.248 | 1.462             | 37.8 | -25.3 | 45.5            | 326.2           | 62.6 | 107.0 | -57.5  | 121.6            | 331.7           | 1.00              | 0.00               | 0.96 | % B51R |
| 327 | 32.3            | 0.348 | 0.163 | 2.129 | -1.192 | 1.4               | 38.1 | -24.4 | 45.2            | 327.3           | 63.6 | 105.8 | -54.7  | 119.1            | 332.6           | 1.00              | 0.00               | 0.94 | % B52R |
| 328 | 33.3            | 0.351 | 0.167 | 2.097 | -1.14  |                   |      |       |                 |                 |      |       |        |                  |                 |                   |                    |      |        |

| Ostwald optimal colours (o) of maximum (m) C <sub>AB</sub> for D65, Y <sub>w,10</sub> =100, Y <sub>m</sub> =520_770, LINYAB data          |                                 |                  |                  |                  |                 |        |         |                 |                                 |                                 |         |         |     | % |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------|------------------|------------------|-----------------|--------|---------|-----------------|---------------------------------|---------------------------------|---------|---------|-----|---|
| i <sub>1</sub> , λ <sub>1</sub>                                                                                                           | i <sub>2</sub> , λ <sub>2</sub> | Y <sub>100</sub> | A <sub>100</sub> | B <sub>100</sub> | C <sub>AB</sub> | a      | b       | h <sub>AB</sub> | i <sub>d</sub> , λ <sub>d</sub> | i <sub>c</sub> , λ <sub>c</sub> | Code    |         | %   |   |
| 0                                                                                                                                         | 405                             | 31               | 556              | 56.57            | -21.89          | -18.32 | 28.54   | 0.5611          | -0.7532                         | 219.9                           | 15 476  | 37 585  | Cm  | % |
| 6                                                                                                                                         | 435                             | 31               | 557              | 57.41            | -26.44          | -8.79  | 27.86   | 0.4876          | -0.5825                         | 198.4                           | 16 480  | 44 621  |     | % |
| 10                                                                                                                                        | 450                             | 31               | 559              | 57.53            | -32.48          | 6.09   | 33.05   | 0.3834          | -0.3234                         | 169.3                           | 18 491  | -1 491c |     | % |
| 11                                                                                                                                        | 460                             | 32               | 562              | 59.27            | -33.9           | 10.52  | 35.5    | 0.3761          | -0.2517                         | 162.7                           | 19 498  | -1 498c |     | % |
| 12                                                                                                                                        | 465                             | 33               | 565              | 60.91            | -34.93          | 14.56  | 37.84   | 0.3747          | -0.1903                         | 157.3                           | 21 506  | -1 506c |     | % |
| 14                                                                                                                                        | 470                             | 34               | 570              | 63.07            | -35.18          | 20.67  | 40.8    | 0.3903          | -0.1016                         | 149.5                           | 24 522  | -1 522c |     | % |
| 15                                                                                                                                        | 475                             | 35               | 579              | 68.64            | -33.55          | 24.85  | 41.75   | 0.4593          | -0.0672                         | 143.4                           | 26 533  | -1 533c | Gm  | % |
| 16                                                                                                                                        | 480                             | 41               | 606              | 81.94            | -23.65          | 31.88  | 39.7    | 0.6594          | -0.0401                         | 126.5                           | 30 550  | -1 550c |     | % |
| 16                                                                                                                                        | 485                             | -1               | 484c             | 92.3             | -10.45          | 36.33  | 37.8    | 0.8348          | -0.0356                         | 106.0                           | 32 560  | 10 454  |     | % |
| 18                                                                                                                                        | 490                             | -1               | 490c             | 89.06            | -7.57           | 36.55  | 37.33   | 0.863           | -0.0188                         | 101.7                           | 32 562  | 11 459  | max | % |
| 19                                                                                                                                        | 495                             | -1               | 495c             | 87.05            | -5.68           | 36.18  | 36.62   | 0.8828          | -0.0136                         | 98.9                            | 32 563  | 12 461  |     | % |
| 19                                                                                                                                        | 500                             | -1               | 499c             | 87.05            | -5.68           | 36.18  | 36.62   | 0.8828          | -0.0136                         | 98.9                            | 32 563  | 12 461  |     | % |
| 22                                                                                                                                        | 510                             | -1               | 510c             | 79.1             | 1.43            | 33.55  | 33.58   | 0.9662          | -0.0051                         | 87.5                            | 33 567  | 13 466  |     | % |
| 23                                                                                                                                        | 520                             | -1               | 519c             | 75.81            | 4.11            | 32.27  | 32.53   | 1.0024          | -0.0036                         | 82.7                            | 33 568  | 13 468  | Ym  | % |
| 26                                                                                                                                        | 530                             | -1               | 530c             | 64.17            | 12.31           | 27.48  | 30.11   | 1.14            | -0.001                          | 65.8                            | 34 573  | 14 472  |     | % |
| 27                                                                                                                                        | 540                             | -1               | 539c             | 59.9             | 14.81           | 25.68  | 29.65   | 1.1955          | -0.0005                         | 60.0                            | 35 576  | 14 473  |     | % |
| 28                                                                                                                                        | 545                             | -1               | 544c             | 55.54            | 17.09           | 23.83  | 29.32   | 1.2559          | -0.0002                         | 54.3                            | 35 578  | 14 474  |     | % |
| 29                                                                                                                                        | 550                             | -1               | 549c             | 51.12            | 19.09           | 21.94  | 29.08   | 1.3215          | -0.0001                         | 48.9                            | 36 580  | 15 475  |     | % |
| 31                                                                                                                                        | 555                             | -1               | 555c             | 42.37            | 21.98           | 18.19  | 28.53   | 1.4668          | 0.0                             | 39.6                            | 37 586  | 15 476  |     | % |
| 32                                                                                                                                        | 560                             | 10               | 451              | 40.04            | 32.52           | -6.18  | 33.11   | 1.7604          | -0.5838                         | 349.2                           | -1 492c | 18 492  |     | % |
| 380                                                                                                                                       | 770                             | 100.0            | 0.0              | 0.0              | 0.01            | 0.9481 | -0.4293 | 0.0             |                                 |                                 |         |         |     | % |
| Ostwald optimal colours (o) of maximum (m) C <sub>AB</sub> for D65, Y <sub>w,10</sub> =100, Y <sub>m</sub> =770_520, LINYAB complementary |                                 |                  |                  |                  |                 |        |         |                 |                                 |                                 |         |         |     | % |
| i <sub>1</sub> , λ <sub>1</sub>                                                                                                           | i <sub>2</sub> , λ <sub>2</sub> | Y <sub>100</sub> | A <sub>100</sub> | B <sub>100</sub> | C <sub>AB</sub> | a      | b       | h <sub>AB</sub> | i <sub>d</sub> , λ <sub>d</sub> | i <sub>c</sub> , λ <sub>c</sub> | Code    |         | %   |   |
| 31                                                                                                                                        | 556                             | 0                | 405              | 43.42            | 21.89           | 18.32  | 28.54   | 1.4522          | -0.0074                         | 39.9                            | 37 585  | 15 476  | Rm  | % |
| 31                                                                                                                                        | 557                             | 6                | 435              | 42.58            | 26.44           | 8.79   | 27.86   | 1.5691          | -0.2226                         | 18.4                            | 44 621  | 16 480  |     | % |
| 31                                                                                                                                        | 559                             | 10               | 450              | 42.46            | 32.48           | -6.09  | 33.05   | 1.713           | -0.5727                         | 349.3                           | -1 491c | 18 491  |     | % |
| 32                                                                                                                                        | 562                             | 11               | 460              | 40.72            | 33.9            | -10.52 | 35.5    | 1.7807          | -0.6879                         | 342.7                           | -1 498c | 19 498  |     | % |
| 33                                                                                                                                        | 565                             | 12               | 465              | 39.08            | 34.93           | -14.56 | 37.84   | 1.8419          | -0.8019                         | 337.3                           | -1 506c | 21 506  |     | % |
| 34                                                                                                                                        | 570                             | 14               | 470              | 36.92            | 35.18           | -20.67 | 40.8    | 1.901           | -0.9891                         | 329.5                           | -1 522c | 24 522  |     | % |
| 35                                                                                                                                        | 579                             | 15               | 475              | 31.35            | 33.55           | -24.85 | 41.75   | 2.0184          | -1.2222                         | 323.4                           | -1 533c | 26 533  | Mm  | % |
| 41                                                                                                                                        | 606                             | 16               | 480              | 18.05            | 23.65           | -31.88 | 39.7    | 2.2587          | -2.1959                         | 306.5                           | -1 550c | 30 550  |     | % |
| -1                                                                                                                                        | 484c                            | 16               | 485              | 7.69             | 10.45           | -36.33 | 37.8    | 2.306           | -5.1484                         | 286.0                           | 10 454  | 32 560  |     | % |
| -1                                                                                                                                        | 490c                            | 18               | 490              | 10.93            | 7.57            | -36.55 | 37.33   | 1.6407          | -3.7725                         | 281.7                           | 11 459  | 32 562  | min | % |
| -1                                                                                                                                        | 495c                            | 19               | 495              | 12.94            | 5.68            | -36.18 | 36.62   | 1.3873          | -3.2239                         | 278.9                           | 12 461  | 32 563  |     | % |
| -1                                                                                                                                        | 499c                            | 19               | 500              | 12.94            | 5.68            | -36.18 | 36.62   | 1.3873          | -3.2239                         | 278.9                           | 12 461  | 32 563  |     | % |
| -1                                                                                                                                        | 510c                            | 22               | 510              | 20.89            | -1.43           | -33.55 | 33.58   | 0.8795          | -2.035                          | 267.5                           | 13 466  | 33 567  |     | % |
| -1                                                                                                                                        | 519c                            | 23               | 520              | 24.18            | -4.12           | -32.27 | 32.53   | 0.7777          | -1.7639                         | 262.7                           | 13 468  | 33 568  | Bm  | % |
| -1                                                                                                                                        | 530c                            | 26               | 530              | 35.82            | -12.31          | -27.48 | 30.11   | 0.6044          | -1.1965                         | 245.8                           | 14 472  | 34 573  |     | % |
| -1                                                                                                                                        | 539c                            | 27               | 540              | 40.09            | -14.81          | -25.68 | 29.65   | 0.5785          | -1.0699                         | 240.0                           | 14 473  | 35 576  |     | % |
| -1                                                                                                                                        | 544c                            | 28               | 545              | 44.45            | -17.09          | -23.83 | 29.32   | 0.5635          | -0.9653                         | 234.3                           | 14 474  | 35 578  |     | % |
| -1                                                                                                                                        | 549c                            | 29               | 550              | 48.87            | -19.09          | -21.94 | 29.08   | 0.5575          | -0.8782                         | 228.9                           | 15 475  | 36 580  |     | % |
| -1                                                                                                                                        | 555c                            | 31               | 555              | 57.62            | -21.98          | -18.19 | 28.53   | 0.5667          | -0.745                          | 219.6                           | 15 476  | 37 586  |     | % |
| 10                                                                                                                                        | 451                             | 32               | 560              | 59.95            | -32.52          | 6.18   | 33.11   | 0.4056          | -0.3261                         | 169.2                           | 18 492  | -1 492c |     | % |
| 380                                                                                                                                       | 770                             | 100.0            | 0.0              | 0.0              | 0.01            | 0.9481 | -0.4293 | 0.0             |                                 |                                 |         |         |     | % |

| rgb <sub>AB</sub> and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65                                                                                                       |      |       |       |       |        |       |      |      |      |       |      |      |       |       |       |      |      |      |      |      |      |      |      |      |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|-------|-------|--------|-------|------|------|------|-------|------|------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|
| Yxy <sub>AB</sub> , abc <sub>AB</sub> , ABC <sub>AB</sub> , LabC <sub>AB</sub> , a <sub>hAB</sub> , b <sub>hAB</sub> data for relative spacing of elementary hue h <sub>AB</sub> of L <sub>1</sub> YAB for CIE 10 degree observer |      |       |       |       |        |       |      |      |      |       |      |      |       |       |       |      |      |      |      |      |      |      |      |      |      |
| Elementary hue circle with 4 intended elementary hues 9 (R): 10.8, 8.7, 2.8, 10 (Y): 55.9, 1.2, 19.6, 11 (G): 20.4, -4.8, 3.0, 12 (B): 7.8, -1.2, -7.2                                                                            |      |       |       |       |        |       |      |      |      |       |      |      |       |       |       |      |      |      |      |      |      |      |      |      |      |
| no.                                                                                                                                                                                                                               | 00.0 | 00.1  | ...   | ...   | ...    | ...   | ...  | ...  | ...  | ...   | ...  | ...  | ...   | ...   | ...   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  |
| no.                                                                                                                                                                                                                               | 00.0 | 00.1  | ...   | ...   | ...    | ...   | ...  | ...  | ...  | ...   | ...  | ...  | ...   | ...   | ...   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  |
| 00.0                                                                                                                                                                                                                              | 48.0 | 0.434 | 0.252 | 1.724 | -0.497 | 0.779 | 31.0 | -2.7 | 31.1 | 354.9 | 69.5 | 81.2 | -7.3  | 81.6  | 354.7 | 1.00 | 0.00 | 0.36 | 0.00 | 0.00 | 0.36 | 0.00 | 0.00 | 0.36 | 0.00 |
| 001                                                                                                                                                                                                                               | 48.0 | 0.436 | 0.253 | 1.719 | -0.487 | 0.773 | 30.8 | -2.3 | 30.9 | 355.7 | 69.5 | 80.8 | -6.3  | 81.1  | 355.5 | 1.00 | 0.00 | 0.34 | 0.00 | 0.00 | 0.34 | 0.00 | 0.00 | 0.34 | 0.00 |
| 002                                                                                                                                                                                                                               | 48.0 | 0.439 | 0.256 | 1.714 | -0.476 | 0.768 | 30.7 | -1.8 | 30.7 | 356.4 | 69.5 | 80.4 | -5.2  | 80.6  | 356.3 | 1.00 | 0.00 | 0.32 | 0.00 | 0.00 | 0.32 | 0.00 | 0.00 | 0.32 | 0.00 |
| 003                                                                                                                                                                                                                               | 48.0 | 0.441 | 0.258 | 1.709 | -0.465 | 0.762 | 30.5 | -1.4 | 30.5 | 357.2 | 69.5 | 80.0 | -4.0  | 80.1  | 357.1 | 1.00 | 0.00 | 0.30 | 0.00 | 0.00 | 0.30 | 0.00 | 0.00 | 0.30 | 0.00 |
| 004                                                                                                                                                                                                                               | 48.1 | 0.443 | 0.26  | 1.704 | -0.454 | 0.757 | 30.3 | -1.0 | 30.3 | 358.1 | 69.5 | 79.6 | -2.8  | 79.6  | 357.9 | 1.00 | 0.00 | 0.28 | 0.00 | 0.00 | 0.28 | 0.00 | 0.00 | 0.28 | 0.00 |
| 005                                                                                                                                                                                                                               | 48.1 | 0.446 | 0.262 | 1.699 | -0.442 | 0.751 | 30.1 | -0.5 | 30.1 | 358.9 | 69.5 | 79.1 | -1.5  | 79.1  | 358.8 | 1.00 | 0.00 | 0.26 | 0.00 | 0.00 | 0.26 | 0.00 | 0.00 | 0.26 | 0.00 |
| 006                                                                                                                                                                                                                               | 48.1 | 0.449 | 0.265 | 1.694 | -0.431 | 0.745 | 29.9 | 0.0  | 29.9 | 359.8 | 69.5 | 78.7 | -0.2  | 78.7  | 359.8 | 1.00 | 0.00 | 0.24 | 0.00 | 0.00 | 0.24 | 0.00 | 0.00 | 0.24 | 0.00 |
| 007                                                                                                                                                                                                                               | 48.1 | 0.451 | 0.267 | 1.688 | -0.419 | 0.737 | 29.7 | 0.4  | 29.7 | 0.7   | 69.6 | 78.2 | 1.1   | 78.2  | 0.8   | 1.00 | 0.00 | 0.22 | 0.00 | 0.00 | 0.22 | 0.00 | 0.00 | 0.22 | 0.00 |
| 008                                                                                                                                                                                                                               | 48.2 | 0.454 | 0.27  | 1.682 | -0.406 | 0.734 | 29.5 | 0.8  | 29.5 | 1.7   | 69.6 | 77.2 | 2.6   | 77.7  | 1.9   | 1.00 | 0.00 | 0.2  | 0.00 | 0.00 | 0.2  | 0.00 | 0.00 | 0.2  | 0.00 |
| 009                                                                                                                                                                                                                               | 48.2 | 0.457 | 0.272 | 1.676 | -0.394 | 0.729 | 29.3 | 1.3  | 29.3 | 2.7   | 69.6 | 77.2 | 4.0   | 77.3  | 3.0   | 1.00 | 0.00 | 0.18 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 | 0.18 | 0.00 |
| 010                                                                                                                                                                                                                               | 48.2 | 0.46  | 0.275 | 1.67  | -0.382 | 0.724 | 29.1 | 1.9  | 29.1 | 3.7   | 69.6 | 76.7 | 5.6   | 76.9  | 4.1   | 1.00 | 0.00 | 0.16 | 0.00 | 0.00 | 0.16 | 0.00 | 0.00 | 0.16 | 0.00 |
| 011                                                                                                                                                                                                                               | 48.3 | 0.463 | 0.278 | 1.664 | -0.369 | 0.719 | 28.8 | 2.4  | 28.8 | 4.7   | 69.6 | 76.2 | 7.2   | 76.4  | 5.4   | 1.00 | 0.00 | 0.14 | 0.00 | 0.00 | 0.14 | 0.00 | 0.00 | 0.14 | 0.00 |
| 012                                                                                                                                                                                                                               | 48.3 | 0.467 | 0.281 | 1.658 | -0.356 | 0.714 | 28.6 | 2.9  | 28.8 | 5.8   | 69.7 | 75.6 | 8.8   | 76.2  | 6.7   | 1.00 | 0.00 | 0.12 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 | 0.12 | 0.00 |
| 013                                                                                                                                                                                                                               | 48.3 | 0.47  | 0.284 | 1.652 | -0.343 | 0.709 | 28.4 | 3.4  | 28.6 | 6.9   | 69.7 | 75.1 | 10.6  | 75.8  | 8.0   | 1.00 | 0.00 | 0.1  | 0.00 | 0.00 | 0.1  | 0.00 | 0.00 | 0.1  | 0.00 |
| 014                                                                                                                                                                                                                               | 48.4 | 0.474 | 0.288 | 1.645 | -0.33  | 0.704 | 28.1 | 4.0  | 28.6 | 8.0   | 69.7 | 74.5 | 12.3  | 75.6  | 9.4   | 1.00 | 0.00 | 0.08 | 0.00 | 0.00 | 0.08 | 0.00 | 0.00 | 0.08 | 0.00 |
| 015                                                                                                                                                                                                                               | 48.4 | 0.477 | 0.291 | 1.639 | -0.316 | 0.7   | 27.9 | 4.5  | 28.3 | 9.2   | 69.8 | 74.0 | 14.2  | 75.3  | 10.8  | 1.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.06 | 0.00 |
| 016                                                                                                                                                                                                                               | 48.5 | 0.481 | 0.294 | 1.632 | -0.303 | 0.695 | 27.7 | 5.0  | 28.1 | 10.4  | 69.8 | 73.4 | 16.1  | 75.2  | 12.3  | 1.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.04 | 0.00 |
| 017                                                                                                                                                                                                                               | 48.5 | 0.485 | 0.298 | 1.625 | -0.29  | 0.691 | 27.4 | 5.6  | 28.0 | 11.6  | 69.8 | 72.8 | 18.1  | 75.0  | 13.9  | 1.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 |
| 018                                                                                                                                                                                                                               | 48.6 | 0.489 | 0.302 | 1.618 | -0.276 | 0.687 | 27.2 | 6.2  | 27.9 | 12.8  | 69.9 | 72.2 | 20.1  | 75.0  | 15.6  | 1.00 | 0.00 | 0.0  | 0.00 | 0.00 | 0.0  | 0.00 | 0.00 | 0.0  | 0.00 |
| 019                                                                                                                                                                                                                               | 48.6 | 0.493 | 0.305 | 1.611 | -0.263 | 0.684 | 27.0 | 6.7  | 27.8 | 14.0  | 69.9 | 71.6 | 22.3  | 75.0  | 17.2  | 1.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |      |
| 020                                                                                                                                                                                                                               | 48.7 | 0.497 | 0.309 | 1.605 | -0.249 | 0.681 | 26.7 | 7.3  | 27.7 | 15.3  | 70.0 | 71.0 | 24.5  | 75.2  | 19.0  | 1.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 |      |
| 021                                                                                                                                                                                                                               | 48.8 | 0.501 | 0.313 | 1.598 | -0.235 | 0.678 | 26.5 | 7.8  | 27.6 | 16.5  | 70.0 | 70.4 | 26.8  | 75.4  | 20.8  | 1.00 | 0.04 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.04 | 0.00 |      |
| 022                                                                                                                                                                                                                               | 48.8 | 0.505 | 0.317 | 1.591 | -0.222 | 0.675 | 26.2 | 8.4  | 27.6 | 17.8  | 70.0 | 69.8 | 29.2  | 75.7  | 22.6  | 1.00 | 0.05 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.05 | 0.00 |      |
| 023                                                                                                                                                                                                                               | 48.9 | 0.509 | 0.321 | 1.583 | -0.208 | 0.673 | 26.0 | 9.0  | 27.7 | 19.1  | 70.1 | 69.2 | 31.7  | 76.1  | 24.6  | 1.00 | 0.06 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.06 | 0.00 |      |
| 024                                                                                                                                                                                                                               | 48.9 | 0.514 | 0.326 | 1.575 | -0.195 | 0.67  | 25.7 | 9.5  | 27.5 | 20.4  | 70.1 | 68.6 | 34.3  | 76.7  | 26.5  | 1.00 | 0.08 | 0.00 | 0.00 | 0.08 | 0.00 | 0.00 | 0.08 | 0.00 |      |
| 025                                                                                                                                                                                                                               | 49.0 | 0.519 | 0.33  | 1.569 | -0.181 | 0.669 | 25.5 | 10.1 | 27.4 | 21.7  | 70.2 | 68.0 | 37.0  | 77.4  | 28.5  | 1.00 | 0.09 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.09 | 0.00 |      |
| 026                                                                                                                                                                                                                               | 49.1 | 0.523 | 0.335 | 1.562 | -0.168 | 0.667 | 25.2 | 10.7 | 27.4 | 23.0  | 70.2 | 67.3 | 39.8  | 78.2  | 30.6  | 1.00 | 0.11 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 | 0.11 | 0.00 |      |
| 027                                                                                                                                                                                                                               | 49.1 | 0.528 | 0.339 | 1.555 | -0.155 | 0.666 | 25.0 | 11.3 | 27.4 | 24.3  | 70.3 | 66.7 | 42.8  | 79.3  | 32.6  | 1.00 | 0.12 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 | 0.12 | 0.00 |      |
| 028                                                                                                                                                                                                                               | 49.2 | 0.533 | 0.344 | 1.548 | -0.141 | 0.665 | 24.7 | 11.8 | 27.4 | 25.6  | 70.3 | 66.1 | 45.9  | 80.5  | 34.8  | 1.00 | 0.14 | 0.00 | 0.00 | 0.14 | 0.00 | 0.00 | 0.14 | 0.00 |      |
| 029                                                                                                                                                                                                                               | 49.3 | 0.538 | 0.349 | 1.541 | -0.128 | 0.664 | 24.5 | 12.4 | 27.5 | 26.8  | 70.4 | 65.4 | 49.2  | 81.9  | 36.9  | 1.00 | 0.15 | 0.00 | 0.00 | 0.15 | 0.00 | 0.00 | 0.15 | 0.00 |      |
| 030                                                                                                                                                                                                                               | 49.4 | 0.543 | 0.354 | 1.533 | -0.115 | 0.664 | 24.2 | 13.0 | 27.5 | 28.1  | 70.4 | 64.8 | 52.7  | 83.6  | 39.1  | 1.00 | 0.17 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 | 0.17 | 0.00 |      |
| 031                                                                                                                                                                                                                               | 49.5 | 0.548 | 0.359 | 1.526 | -0.102 | 0.664 | 24.0 | 13.5 | 27.6 | 29.4  | 70.5 | 64.2 | 56.5  | 85.5  | 41.3  | 1.00 | 0.18 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 | 0.18 | 0.00 |      |
| 032                                                                                                                                                                                                                               | 49.6 | 0.553 | 0.364 | 1.519 | -0.089 | 0.664 | 23.7 | 14.1 | 27.6 | 30.6  | 70.6 | 63.5 | 59.7  | 87.4  | 43.6  | 1.00 | 0.2  | 0.00 | 0.00 | 0.2  | 0.00 | 0.00 | 0.2  | 0.00 |      |
| 033                                                                                                                                                                                                                               | 49.7 | 0.558 | 0.369 | 1.512 | -0.077 | 0.665 | 23.5 | 14.6 | 27.7 | 31.9  | 70.6 | 62.9 | 64.9  | 90.4  | 45.8  | 1.00 | 0.21 | 0.00 | 0.00 | 0.21 | 0.00 | 0.00 | 0.21 | 0.00 |      |
| 034                                                                                                                                                                                                                               | 49.8 | 0.564 | 0.374 | 1.505 | -0.065 | 0.665 | 23.3 | 15.2 | 27.8 | 33.1  | 70.7 | 62.3 | 69.7  | 93.5  | 48.2  | 1.00 | 0.23 | 0.00 | 0.00 | 0.23 | 0.00 | 0.00 | 0.23 | 0.00 |      |
| 035                                                                                                                                                                                                                               | 49.9 | 0.569 | 0.38  | 1.498 | -0.053 | 0.666 | 23.0 | 15.7 | 27.9 | 34.3  | 70.8 | 61.6 | 70.5  | 97.1  | 50.5  | 1.00 | 0.24 | 0.00 | 0.00 | 0.24 | 0.00 | 0.00 | 0.24 | 0.00 |      |
| 036                                                                                                                                                                                                                               | 49.9 | 0.574 | 0.385 | 1.491 | -0.041 | 0.667 | 22.8 | 16.3 | 28.0 | 35.5  | 70.8 | 61.0 | 81.1  | 101.5 | 53.0  | 1.00 | 0.26 | 0.00 | 0.00 | 0.26 | 0.00 | 0.00 | 0.26 | 0.00 |      |
| 037                                                                                                                                                                                                                               | 49.0 | 0.58  | 0.39  | 1.484 | -0.029 | 0.669 | 22.5 | 16.8 | 28.1 | 36.6  | 70.9 | 60.4 | 88.4  | 107.1 | 55.6  | 1.00 | 0.27 | 0.00 | 0.00 | 0.27 | 0.00 | 0.00 | 0.27 | 0.00 |      |
| 038                                                                                                                                                                                                                               | 49.2 | 0.585 | 0.396 | 1.477 | -0.017 | 0.67  | 22.3 | 17.3 | 28.3 | 37.8  | 71.0 | 59.7 | 97.8  | 114.6 | 58.5  | 1.00 | 0.29 | 0.00 | 0.00 | 0.29 | 0.00 | 0.00 | 0.29 | 0.00 |      |
| 039                                                                                                                                                                                                                               | 49.3 | 0.591 | 0.401 | 1.471 | -0.006 | 0.672 | 22.1 | 17.8 | 28.4 | 38.9  | 71.0 | 59.1 | 111.4 | 126.1 | 62.0  | 1.00 | 0.3  | 0.00 | 0.00 | 0.3  | 0.00 | 0.00 | 0.3  | 0.00 |      |
| 040                                                                                                                                                                                                                               | 49.4 | 0.597 | 0.407 | 1.464 | -0.007 | 0.673 | 21.9 | 18.3 | 28.5 | 40.0  | 71.1 | 58.4 | 120.1 | 131.6 | 64.9  | 1.00 | 0.31 | 0.00 | 0.00 | 0.31 | 0.00 | 0.00 | 0.31 | 0.00 |      |
| 041                                                                                                                                                                                                                               | 49.5 | 0.602 | 0.413 | 1.457 | 0.02   | 0.663 | 21.2 | 19.5 | 28.8 | 42.7  | 71.9 | 56.2 | 159.4 | 169.0 | 70.5  | 1.00 | 0.33 | 0.00 | 0.00 | 0.33 | 0.00 | 0.00 | 0.33 | 0.00 |      |
| 042                                                                                                                                                                                                                               | 49.4 | 0.604 | 0.426 | 1.416 | 0.029  | 0.655 | 20.7 | 20.3 | 29.0 | 44.4  | 72.5 | 54.5 | 175.2 | 183.5 | 72.7  | 1.00 | 0.34 | 0.00 | 0.00 | 0.34 | 0.00 | 0.00 | 0.34 | 0.00 |      |
| 043                                                                                                                                                                                                                               | 49.3 | 0.603 | 0.431 | 1.397 | 0.032  | 0.644 | 20.4 | 20.9 | 29.2 | 45.7  | 73.1 | 53.0 | 183.4 | 199.0 | 73.8  | 1.00 | 0.36 | 0.00 | 0.00 | 0.36 | 0.00 | 0.00 | 0.36 | 0.00 |      |
| 044                                                                                                                                                                                                                               | 49.3 | 0.6   | 0.434 | 1.381 | 0.032  | 0.633 | 20.0 | 21.3 | 29.3 | 46.7  | 73.7 | 51.7 | 184.9 | 192.0 | 74.3  | 1.00 | 0.37 | 0.00 | 0.00 | 0.37 | 0.00 | 0.00 | 0.37 | 0.00 |      |
| 045                                                                                                                                                                                                                               | 49.3 | 0.595 | 0.435 | 1.366 | 0.028  | 0.62  | 19.8 | 21.6 | 29.3 | 47.5  | 74.3 | 50.5 | 180.9 | 187.8 | 74.4  |      |      |      |      |      |      |      |      |      |      |





| rgb <sub>AB</sub> and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65                                                                                                                                                                |      |                 |                 |                 |                 |                    |                 |                 |                    |                    |                  |                  |                  |                     |                    |                   |      |      |      |    |    |    |    |    |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|-----------------|-----------------|-----------------|--------------------|-----------------|-----------------|--------------------|--------------------|------------------|------------------|------------------|---------------------|--------------------|-------------------|------|------|------|----|----|----|----|----|----|
| Yxy <sub>AB</sub> , abc <sub>AB</sub> , ABC <sub>AB</sub> , LabC <sub>ab</sub> <sub>AB</sub> data for relative spacing of elementary hue h <sub>AB</sub> of LINYAB for CIE 10 degree observer                                                                                              |      |                 |                 |                 |                 |                    |                 |                 |                    |                    |                  |                  |                  |                     |                    |                   |      |      |      |    |    |    |    |    |    |
| Elementary hue circle with 4 divided elementary hue angles: h <sub>AB</sub> = 18.2, 86.3, 156.2, 260.1 of LINYAB, and 90 intended hue angles: 180, 181, ..., 269, LINYAB data of CIE test colours 9 (R): 10.8 8.7 2.8, 10 (Y): 55.9 1.2 19.6, 11 (G): 20.4 -6.8 3.0, 12 (B): 7.8 -1.2 -7.2 |      |                 |                 |                 |                 |                    |                 |                 |                    |                    |                  |                  |                  |                     |                    |                   |      |      |      |    |    |    |    |    |    |
| no.                                                                                                                                                                                                                                                                                        | AB   | X <sub>10</sub> | Y <sub>10</sub> | a <sub>10</sub> | b <sub>10</sub> | C <sub>AB</sub> 10 | A <sub>10</sub> | B <sub>10</sub> | C <sub>AB</sub> 10 | h <sub>AB</sub> 10 | L* <sub>10</sub> | a* <sub>10</sub> | b* <sub>10</sub> | C* <sub>ab</sub> 10 | h <sub>ab</sub> 10 | rgb <sub>AB</sub> | AB   | 10   | Code | AB | 10 | 10 | 10 | 10 | 10 |
| 180                                                                                                                                                                                                                                                                                        | 41.8 | 0.485           | 0.304           | 1.593           | -0.274          | 0.664              | 27.0            | 6.4             | 27.7               | 13.4               | 70.7             | 79.6             | 29.6             | 73.6                | 16.2               | 0.00              | 1.00 | 0.45 | G22B | 10 | 10 | 10 | 10 | 10 | 10 |
| 181                                                                                                                                                                                                                                                                                        | 41.8 | 0.485           | 0.304           | 1.595           | -0.276          | 0.664              | 27.0            | 6.3             | 27.7               | 13.2               | 70.7             | 79.7             | 29.6             | 73.6                | 16.0               | 0.00              | 1.00 | 0.47 | G23B | 10 | 10 | 10 | 10 | 10 | 10 |
| 182                                                                                                                                                                                                                                                                                        | 41.7 | 0.484           | 0.303           | 1.596           | -0.279          | 0.665              | 27.0            | 6.2             | 27.8               | 13.0               | 70.7             | 79.8             | 19.9             | 73.6                | 15.7               | 0.00              | 1.00 | 0.49 | G24B | 10 | 10 | 10 | 10 | 10 | 10 |
| 183                                                                                                                                                                                                                                                                                        | 41.7 | 0.484           | 0.302           | 1.597           | -0.281          | 0.666              | 27.1            | 6.1             | 27.8               | 12.8               | 70.7             | 79.9             | 19.6             | 73.6                | 15.4               | 0.00              | 1.00 | 0.51 | G25B | 10 | 10 | 10 | 10 | 10 | 10 |
| 184                                                                                                                                                                                                                                                                                        | 41.7 | 0.483           | 0.302           | 1.598           | -0.283          | 0.666              | 27.1            | 6.0             | 27.8               | 12.6               | 70.7             | 71.0             | 19.3             | 73.6                | 15.2               | 0.00              | 1.00 | 0.53 | G26B | 10 | 10 | 10 | 10 | 10 | 10 |
| 185                                                                                                                                                                                                                                                                                        | 41.7 | 0.482           | 0.301           | 1.599           | -0.285          | 0.667              | 27.2            | 6.0             | 27.8               | 12.4               | 70.7             | 71.1             | 19.0             | 73.6                | 14.9               | 0.00              | 1.00 | 0.55 | G27B | 10 | 10 | 10 | 10 | 10 | 10 |
| 186                                                                                                                                                                                                                                                                                        | 41.7 | 0.482           | 0.301           | 1.6             | -0.287          | 0.667              | 27.2            | 5.9             | 27.8               | 12.2               | 70.7             | 71.2             | 18.6             | 73.6                | 14.6               | 0.00              | 1.00 | 0.57 | G28B | 10 | 10 | 10 | 10 | 10 | 10 |
| 187                                                                                                                                                                                                                                                                                        | 41.7 | 0.481           | 0.3             | 1.601           | -0.289          | 0.668              | 27.2            | 5.8             | 27.9               | 12.0               | 70.6             | 71.3             | 18.3             | 73.6                | 14.4               | 0.00              | 1.00 | 0.59 | G29B | 10 | 10 | 10 | 10 | 10 | 10 |
| 188                                                                                                                                                                                                                                                                                        | 41.7 | 0.481           | 0.3             | 1.603           | -0.291          | 0.668              | 27.3            | 5.7             | 27.9               | 11.8               | 70.6             | 71.4             | 18.0             | 73.7                | 14.2               | 0.00              | 1.00 | 0.61 | G30B | 10 | 10 | 10 | 10 | 10 | 10 |
| 189                                                                                                                                                                                                                                                                                        | 41.6 | 0.48            | 0.299           | 1.604           | -0.294          | 0.669              | 27.3            | 5.6             | 27.9               | 11.6               | 70.6             | 71.5             | 17.7             | 73.7                | 13.9               | 0.00              | 1.00 | 0.63 | G31B | 10 | 10 | 10 | 10 | 10 | 10 |
| 190                                                                                                                                                                                                                                                                                        | 41.6 | 0.479           | 0.298           | 1.605           | -0.296          | 0.67               | 27.4            | 5.5             | 27.9               | 11.4               | 70.6             | 71.6             | 17.3             | 73.7                | 13.6               | 0.00              | 1.00 | 0.64 | G32B | 10 | 10 | 10 | 10 | 10 | 10 |
| 191                                                                                                                                                                                                                                                                                        | 41.6 | 0.479           | 0.298           | 1.606           | -0.298          | 0.671              | 27.4            | 5.4             | 27.9               | 11.2               | 70.6             | 71.7             | 17.0             | 73.7                | 13.3               | 0.00              | 1.00 | 0.66 | G33B | 10 | 10 | 10 | 10 | 10 | 10 |
| 192                                                                                                                                                                                                                                                                                        | 41.6 | 0.478           | 0.297           | 1.607           | -0.3            | 0.672              | 27.4            | 5.3             | 28.0               | 11.0               | 70.6             | 71.8             | 16.7             | 73.7                | 13.1               | 0.00              | 1.00 | 0.68 | G34B | 10 | 10 | 10 | 10 | 10 | 10 |
| 193                                                                                                                                                                                                                                                                                        | 41.6 | 0.478           | 0.297           | 1.608           | -0.302          | 0.672              | 27.5            | 5.2             | 28.0               | 10.8               | 70.6             | 71.9             | 16.4             | 73.8                | 12.8               | 0.00              | 1.00 | 0.7  | G35B | 10 | 10 | 10 | 10 | 10 | 10 |
| 194                                                                                                                                                                                                                                                                                        | 41.6 | 0.477           | 0.296           | 1.609           | -0.304          | 0.673              | 27.5            | 5.1             | 28.0               | 10.6               | 70.6             | 72.0             | 16.1             | 73.8                | 12.6               | 0.00              | 1.00 | 0.72 | G36B | 10 | 10 | 10 | 10 | 10 | 10 |
| 195                                                                                                                                                                                                                                                                                        | 41.6 | 0.476           | 0.296           | 1.611           | -0.306          | 0.674              | 27.6            | 5.1             | 28.0               | 10.4               | 70.6             | 72.1             | 15.8             | 73.8                | 12.3               | 0.00              | 1.00 | 0.74 | G37B | 10 | 10 | 10 | 10 | 10 | 10 |
| 196                                                                                                                                                                                                                                                                                        | 41.6 | 0.476           | 0.295           | 1.612           | -0.308          | 0.674              | 27.6            | 5.0             | 28.0               | 10.2               | 70.6             | 72.2             | 15.5             | 73.9                | 12.1               | 0.00              | 1.00 | 0.76 | G38B | 10 | 10 | 10 | 10 | 10 | 10 |
| 197                                                                                                                                                                                                                                                                                        | 41.6 | 0.475           | 0.294           | 1.613           | -0.311          | 0.675              | 27.6            | 4.9             | 28.1               | 10.0               | 70.6             | 72.3             | 15.1             | 73.9                | 11.8               | 0.00              | 1.00 | 0.78 | G39B | 10 | 10 | 10 | 10 | 10 | 10 |
| 198                                                                                                                                                                                                                                                                                        | 41.5 | 0.475           | 0.294           | 1.614           | -0.313          | 0.676              | 27.7            | 4.8             | 28.1               | 9.8                | 70.6             | 72.4             | 14.8             | 73.9                | 11.6               | 0.00              | 1.00 | 0.8  | G40B | 10 | 10 | 10 | 10 | 10 | 10 |
| 199                                                                                                                                                                                                                                                                                        | 41.5 | 0.474           | 0.293           | 1.615           | -0.315          | 0.677              | 27.7            | 4.7             | 28.1               | 9.6                | 70.5             | 72.5             | 14.5             | 74.0                | 11.3               | 0.00              | 1.00 | 0.82 | G41B | 10 | 10 | 10 | 10 | 10 | 10 |
| 200                                                                                                                                                                                                                                                                                        | 41.5 | 0.474           | 0.293           | 1.616           | -0.317          | 0.677              | 27.7            | 4.6             | 28.1               | 9.4                | 70.5             | 72.6             | 14.2             | 74.0                | 11.1               | 0.00              | 1.00 | 0.84 | G42B | 10 | 10 | 10 | 10 | 10 | 10 |
| 201                                                                                                                                                                                                                                                                                        | 41.5 | 0.473           | 0.292           | 1.617           | -0.319          | 0.678              | 27.8            | 4.5             | 28.2               | 9.3                | 70.5             | 72.7             | 13.9             | 74.0                | 10.8               | 0.00              | 1.00 | 0.86 | G43B | 10 | 10 | 10 | 10 | 10 | 10 |
| 202                                                                                                                                                                                                                                                                                        | 41.5 | 0.472           | 0.292           | 1.619           | -0.321          | 0.679              | 27.8            | 4.4             | 28.2               | 9.1                | 70.5             | 72.8             | 13.6             | 74.1                | 10.6               | 0.00              | 1.00 | 0.88 | G44B | 10 | 10 | 10 | 10 | 10 | 10 |
| 203                                                                                                                                                                                                                                                                                        | 41.5 | 0.472           | 0.291           | 1.62            | -0.323          | 0.68               | 27.9            | 4.3             | 28.2               | 8.9                | 70.5             | 72.9             | 13.3             | 74.1                | 10.3               | 0.00              | 1.00 | 0.9  | G45B | 10 | 10 | 10 | 10 | 10 | 10 |
| 204                                                                                                                                                                                                                                                                                        | 41.5 | 0.471           | 0.291           | 1.621           | -0.326          | 0.681              | 27.9            | 4.2             | 28.2               | 8.7                | 70.5             | 73.0             | 13.0             | 74.1                | 10.1               | 0.00              | 1.00 | 0.91 | G46B | 10 | 10 | 10 | 10 | 10 | 10 |
| 205                                                                                                                                                                                                                                                                                        | 41.5 | 0.471           | 0.29            | 1.622           | -0.328          | 0.681              | 27.9            | 4.2             | 28.3               | 8.5                | 70.5             | 73.1             | 12.7             | 74.2                | 9.9                | 0.00              | 1.00 | 0.93 | G47B | 10 | 10 | 10 | 10 | 10 | 10 |
| 206                                                                                                                                                                                                                                                                                        | 41.5 | 0.47            | 0.289           | 1.623           | -0.33           | 0.682              | 28.0            | 4.1             | 28.3               | 8.3                | 70.5             | 73.2             | 12.4             | 74.2                | 9.6                | 0.00              | 1.00 | 0.95 | G48B | 10 | 10 | 10 | 10 | 10 | 10 |
| 207                                                                                                                                                                                                                                                                                        | 41.4 | 0.47            | 0.289           | 1.624           | -0.332          | 0.683              | 28.0            | 4.0             | 28.3               | 8.1                | 70.5             | 73.3             | 12.1             | 74.3                | 9.4                | 0.00              | 1.00 | 0.97 | G49B | 10 | 10 | 10 | 10 | 10 | 10 |
| 208                                                                                                                                                                                                                                                                                        | 41.4 | 0.469           | 0.288           | 1.625           | -0.334          | 0.684              | 28.1            | 3.9             | 28.3               | 7.9                | 70.5             | 73.4             | 11.9             | 74.3                | 9.2                | 0.00              | 1.00 | 0.99 | G50B | 10 | 10 | 10 | 10 | 10 | 10 |
| 209                                                                                                                                                                                                                                                                                        | 41.4 | 0.469           | 0.288           | 1.626           | -0.336          | 0.685              | 28.1            | 3.8             | 28.4               | 7.7                | 70.5             | 73.5             | 11.6             | 74.4                | 8.9                | 0.00              | 0.98 | 1.00 | G50B | 10 | 10 | 10 | 10 | 10 | 10 |
| 210                                                                                                                                                                                                                                                                                        | 41.4 | 0.468           | 0.287           | 1.628           | -0.338          | 0.686              | 28.1            | 3.7             | 28.4               | 7.5                | 70.4             | 73.6             | 11.3             | 74.4                | 8.7                | 0.00              | 0.96 | 1.00 | G51B | 10 | 10 | 10 | 10 | 10 | 10 |
| 211                                                                                                                                                                                                                                                                                        | 41.4 | 0.467           | 0.287           | 1.629           | -0.34           | 0.686              | 28.2            | 3.6             | 28.4               | 7.4                | 70.4             | 73.7             | 11.0             | 74.5                | 8.5                | 0.00              | 0.94 | 1.00 | G52B | 10 | 10 | 10 | 10 | 10 | 10 |
| 212                                                                                                                                                                                                                                                                                        | 41.4 | 0.467           | 0.286           | 1.63            | -0.342          | 0.687              | 28.2            | 3.5             | 28.4               | 7.2                | 70.4             | 73.8             | 10.7             | 74.5                | 8.2                | 0.00              | 0.92 | 1.00 | G53B | 10 | 10 | 10 | 10 | 10 | 10 |
| 213                                                                                                                                                                                                                                                                                        | 41.4 | 0.466           | 0.286           | 1.631           | -0.345          | 0.688              | 28.3            | 3.4             | 28.5               | 7.0                | 70.4             | 73.9             | 10.4             | 74.6                | 8.0                | 0.00              | 0.9  | 1.00 | G54B | 10 | 10 | 10 | 10 | 10 | 10 |
| 214                                                                                                                                                                                                                                                                                        | 41.4 | 0.466           | 0.285           | 1.632           | -0.347          | 0.689              | 28.3            | 3.4             | 28.5               | 6.8                | 70.4             | 73.9             | 10.1             | 74.6                | 7.8                | 0.00              | 0.88 | 1.00 | G55B | 10 | 10 | 10 | 10 | 10 | 10 |
| 215                                                                                                                                                                                                                                                                                        | 41.3 | 0.465           | 0.285           | 1.633           | -0.349          | 0.69               | 28.3            | 3.3             | 28.5               | 6.6                | 70.4             | 74.0             | 9.9              | 74.7                | 7.6                | 0.00              | 0.86 | 1.00 | G56B | 10 | 10 | 10 | 10 | 10 | 10 |
| 216                                                                                                                                                                                                                                                                                        | 41.3 | 0.465           | 0.284           | 1.634           | -0.351          | 0.691              | 28.4            | 3.2             | 28.5               | 6.4                | 70.4             | 74.1             | 9.6              | 74.8                | 7.3                | 0.00              | 0.84 | 1.00 | G57B | 10 | 10 | 10 | 10 | 10 | 10 |
| 217                                                                                                                                                                                                                                                                                        | 41.3 | 0.464           | 0.284           | 1.635           | -0.353          | 0.692              | 28.4            | 3.1             | 28.6               | 6.2                | 70.4             | 74.2             | 9.3              | 74.8                | 7.1                | 0.00              | 0.83 | 1.00 | G58B | 10 | 10 | 10 | 10 | 10 | 10 |
| 218                                                                                                                                                                                                                                                                                        | 41.3 | 0.464           | 0.283           | 1.637           | -0.355          | 0.692              | 28.4            | 3.0             | 28.6               | 6.1                | 70.4             | 74.3             | 9.0              | 74.9                | 6.9                | 0.00              | 0.81 | 1.00 | G59B | 10 | 10 | 10 | 10 | 10 | 10 |
| 219                                                                                                                                                                                                                                                                                        | 41.3 | 0.463           | 0.283           | 1.638           | -0.357          | 0.693              | 28.5            | 2.9             | 28.6               | 5.9                | 70.4             | 74.4             | 8.7              | 74.9                | 6.7                | 0.00              | 0.79 | 1.00 | G60B | 10 | 10 | 10 | 10 | 10 | 10 |
| 220                                                                                                                                                                                                                                                                                        | 41.3 | 0.463           | 0.282           | 1.639           | -0.359          | 0.694              | 28.5            | 2.8             | 28.7               | 5.7                | 70.4             | 74.5             | 8.4              | 75.0                | 6.5                | 0.00              | 0.77 | 1.00 | G61B | 10 | 10 | 10 | 10 | 10 | 10 |
| 221                                                                                                                                                                                                                                                                                        | 41.3 | 0.462           | 0.282           | 1.64            | -0.361          | 0.695              | 28.6            | 2.7             | 28.7               | 5.5                | 70.4             | 74.6             | 8.2              | 75.1                | 6.2                | 0.00              | 0.75 | 1.00 | G62B | 10 | 10 | 10 | 10 | 10 | 10 |
| 222                                                                                                                                                                                                                                                                                        | 41.3 | 0.462           | 0.281           | 1.641           | -0.364          | 0.696              | 28.6            | 2.6             | 28.7               | 5.3                | 70.3             | 74.7             | 7.9              | 75.1                | 6.0                | 0.00              | 0.73 | 1.00 | G63B | 10 | 10 | 10 | 10 | 10 | 10 |
| 223                                                                                                                                                                                                                                                                                        | 41.2 | 0.461           | 0.281           | 1.642           | -0.366          | 0.697              | 28.6            | 2.6             | 28.8               | 5.2                | 70.3             | 74.7             | 7.7              | 75.2                | 5.8                | 0.00              | 0.71 | 1.00 | G64B | 10 | 10 | 10 | 10 | 10 | 10 |
| 224                                                                                                                                                                                                                                                                                        | 41.2 | 0.461           | 0.28            | 1.643           | -0.368          | 0.698              | 28.7            | 2.5             | 28.8               | 5.0                | 70.3             | 74.9             | 7.4              | 75.3                | 5.6                | 0.00              | 0.69 | 1.00 | G65B | 10 | 10 | 10 | 10 | 10 | 10 |
| 225                                                                                                                                                                                                                                                                                        | 41.2 | 0.46            | 0.28            | 1.644           | -0.37           | 0.699              | 28.7            | 2.4             | 28.8               | 4.8                | 70.3             | 75.0             | 7.1              | 75.3                | 5.4                | 0.00              | 0.67 | 1.00 | G66B | 10 | 10 | 10 | 10 | 10 | 10 |
| 226                                                                                                                                                                                                                                                                                        | 41.2 | 0.46            | 0.279           | 1.646           | -0.372          | 0.7                | 28.7            | 2.3             | 28.8               | 4.6                | 70.3             | 75.1             | 6.8              | 75.4                | 5.2                | 0.00              | 0.65 | 1.00 | G67B | 10 | 10 | 10 | 10 | 10 | 10 |
| 227                                                                                                                                                                                                                                                                                        | 41.2 | 0.459           | 0.278           | 1.647           | -0.374          | 0.701              | 28.8            | 2.2             | 28.9               | 4.4                | 70.3             | 75.2             | 6.6              | 75.5                | 5.0                | 0.00              | 0.63 | 1.00 | G68B | 10 | 10 | 10 | 10 | 10 | 10 |
| 228                                                                                                                                                                                                                                                                                        | 41.2 | 0.459           | 0.279           | 1.648           | -0.376          | 0.702              | 28.8            | 2.1             | 28.9               | 4.3                | 70.30            |                  |                  |                     |                    |                   |      |      |      |    |    |    |    |    |    |

**rgb<sub>LAB</sub>** and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65

**Xyy<sub>abcAB</sub> ABC<sub>AB</sub> LabC<sub>ab</sub><sub>AB</sub>** data for relative spacing of elementary hue **h<sub>AB</sub>** of **LIN<sub>YAB</sub>** for CIE 10 degree observer

Elementary hue circle with 4 intended elementary colours (R): **h<sub>AB</sub> = 18.2, 86.3, 156.2, 260.1** of **LIN<sub>YAB</sub>**, and 90 intended hue angles:

**270, 271, ..., 360**, LIN<sub>YAB</sub> data of CIE test colours (R): **10.8 8.7 2.8, 10 (Y): 55.9 1.2 19.6, 11 (G): 20.4 -6.8 3.0, 12 (B): 7.8 -1.2 -7.2**

| no. | AB <sub>10</sub> | x <sub>10</sub> | y <sub>10</sub> | a <sub>10</sub> | b <sub>10</sub> | C <sub>AB10</sub> | A <sub>10</sub> | B <sub>10</sub> | C <sub>AB10</sub> | h <sub>AB10</sub> | L* <sub>10</sub> | a*   | b*    | C <sub>ab10</sub> | h <sub>ab10</sub> | rgb <sub>ab10</sub> | Code <sub>AB10</sub> |      |        |
|-----|------------------|-----------------|-----------------|-----------------|-----------------|-------------------|-----------------|-----------------|-------------------|-------------------|------------------|------|-------|-------------------|-------------------|---------------------|----------------------|------|--------|
| 270 | 40.7             | 0.44            | 0.26            | 1.693           | -0.46           | 0.745             | 30.3            | -1.2            | 30.3              | 357.6             | 70.0             | 79.0 | -3.4  | 79.1              | 357.4             | 0.16                | 0.00                 | 1.00 | % B08R |
| 271 | 40.7             | 0.44            | 0.259           | 1.694           | -0.462          | 0.746             | 30.4            | -1.3            | 30.4              | 357.4             | 70.0             | 79.1 | -3.6  | 79.2              | 357.3             | 0.18                | 0.00                 | 1.00 | % B09R |
| 272 | 40.7             | 0.439           | 0.259           | 1.695           | -0.464          | 0.747             | 30.4            | -1.4            | 30.4              | 357.3             | 70.0             | 79.2 | -3.8  | 79.3              | 357.1             | 0.2                 | 0.00                 | 1.00 | % B10R |
| 273 | 40.7             | 0.439           | 0.259           | 1.696           | -0.465          | 0.749             | 30.4            | -1.4            | 30.5              | 357.2             | 69.9             | 79.2 | -4.0  | 79.3              | 357.0             | 0.21                | 0.00                 | 1.00 | % B10R |
| 274 | 40.7             | 0.438           | 0.258           | 1.697           | -0.467          | 0.75              | 30.5            | -1.5            | 30.5              | 357.0             | 69.9             | 79.3 | -4.2  | 79.4              | 356.9             | 0.23                | 0.00                 | 1.00 | % B11R |
| 275 | 40.7             | 0.438           | 0.258           | 1.698           | -0.469          | 0.751             | 30.5            | -1.6            | 30.5              | 356.9             | 69.9             | 79.4 | -4.4  | 79.5              | 356.7             | 0.25                | 0.00                 | 1.00 | % B12R |
| 276 | 40.6             | 0.438           | 0.257           | 1.699           | -0.471          | 0.752             | 30.5            | -1.7            | 30.6              | 356.7             | 69.9             | 79.5 | -4.6  | 79.6              | 356.6             | 0.26                | 0.00                 | 1.00 | % B13R |
| 277 | 40.6             | 0.437           | 0.257           | 1.7             | -0.473          | 0.753             | 30.6            | -1.7            | 30.6              | 356.6             | 69.9             | 79.6 | -4.8  | 79.7              | 356.4             | 0.28                | 0.00                 | 1.00 | % B14R |
| 278 | 40.6             | 0.437           | 0.257           | 1.701           | -0.475          | 0.753             | 30.6            | -1.8            | 30.6              | 356.5             | 69.9             | 79.7 | -5.0  | 79.8              | 356.3             | 0.3                 | 0.00                 | 1.00 | % B15R |
| 279 | 40.6             | 0.437           | 0.256           | 1.702           | -0.476          | 0.755             | 30.6            | -1.9            | 30.7              | 356.3             | 69.9             | 79.7 | -5.2  | 79.9              | 356.2             | 0.31                | 0.00                 | 1.00 | % B15R |
| 280 | 40.6             | 0.436           | 0.256           | 1.703           | -0.478          | 0.756             | 30.6            | -2.0            | 30.7              | 356.2             | 69.9             | 79.8 | -5.4  | 80.0              | 356.0             | 0.33                | 0.00                 | 1.00 | % B16R |
| 281 | 40.6             | 0.436           | 0.256           | 1.704           | -0.48           | 0.757             | 30.7            | -2.0            | 30.8              | 356.1             | 69.9             | 79.9 | -5.6  | 80.1              | 355.9             | 0.35                | 0.00                 | 1.00 | % B17R |
| 282 | 40.6             | 0.435           | 0.255           | 1.705           | -0.482          | 0.758             | 30.7            | -2.1            | 30.8              | 355.9             | 69.9             | 80.0 | -5.8  | 80.2              | 355.8             | 0.37                | 0.00                 | 1.00 | % B18R |
| 283 | 40.6             | 0.435           | 0.255           | 1.706           | -0.484          | 0.76              | 30.7            | -2.2            | 30.8              | 355.8             | 69.9             | 80.0 | -6.0  | 80.3              | 355.6             | 0.38                | 0.00                 | 1.00 | % B19R |
| 284 | 40.6             | 0.435           | 0.254           | 1.707           | -0.486          | 0.761             | 30.8            | -2.3            | 30.9              | 355.7             | 69.9             | 80.1 | -6.2  | 80.4              | 355.5             | 0.4                 | 0.00                 | 1.00 | % B20R |
| 285 | 40.6             | 0.434           | 0.254           | 1.708           | -0.487          | 0.762             | 30.8            | -2.3            | 30.9              | 355.6             | 69.9             | 80.2 | -6.4  | 80.5              | 355.4             | 0.42                | 0.00                 | 1.00 | % B21R |
| 286 | 40.5             | 0.434           | 0.254           | 1.709           | -0.489          | 0.763             | 30.8            | -2.4            | 31.0              | 355.5             | 69.8             | 80.3 | -6.6  | 80.6              | 355.2             | 0.43                | 0.00                 | 1.00 | % B21R |
| 287 | 40.5             | 0.434           | 0.253           | 1.71            | -0.491          | 0.764             | 30.9            | -2.5            | 31.0              | 355.3             | 69.8             | 80.4 | -6.8  | 80.7              | 355.1             | 0.45                | 0.00                 | 1.00 | % B22R |
| 288 | 40.5             | 0.433           | 0.253           | 1.71            | -0.493          | 0.765             | 30.9            | -2.5            | 31.0              | 355.2             | 69.8             | 80.4 | -6.9  | 80.8              | 355.0             | 0.47                | 0.00                 | 1.00 | % B23R |
| 289 | 40.5             | 0.433           | 0.253           | 1.711           | -0.494          | 0.766             | 30.9            | -2.6            | 31.0              | 355.0             | 69.8             | 80.5 | -7.1  | 80.9              | 354.9             | 0.48                | 0.00                 | 1.00 | % B24R |
| 290 | 40.5             | 0.433           | 0.252           | 1.712           | -0.496          | 0.767             | 31.0            | -2.7            | 31.1              | 354.9             | 69.8             | 80.6 | -7.3  | 80.9              | 354.7             | 0.5                 | 0.00                 | 1.00 | % B25R |
| 291 | 40.5             | 0.432           | 0.252           | 1.713           | -0.498          | 0.768             | 31.0            | -2.7            | 31.1              | 354.8             | 69.8             | 80.7 | -7.5  | 81.0              | 354.6             | 0.52                | 0.00                 | 1.00 | % B26R |
| 292 | 40.5             | 0.432           | 0.252           | 1.714           | -0.501          | 0.769             | 31.0            | -2.8            | 31.2              | 354.7             | 69.8             | 80.7 | -7.7  | 81.1              | 354.5             | 0.53                | 0.00                 | 1.00 | % B26R |
| 293 | 40.5             | 0.432           | 0.251           | 1.715           | -0.501          | 0.771             | 31.1            | -2.9            | 31.2              | 354.6             | 69.8             | 80.8 | -7.9  | 81.2              | 354.4             | 0.55                | 0.00                 | 1.00 | % B27R |
| 294 | 40.5             | 0.431           | 0.251           | 1.716           | -0.503          | 0.772             | 31.1            | -3.0            | 31.2              | 354.4             | 69.8             | 80.9 | -8.1  | 81.3              | 354.2             | 0.57                | 0.00                 | 1.00 | % B28R |
| 295 | 40.5             | 0.431           | 0.251           | 1.717           | -0.505          | 0.773             | 31.1            | -3.0            | 31.3              | 354.3             | 69.8             | 81.0 | -8.2  | 81.4              | 354.1             | 0.59                | 0.00                 | 1.00 | % B29R |
| 296 | 40.4             | 0.431           | 0.25            | 1.718           | -0.507          | 0.774             | 31.1            | -3.1            | 31.3              | 354.2             | 69.8             | 81.0 | -8.4  | 81.5              | 354.0             | 0.6                 | 0.00                 | 1.00 | % B30R |
| 297 | 40.4             | 0.43            | 0.25            | 1.719           | -0.508          | 0.775             | 31.2            | -3.2            | 31.3              | 354.1             | 69.8             | 81.1 | -8.6  | 81.6              | 353.9             | 0.62                | 0.00                 | 1.00 | % B31R |
| 298 | 40.4             | 0.43            | 0.25            | 1.72            | -0.51           | 0.776             | 31.2            | -3.2            | 31.4              | 354.0             | 69.8             | 81.2 | -8.7  | 81.7              | 353.8             | 0.64                | 0.00                 | 1.00 | % B32R |
| 299 | 40.4             | 0.43            | 0.249           | 1.721           | -0.512          | 0.777             | 31.2            | -3.3            | 31.4              | 353.8             | 69.8             | 81.3 | -8.9  | 81.8              | 353.7             | 0.65                | 0.00                 | 1.00 | % B33R |
| 300 | 40.4             | 0.429           | 0.249           | 1.722           | -0.513          | 0.778             | 31.3            | -3.4            | 31.4              | 353.7             | 69.7             | 81.3 | -9.1  | 81.8              | 353.6             | 0.67                | 0.00                 | 1.00 | % B33R |
| 301 | 40.4             | 0.429           | 0.249           | 1.723           | -0.515          | 0.779             | 31.3            | -3.4            | 31.5              | 353.6             | 69.7             | 81.4 | -9.2  | 81.9              | 353.4             | 0.69                | 0.00                 | 1.00 | % B34R |
| 302 | 40.4             | 0.429           | 0.248           | 1.723           | -0.517          | 0.78              | 31.3            | -3.5            | 31.5              | 353.5             | 69.7             | 81.5 | -9.4  | 82.0              | 353.3             | 0.7                 | 0.00                 | 1.00 | % B35R |
| 303 | 40.4             | 0.428           | 0.248           | 1.724           | -0.518          | 0.781             | 31.3            | -3.6            | 31.6              | 353.4             | 69.7             | 81.6 | -9.6  | 82.1              | 353.2             | 0.72                | 0.00                 | 1.00 | % B36R |
| 304 | 40.4             | 0.428           | 0.248           | 1.725           | -0.52           | 0.782             | 31.4            | -3.6            | 31.6              | 353.3             | 69.7             | 81.6 | -9.7  | 82.2              | 353.1             | 0.74                | 0.00                 | 1.00 | % B37R |
| 305 | 40.4             | 0.428           | 0.248           | 1.726           | -0.521          | 0.784             | 31.4            | -3.7            | 31.6              | 353.2             | 69.7             | 81.7 | -9.9  | 82.3              | 353.0             | 0.75                | 0.00                 | 1.00 | % B37R |
| 306 | 40.3             | 0.427           | 0.247           | 1.727           | -0.523          | 0.785             | 31.4            | -3.8            | 31.7              | 353.1             | 69.7             | 81.8 | -10.1 | 82.4              | 352.9             | 0.77                | 0.00                 | 1.00 | % B38R |
| 307 | 40.3             | 0.427           | 0.247           | 1.728           | -0.525          | 0.786             | 31.5            | -3.8            | 31.7              | 352.9             | 69.7             | 81.8 | -10.2 | 82.5              | 352.8             | 0.79                | 0.00                 | 1.00 | % B39R |
| 308 | 40.3             | 0.427           | 0.247           | 1.729           | -0.526          | 0.787             | 31.5            | -3.9            | 31.7              | 352.8             | 69.7             | 81.9 | -10.4 | 82.6              | 352.7             | 0.81                | 0.00                 | 1.00 | % B40R |
| 309 | 40.3             | 0.427           | 0.246           | 1.73            | -0.528          | 0.788             | 31.5            | -3.9            | 31.8              | 352.7             | 69.7             | 82.0 | -10.5 | 82.7              | 352.6             | 0.82                | 0.00                 | 1.00 | % B41R |
| 310 | 40.3             | 0.426           | 0.246           | 1.73            | -0.529          | 0.789             | 31.5            | -4.0            | 31.8              | 352.6             | 69.7             | 82.0 | -10.7 | 82.7              | 352.5             | 0.84                | 0.00                 | 1.00 | % B42R |
| 311 | 40.3             | 0.426           | 0.246           | 1.731           | -0.531          | 0.79              | 31.6            | -4.1            | 31.8              | 352.5             | 69.7             | 82.1 | -10.9 | 82.8              | 352.4             | 0.86                | 0.00                 | 1.00 | % B43R |
| 312 | 40.3             | 0.426           | 0.245           | 1.732           | -0.533          | 0.791             | 31.6            | -4.1            | 31.9              | 352.4             | 69.7             | 82.2 | -11.0 | 82.9              | 352.3             | 0.87                | 0.00                 | 1.00 | % B43R |
| 313 | 40.3             | 0.425           | 0.245           | 1.733           | -0.534          | 0.792             | 31.6            | -4.2            | 31.9              | 352.3             | 69.7             | 82.2 | -11.2 | 83.0              | 352.2             | 0.89                | 0.00                 | 1.00 | % B44R |
| 314 | 40.3             | 0.425           | 0.245           | 1.734           | -0.536          | 0.793             | 31.7            | -4.3            | 31.9              | 352.2             | 69.7             | 82.3 | -11.3 | 83.1              | 352.1             | 0.91                | 0.00                 | 1.00 | % B45R |
| 315 | 40.3             | 0.425           | 0.245           | 1.735           | -0.537          | 0.794             | 31.7            | -4.3            | 32.0              | 352.1             | 69.7             | 82.4 | -11.5 | 83.2              | 352.0             | 0.92                | 0.00                 | 1.00 | % B46R |
| 316 | 40.3             | 0.425           | 0.244           | 1.736           | -0.539          | 0.795             | 31.7            | -4.4            | 32.0              | 352.0             | 69.6             | 82.4 | -11.6 | 83.3              | 351.9             | 0.94                | 0.00                 | 1.00 | % B47R |
| 317 | 40.2             | 0.424           | 0.244           | 1.736           | -0.540          | 0.796             | 31.7            | -4.4            | 32.0              | 351.9             | 69.6             | 82.5 | -11.8 | 83.4              | 351.8             | 0.96                | 0.00                 | 1.00 | % B48R |
| 318 | 40.2             | 0.424           | 0.244           | 1.737           | -0.542          | 0.797             | 31.8            | -4.5            | 32.1              | 351.8             | 69.6             | 82.6 | -11.9 | 83.4              | 351.7             | 0.97                | 0.00                 | 1.00 | % B48R |
| 319 | 40.2             | 0.424           | 0.244           | 1.738           | -0.543          | 0.798             | 31.8            | -4.6            | 32.1              | 351.7             | 69.6             | 82.6 | -12.1 | 83.5              | 351.6             | 0.98                | 0.00                 | 1.00 | % B49R |
| 320 | 40.2             | 0.423           | 0.243           | 1.739           | -0.545          | 0.799             | 31.8            | -4.6            | 32.2              | 351.6             | 69.6             | 82.7 | -12.2 | 83.6              | 351.5             | 1.00                | 0.00                 | 0.98 | % B50R |
| 321 | 40.2             | 0.423           | 0.243           | 1.74            | -0.546          | 0.8               | 31.8            | -4.7            | 32.2              | 351.5             | 69.6             | 82.8 | -12.3 | 83.7              | 351.4             | 1.00                | 0.00                 | 0.96 | % B51R |
| 322 | 40.2             | 0.423           | 0.243           | 1.74            | -0.548          | 0.801             | 31.9            | -4.7            | 32.2              | 351.4             | 69.6             | 82.8 | -12.5 | 83.8              | 351.4             | 1.00                | 0.00                 | 0.95 | % B52R |
| 323 | 40.2             | 0.423           | 0.242           | 1.742           | -0.549          | 0.802             | 31.9            | -4.8            | 32.3              | 351.3             | 69.6             | 82.9 | -12.6 | 83.9              | 351.3             | 1.00                | 0.00                 | 0.93 | % B53R |
| 324 | 40.2             | 0.422           | 0.242           | 1.742           | -0.551          | 0.803             | 31.9            | -4.9            | 32.3              | 351.2             | 69.6             | 83.0 | -12.8 | 83.9              | 351.2             | 1.00                | 0.00                 | 0.91 | % B54R |
| 325 | 40.2             | 0.422           | 0.242           | 1.743           | -0.552          | 0.804             | 31.9            | -4.9            | 32.3              | 351.1             | 69.6             | 83.0 | -12.9 | 84.0              | 351.1             | 1.00                | 0.00                 | 0.9  | % B54R |
| 326 | 40.2             | 0.422           | 0.242           | 1.744           | -0.553          | 0.805             | 32.0            | -5.0            | 32.4              | 351.0             | 69.6             | 83.1 | -13.0 | 84.1              | 351.0             | 1.00                | 0.00                 | 0.88 | % B55R |
| 327 | 40.2             | 0.422           | 0.241           | 1.744           | -0.555          | 0.806             | 32.0            | -5.0            | 32.4              | 351.0             | 69.6             | 83.1 | -13.2 | 84.2              | 350.9             | 1.00                | 0.00                 | 0.86 | % B56R |
| 328 | 40.2             | 0.421           | 0.241           | 1.745           | -0.556          | 0.807             | 32.0            | -5.1            | 32.4              | 350.9             | 69.6             | 83.2 | -13.3 |                   |                   |                     |                      |      |        |

| Ostwald optimal colours (o) of maximum (m) C <sub>AB</sub> for D65, Y <sub>w</sub> =100, Y <sub>m</sub> =520_770, CIELAB data          |                                 |                   |                   |                   |                  |        |         |                 |                                 |                                 |      |  |   | % |
|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------|-------------------|-------------------|------------------|--------|---------|-----------------|---------------------------------|---------------------------------|------|--|---|---|
| i <sub>1</sub> , λ <sub>1</sub>                                                                                                        | i <sub>2</sub> , λ <sub>2</sub> | L* <sub>100</sub> | a* <sub>100</sub> | b* <sub>100</sub> | C* <sub>ab</sub> | a'     | b'      | h <sub>ab</sub> | i <sub>d</sub> , λ <sub>d</sub> | i <sub>c</sub> , λ <sub>c</sub> | Code |  | % |   |
| 0 405                                                                                                                                  | 32 561                          | 80.85             | -67.55            | -32.54            | 74.98            | 0.1805 | -0.1029 | 205.7           | 16 483                          | 37 589                          | Cm   |  | % |   |
| 6 435                                                                                                                                  | 32 562                          | 81.18             | -81.89            | -19.25            | 84.12            | 0.1732 | -0.096  | 193.2           | 17 486                          | 42 610                          |      |  | % |   |
| 10 450                                                                                                                                 | 32 563                          | 81.52             | -109.06           | 11.43             | 109.66           | 0.1595 | -0.0803 | 174.0           | 19 496                          | -1 496c                         |      |  | % |   |
| 12 460                                                                                                                                 | 33 565                          | 82.01             | -120.74           | 33.26             | 125.23           | 0.1538 | -0.0692 | 164.5           | 21 505                          | -1 505c                         |      |  | % |   |
| 12 465                                                                                                                                 | 33 567                          | 82.73             | -118.76           | 34.5              | 123.67           | 0.1552 | -0.0687 | 163.8           | 21 506                          | -1 506c                         |      |  | % |   |
| 14 470                                                                                                                                 | 33 569                          | 83.3              | -123.47           | 57.53             | 136.22           | 0.1532 | -0.0572 | 155.0           | 24 520                          | -1 520c                         |      |  | % |   |
| 15 475                                                                                                                                 | 34 573                          | 84.63             | -118.73           | 70.39             | 138.03           | 0.1564 | -0.0512 | 149.3           | 25 528                          | -1 528c                         | Gm   |  | % |   |
| 16 480                                                                                                                                 | 36 580                          | 86.98             | -107.21           | 84.2              | 136.33           | 0.1633 | -0.0452 | 141.8           | 27 537                          | -1 537c                         |      |  | % |   |
| 17 485                                                                                                                                 | 39 595                          | 91.12             | -80.53            | 100.07            | 128.45           | 0.1778 | -0.0394 | 128.8           | 29 548                          | -1 548c                         |      |  | % |   |
| 18 490                                                                                                                                 | -1 490c                         | 97.55             | -23.15            | 119.05            | 121.28           | 0.2052 | -0.0337 | 101.0           | 33 565                          | 11 459                          | max  |  | % |   |
| 19 495                                                                                                                                 | -1 495c                         | 96.94             | -20.63            | 125.42            | 127.1            | 0.2062 | -0.0306 | 99.3            | 33 566                          | 12 462                          |      |  | % |   |
| 20 500                                                                                                                                 | -1 500c                         | 96.17             | -17.33            | 131.15            | 132.29           | 0.2076 | -0.0277 | 97.5            | 33 567                          | 12 464                          |      |  | % |   |
| 22 510                                                                                                                                 | -1 510c                         | 94.0              | -8.24             | 140.17            | 140.41           | 0.2116 | -0.0224 | 93.3            | 33 569                          | 13 469                          |      |  | % |   |
| 23 520                                                                                                                                 | -1 519c                         | 92.57             | -2.53             | 142.99            | 143.01           | 0.2142 | -0.0202 | 91.0            | 34 570                          | 14 471                          | Ym   |  | % |   |
| 25 530                                                                                                                                 | -1 529c                         | 88.94             | 10.79             | 144.39            | 144.79           | 0.2205 | -0.0165 | 85.7            | 34 573                          | 15 475                          |      |  | % |   |
| 27 540                                                                                                                                 | -1 539c                         | 84.43             | 25.54             | 141.4             | 143.69           | 0.2281 | -0.0134 | 79.7            | 35 577                          | 15 478                          |      |  | % |   |
| 28 545                                                                                                                                 | -1 544c                         | 81.91             | 33.05             | 138.34            | 142.24           | 0.2322 | -0.0121 | 76.5            | 35 579                          | 15 479                          |      |  | % |   |
| 29 550                                                                                                                                 | -1 549c                         | 79.2              | 40.58             | 134.51            | 140.5            | 0.2367 | -0.0111 | 73.2            | 36 582                          | 16 480                          |      |  | % |   |
| 30 555                                                                                                                                 | -1 554c                         | 76.32             | 47.96             | 130.1             | 138.66           | 0.2413 | -0.0103 | 69.7            | 36 584                          | 16 481                          |      |  | % |   |
| 32 560                                                                                                                                 | -1 560c                         | 70.18             | 61.63             | 120.13            | 135.02           | 0.2511 | -0.0093 | 62.8            | 37 589                          | 16 483                          |      |  | % |   |
| 380                                                                                                                                    | 770                             | 100.0             | 0.0               | 0.0               | 0.0              | 0.2154 | -0.0861 | 0.0             |                                 |                                 |      |  | % |   |
| Ostwald optimal colours (o) of maximum (m) C <sub>AB</sub> for D65, Y <sub>w</sub> =100, Y <sub>m</sub> =770_520, CIELAB complementary |                                 |                   |                   |                   |                  |        |         |                 |                                 |                                 |      |  |   | % |
| i <sub>1</sub> , λ <sub>1</sub>                                                                                                        | i <sub>2</sub> , λ <sub>2</sub> | L* <sub>100</sub> | a* <sub>100</sub> | b* <sub>100</sub> | C* <sub>ab</sub> | a'     | b'      | h <sub>ab</sub> | i <sub>d</sub> , λ <sub>d</sub> | i <sub>c</sub> , λ <sub>c</sub> | Code |  | % |   |
| 32 561                                                                                                                                 | 0 405                           | 70.73             | 60.88             | 110.08            | 125.79           | 0.2505 | -0.022  | 61.0            | 37 589                          | 16 483                          | Rm   |  | % |   |
| 32 562                                                                                                                                 | 6 435                           | 70.32             | 70.58             | 34.83             | 78.71            | 0.2562 | -0.0659 | 26.2            | 42 610                          | 17 486                          |      |  | % |   |
| 32 563                                                                                                                                 | 10 450                          | 69.88             | 85.85             | -12.65            | 86.78            | 0.2653 | -0.0935 | 351.6           | -1 496c                         | 19 496                          |      |  | % |   |
| 33 565                                                                                                                                 | 12 460                          | 69.24             | 92.89             | -29.55            | 97.48            | 0.2698 | -0.1035 | 342.3           | -1 505c                         | 21 505                          |      |  | % |   |
| 33 567                                                                                                                                 | 12 465                          | 68.27             | 94.84             | -31.22            | 99.85            | 0.2716 | -0.1046 | 341.7           | -1 506c                         | 21 506                          |      |  | % |   |
| 33 569                                                                                                                                 | 14 470                          | 67.49             | 99.24             | -42.98            | 108.15           | 0.2748 | -0.1119 | 336.5           | -1 520c                         | 24 520                          |      |  | % |   |
| 34 573                                                                                                                                 | 15 475                          | 65.52             | 102.87            | -49.85            | 114.31           | 0.2784 | -0.1167 | 334.1           | -1 528c                         | 25 528                          | Mm   |  | % |   |
| 36 580                                                                                                                                 | 16 480                          | 61.69             | 107.96            | -59.02            | 123.05           | 0.2848 | -0.1241 | 331.3           | -1 537c                         | 27 537                          |      |  | % |   |
| 39 595                                                                                                                                 | 17 485                          | 53.22             | 112.99            | -75.47            | 135.88           | 0.297  | -0.1406 | 326.2           | -1 548c                         | 29 548                          |      |  | % |   |
| -1 490c                                                                                                                                | 18 490                          | 29.91             | 89.01             | -117.0            | 147.01           | 0.3124 | -0.2136 | 307.2           | 11 459                          | 33 565                          | min  |  | % |   |
| -1 495c                                                                                                                                | 19 495                          | 33.36             | 74.42             | -112.09           | 134.55           | 0.2908 | -0.1997 | 303.5           | 12 462                          | 33 566                          |      |  | % |   |
| -1 500c                                                                                                                                | 20 500                          | 37.09             | 58.44             | -106.44           | 121.43           | 0.2704 | -0.1864 | 298.7           | 12 464                          | 33 567                          |      |  | % |   |
| -1 510c                                                                                                                                | 22 510                          | 45.26             | 23.9              | -93.37            | 96.38            | 0.2349 | -0.1623 | 284.3           | 13 469                          | 33 569                          |      |  | % |   |
| -1 519c                                                                                                                                | 23 520                          | 49.52             | 6.76              | -86.32            | 86.58            | 0.2205 | -0.152  | 274.4           | 14 471                          | 34 570                          | Bm   |  | % |   |
| -1 529c                                                                                                                                | 25 530                          | 58.0              | -23.98            | -72.06            | 75.95            | 0.1992 | -0.1348 | 251.5           | 15 475                          | 34 573                          |      |  | % |   |
| -1 539c                                                                                                                                | 27 540                          | 65.83             | -46.7             | -58.75            | 75.05            | 0.1868 | -0.122  | 231.5           | 15 478                          | 35 577                          |      |  | % |   |
| -1 544c                                                                                                                                | 28 545                          | 69.38             | -54.68            | -52.68            | 75.93            | 0.1833 | -0.117  | 223.9           | 15 479                          | 35 579                          |      |  | % |   |
| -1 549c                                                                                                                                | 29 550                          | 72.72             | -60.59            | -46.95            | 76.65            | 0.1812 | -0.1126 | 217.7           | 16 480                          | 36 582                          |      |  | % |   |
| -1 554c                                                                                                                                | 30 555                          | 75.82             | -64.5             | -41.62            | 76.77            | 0.1803 | -0.1088 | 212.8           | 16 481                          | 36 584                          |      |  | % |   |
| -1 560c                                                                                                                                | 32 560                          | 81.29             | -66.96            | -32.22            | 74.32            | 0.181  | -0.1027 | 205.6           | 16 483                          | 37 589                          |      |  | % |   |
| 380                                                                                                                                    | 770                             | 100.0             | 0.0               | 0.0               | 0.0              | 0.2154 | -0.0861 | 0.0             |                                 |                                 |      |  | % |   |

| rgb <sub>ab</sub> and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65                                                                                        |          |          |          |          |          |                        |          |          |                        |                       |                       |                       |                       |                                     |                       |                          |                           |      |      |       |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|------------------------|----------|----------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------------------|-----------------------|--------------------------|---------------------------|------|------|-------|--|--|--|--|--|
| Yxy, <i>abc</i> <sub>AB</sub> , <i>ABC</i> <sub>AB</sub> , <i>LabC</i> <sub>ab</sub> , <i>h<sub>ab</sub></i> data for relative spacing of elementary hue <i>h<sub>ab</sub></i> of CIELAB for CIE 2 degree observer |          |          |          |          |          |                        |          |          |                        |                       |                       |                       |                       |                                     |                       |                          |                           |      |      |       |  |  |  |  |  |
| Elementary hue circle with 4 intended elementary hue angles: <i>h<sub>ab</sub></i> = 25.6, 92.4, 162.1, 271.5 of CIELAB, and 90 intended hue angles:                                                               |          |          |          |          |          |                        |          |          |                        |                       |                       |                       |                       |                                     |                       |                          |                           |      |      |       |  |  |  |  |  |
| 000, 001, ..., 089, CIELAB data of CIE test colours 9 (R): 40.0 58.9 28.3, 10 (Y): 81.3 -3.0 71.8, 11 (G): 52.2 -42.3 13.6, 12 (B): 30.5 1.2 -46.3                                                                 |          |          |          |          |          |                        |          |          |                        |                       |                       |                       |                       |                                     |                       |                          |                           |      |      |       |  |  |  |  |  |
| <i>no.</i> <sub>ab</sub>                                                                                                                                                                                           | <i>Y</i> | <i>x</i> | <i>y</i> | <i>a</i> | <i>b</i> | <i>c</i> <sub>AB</sub> | <i>A</i> | <i>B</i> | <i>C</i> <sub>AB</sub> | <i>h<sub>ab</sub></i> | <i>L</i> <sub>Y</sub> | <i>a</i> <sup>*</sup> | <i>b</i> <sup>*</sup> | <i>C</i> <sup>*</sup> <sub>ab</sub> | <i>h<sub>ab</sub></i> | <i>rgb</i> <sub>ab</sub> | <i>Code</i> <sub>ab</sub> |      |      |       |  |  |  |  |  |
| 000                                                                                                                                                                                                                | 40.7     | 0.443    | 0.255    | 1.735    | -0.47    | 0.785                  | 31.9     | -1.4     | 32.0                   | 357.4                 | 70.0                  | 82.3                  | -3.8                  | 82.4                                | 357.3                 | 1.00                     | 0.00                      | 0.58 | 0.58 | 0.789 |  |  |  |  |  |
| 001                                                                                                                                                                                                                | 40.7     | 0.445    | 0.257    | 1.73     | -0.459   | 0.78                   | 31.7     | -0.9     | 31.8                   | 358.2                 | 70.0                  | 81.9                  | -2.6                  | 81.9                                | 358.1                 | 1.00                     | 0.00                      | 0.55 | 0.55 | 0.782 |  |  |  |  |  |
| 002                                                                                                                                                                                                                | 40.7     | 0.448    | 0.259    | 1.725    | -0.448   | 0.774                  | 31.6     | -0.5     | 31.6                   | 359.0                 | 70.0                  | 81.5                  | -1.5                  | 81.5                                | 358.9                 | 1.00                     | 0.00                      | 0.53 | 0.53 | 0.773 |  |  |  |  |  |
| 003                                                                                                                                                                                                                | 40.8     | 0.45     | 0.262    | 1.719    | -0.438   | 0.769                  | 31.4     | -0.1     | 31.4                   | 359.8                 | 70.0                  | 81.0                  | -0.2                  | 81.0                                | 359.7                 | 1.00                     | 0.00                      | 0.51 | 0.51 | 0.747 |  |  |  |  |  |
| 004                                                                                                                                                                                                                | 40.8     | 0.453    | 0.264    | 1.714    | -0.427   | 0.764                  | 31.2     | 0.3      | 31.2                   | 0.6                   | 70.0                  | 80.6                  | 0.9                   | 80.6                                | 0.6                   | 1.00                     | 0.00                      | 0.48 | 0.48 | 0.758 |  |  |  |  |  |
| 005                                                                                                                                                                                                                | 40.8     | 0.455    | 0.266    | 1.709    | -0.416   | 0.759                  | 31.0     | 0.7      | 31.0                   | 1.4                   | 70.0                  | 80.1                  | 2.2                   | 80.2                                | 1.5                   | 1.00                     | 0.00                      | 0.46 | 0.46 | 0.767 |  |  |  |  |  |
| 006                                                                                                                                                                                                                | 40.8     | 0.458    | 0.268    | 1.704    | -0.405   | 0.754                  | 30.8     | 1.2      | 30.8                   | 2.2                   | 70.0                  | 79.7                  | 3.5                   | 79.8                                | 2.5                   | 1.00                     | 0.00                      | 0.44 | 0.44 | 0.777 |  |  |  |  |  |
| 007                                                                                                                                                                                                                | 40.8     | 0.461    | 0.271    | 1.698    | -0.394   | 0.749                  | 30.6     | 1.6      | 30.6                   | 3.4                   | 70.0                  | 79.2                  | 4.8                   | 79.4                                | 3.4                   | 1.00                     | 0.00                      | 0.42 | 0.42 | 0.787 |  |  |  |  |  |
| 008                                                                                                                                                                                                                | 40.9     | 0.463    | 0.273    | 1.693    | -0.383   | 0.744                  | 30.4     | 2.0      | 30.4                   | 4.6                   | 70.1                  | 78.7                  | 6.1                   | 78.9                                | 4.4                   | 1.00                     | 0.00                      | 0.39 | 0.39 | 0.827 |  |  |  |  |  |
| 009                                                                                                                                                                                                                | 40.9     | 0.466    | 0.276    | 1.688    | -0.372   | 0.74                   | 30.1     | 2.5      | 30.3                   | 4.8                   | 70.1                  | 78.3                  | 7.5                   | 78.7                                | 5.4                   | 1.00                     | 0.00                      | 0.37 | 0.37 | 0.837 |  |  |  |  |  |
| 010                                                                                                                                                                                                                | 40.9     | 0.469    | 0.278    | 1.683    | -0.361   | 0.736                  | 29.9     | 3.0      | 30.1                   | 5.7                   | 70.1                  | 77.9                  | 8.9                   | 78.4                                | 6.5                   | 1.00                     | 0.00                      | 0.35 | 0.35 | 0.842 |  |  |  |  |  |
| 011                                                                                                                                                                                                                | 40.9     | 0.471    | 0.281    | 1.677    | -0.35    | 0.732                  | 29.7     | 3.4      | 29.9                   | 6.6                   | 70.1                  | 77.4                  | 10.3                  | 78.1                                | 7.5                   | 1.00                     | 0.00                      | 0.33 | 0.33 | 0.851 |  |  |  |  |  |
| 012                                                                                                                                                                                                                | 40.9     | 0.474    | 0.283    | 1.672    | -0.34    | 0.728                  | 29.5     | 3.9      | 29.8                   | 7.5                   | 70.1                  | 76.9                  | 11.7                  | 77.8                                | 8.6                   | 1.00                     | 0.00                      | 0.3  | 0.3  | 0.861 |  |  |  |  |  |
| 013                                                                                                                                                                                                                | 40.9     | 0.477    | 0.286    | 1.667    | -0.329   | 0.724                  | 29.3     | 4.3      | 29.7                   | 8.4                   | 70.1                  | 76.5                  | 13.2                  | 77.6                                | 9.8                   | 1.00                     | 0.00                      | 0.28 | 0.28 | 0.871 |  |  |  |  |  |
| 014                                                                                                                                                                                                                | 41.0     | 0.48     | 0.289    | 1.662    | -0.318   | 0.721                  | 29.1     | 4.7      | 29.5                   | 9.3                   | 70.1                  | 76.0                  | 14.7                  | 77.4                                | 10.9                  | 1.00                     | 0.00                      | 0.26 | 0.26 | 0.881 |  |  |  |  |  |
| 015                                                                                                                                                                                                                | 41.0     | 0.483    | 0.291    | 1.656    | -0.308   | 0.717                  | 28.9     | 5.2      | 29.4                   | 10.2                  | 70.1                  | 75.5                  | 16.2                  | 77.3                                | 12.1                  | 1.00                     | 0.00                      | 0.24 | 0.24 | 0.891 |  |  |  |  |  |
| 016                                                                                                                                                                                                                | 41.0     | 0.486    | 0.294    | 1.651    | -0.297   | 0.713                  | 28.7     | 5.6      | 29.3                   | 11.1                  | 70.1                  | 75.0                  | 17.7                  | 77.2                                | 13.2                  | 1.00                     | 0.00                      | 0.21 | 0.21 | 0.901 |  |  |  |  |  |
| 017                                                                                                                                                                                                                | 41.0     | 0.489    | 0.297    | 1.646    | -0.286   | 0.71                   | 28.5     | 6.1      | 29.2                   | 12.0                  | 70.2                  | 74.6                  | 19.2                  | 77.1                                | 14.4                  | 1.00                     | 0.00                      | 0.19 | 0.19 | 0.911 |  |  |  |  |  |
| 018                                                                                                                                                                                                                | 41.0     | 0.492    | 0.3      | 1.641    | -0.276   | 0.709                  | 28.3     | 6.5      | 29.1                   | 12.9                  | 70.2                  | 74.2                  | 20.8                  | 77.1                                | 15.7                  | 1.00                     | 0.00                      | 0.17 | 0.17 | 0.921 |  |  |  |  |  |
| 019                                                                                                                                                                                                                | 41.0     | 0.495    | 0.302    | 1.636    | -0.266   | 0.706                  | 28.1     | 6.9      | 29.0                   | 13.8                  | 70.2                  | 73.7                  | 22.4                  | 77.1                                | 16.9                  | 1.00                     | 0.00                      | 0.15 | 0.15 | 0.931 |  |  |  |  |  |
| 020                                                                                                                                                                                                                | 41.1     | 0.498    | 0.305    | 1.631    | -0.256   | 0.704                  | 27.9     | 7.3      | 28.9                   | 14.7                  | 70.2                  | 73.3                  | 24.1                  | 77.1                                | 18.1                  | 1.00                     | 0.00                      | 0.12 | 0.12 | 0.941 |  |  |  |  |  |
| 021                                                                                                                                                                                                                | 41.1     | 0.501    | 0.308    | 1.626    | -0.246   | 0.701                  | 27.7     | 7.7      | 28.8                   | 15.6                  | 70.2                  | 72.8                  | 25.7                  | 77.3                                | 19.4                  | 1.00                     | 0.00                      | 0.1  | 0.1  | 0.951 |  |  |  |  |  |
| 022                                                                                                                                                                                                                | 41.1     | 0.504    | 0.311    | 1.621    | -0.236   | 0.699                  | 27.5     | 8.1      | 28.7                   | 16.5                  | 70.2                  | 72.4                  | 27.4                  | 77.4                                | 20.7                  | 1.00                     | 0.00                      | 0.08 | 0.08 | 0.961 |  |  |  |  |  |
| 023                                                                                                                                                                                                                | 41.1     | 0.507    | 0.314    | 1.616    | -0.226   | 0.697                  | 27.4     | 8.6      | 28.7                   | 17.4                  | 70.2                  | 72.0                  | 29.1                  | 77.6                                | 22.0                  | 1.00                     | 0.00                      | 0.06 | 0.06 | 0.971 |  |  |  |  |  |
| 024                                                                                                                                                                                                                | 41.1     | 0.51     | 0.317    | 1.611    | -0.216   | 0.696                  | 27.2     | 9.0      | 28.6                   | 18.3                  | 70.3                  | 71.5                  | 30.8                  | 77.7                                | 23.3                  | 1.00                     | 0.00                      | 0.03 | 0.03 | 0.981 |  |  |  |  |  |
| 025                                                                                                                                                                                                                | 41.1     | 0.514    | 0.319    | 1.606    | -0.207   | 0.694                  | 27.0     | 9.3      | 28.6                   | 19.1                  | 70.3                  | 71.1                  | 32.5                  | 78.2                                | 24.6                  | 1.00                     | 0.00                      | 0.01 | 0.01 | 0.991 |  |  |  |  |  |
| 026                                                                                                                                                                                                                | 41.2     | 0.517    | 0.322    | 1.601    | -0.198   | 0.693                  | 26.8     | 9.7      | 28.5                   | 20.0                  | 70.3                  | 70.7                  | 34.3                  | 78.6                                | 25.9                  | 1.00                     | 0.00                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 027                                                                                                                                                                                                                | 41.2     | 0.52     | 0.326    | 1.597    | -0.187   | 0.692                  | 26.6     | 10.2     | 28.5                   | 20.9                  | 70.3                  | 70.3                  | 36.4                  | 79.2                                | 27.4                  | 1.00                     | 0.02                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 028                                                                                                                                                                                                                | 41.2     | 0.525    | 0.329    | 1.593    | -0.176   | 0.692                  | 26.5     | 10.6     | 28.5                   | 21.9                  | 70.3                  | 69.9                  | 38.7                  | 79.9                                | 28.9                  | 1.00                     | 0.03                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 029                                                                                                                                                                                                                | 41.2     | 0.528    | 0.332    | 1.588    | -0.165   | 0.693                  | 26.3     | 11.1     | 28.6                   | 22.8                  | 70.3                  | 69.5                  | 40.9                  | 80.7                                | 30.4                  | 1.00                     | 0.05                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 030                                                                                                                                                                                                                | 41.3     | 0.532    | 0.336    | 1.584    | -0.155   | 0.693                  | 26.2     | 11.5     | 28.6                   | 23.8                  | 70.3                  | 69.1                  | 43.2                  | 81.5                                | 31.9                  | 1.00                     | 0.06                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 031                                                                                                                                                                                                                | 41.3     | 0.536    | 0.339    | 1.58     | -0.145   | 0.693                  | 26.0     | 11.9     | 28.6                   | 24.6                  | 70.4                  | 68.8                  | 45.5                  | 82.5                                | 33.4                  | 1.00                     | 0.08                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 032                                                                                                                                                                                                                | 41.3     | 0.54     | 0.342    | 1.576    | -0.136   | 0.694                  | 25.9     | 12.3     | 28.7                   | 25.5                  | 70.4                  | 68.4                  | 47.8                  | 83.5                                | 34.9                  | 1.00                     | 0.09                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 033                                                                                                                                                                                                                | 41.3     | 0.544    | 0.345    | 1.572    | -0.127   | 0.694                  | 25.7     | 12.7     | 28.7                   | 26.3                  | 70.4                  | 68.1                  | 50.1                  | 84.5                                | 36.3                  | 1.00                     | 0.11                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 034                                                                                                                                                                                                                | 41.3     | 0.547    | 0.348    | 1.569    | -0.118   | 0.695                  | 25.6     | 13.1     | 28.7                   | 27.1                  | 70.4                  | 67.7                  | 52.4                  | 85.6                                | 37.7                  | 1.00                     | 0.12                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 035                                                                                                                                                                                                                | 41.4     | 0.55     | 0.351    | 1.565    | -0.11    | 0.695                  | 25.4     | 13.4     | 28.8                   | 27.8                  | 70.4                  | 67.4                  | 54.7                  | 86.8                                | 39.0                  | 1.00                     | 0.13                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 036                                                                                                                                                                                                                | 41.4     | 0.554    | 0.354    | 1.561    | -0.102   | 0.696                  | 25.3     | 13.8     | 28.8                   | 28.5                  | 70.4                  | 67.1                  | 57.0                  | 88.1                                | 40.3                  | 1.00                     | 0.15                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 037                                                                                                                                                                                                                | 41.4     | 0.557    | 0.357    | 1.558    | -0.094   | 0.696                  | 25.1     | 14.1     | 28.8                   | 29.2                  | 70.4                  | 66.7                  | 59.4                  | 89.3                                | 41.6                  | 1.00                     | 0.16                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 038                                                                                                                                                                                                                | 41.4     | 0.56     | 0.36     | 1.554    | -0.087   | 0.697                  | 25.0     | 14.4     | 28.9                   | 29.9                  | 70.5                  | 66.4                  | 61.7                  | 90.7                                | 42.8                  | 1.00                     | 0.18                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 039                                                                                                                                                                                                                | 41.5     | 0.563    | 0.363    | 1.55     | -0.08    | 0.697                  | 24.9     | 14.7     | 28.9                   | 30.5                  | 70.5                  | 66.1                  | 64.0                  | 92.0                                | 44.0                  | 1.00                     | 0.19                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 040                                                                                                                                                                                                                | 41.5     | 0.566    | 0.365    | 1.547    | -0.074   | 0.697                  | 24.7     | 15.0     | 28.9                   | 31.1                  | 70.5                  | 65.8                  | 66.3                  | 93.3                                | 45.3                  | 1.00                     | 0.21                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 041                                                                                                                                                                                                                | 41.5     | 0.568    | 0.368    | 1.544    | -0.068   | 0.698                  | 24.6     | 15.2     | 29.0                   | 31.7                  | 70.5                  | 65.5                  | 68.7                  | 94.9                                | 46.3                  | 1.00                     | 0.22                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 042                                                                                                                                                                                                                | 41.5     | 0.571    | 0.37     | 1.54     | -0.062   | 0.698                  | 24.5     | 15.4     | 29.0                   | 32.2                  | 70.5                  | 65.2                  | 71.0                  | 96.4                                | 47.4                  | 1.00                     | 0.24                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 043                                                                                                                                                                                                                | 41.5     | 0.573    | 0.372    | 1.537    | -0.057   | 0.698                  | 24.4     | 15.5     | 29.0                   | 32.7                  | 70.5                  | 64.9                  | 73.2                  | 97.9                                | 48.4                  | 1.00                     | 0.25                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 044                                                                                                                                                                                                                | 41.6     | 0.575    | 0.375    | 1.534    | -0.052   | 0.698                  | 24.3     | 15.9     | 29.0                   | 33.2                  | 70.5                  | 64.6                  | 75.5                  | 99.4                                | 49.4                  | 1.00                     | 0.27                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 045                                                                                                                                                                                                                | 41.6     | 0.577    | 0.377    | 1.531    | -0.047   | 0.698                  | 24.1     | 16.1     | 29.0                   | 33.7                  | 70.6                  | 64.3                  | 77.8                  | 100.9                               | 50.4                  | 1.00                     | 0.28                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 046                                                                                                                                                                                                                | 41.6     | 0.579    | 0.379    | 1.528    | -0.043   | 0.698                  | 24.0     | 16.3     | 29.0                   | 34.1                  | 70.6                  | 64.0                  | 80.0                  | 102.5                               | 51.3                  | 1.00                     | 0.3                       | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 047                                                                                                                                                                                                                | 41.6     | 0.581    | 0.381    | 1.525    | -0.039   | 0.698                  | 23.9     | 16.5     | 29.0                   | 34.5                  | 70.6                  | 63.8                  | 82.2                  | 104.1                               | 52.2                  | 1.00                     | 0.31                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 048                                                                                                                                                                                                                | 41.6     | 0.583    | 0.382    | 1.523    | -0.035   | 0.698                  | 23.8     | 16.6     | 29.1                   | 34.9                  | 70.6                  | 63.5                  | 84.4                  | 105.7                               | 53.0                  | 1.00                     | 0.33                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 049                                                                                                                                                                                                                | 41.6     | 0.584    | 0.384    | 1.52     | -0.032   | 0.698                  | 23.7     | 16.8     | 29.1                   | 35.2                  | 70.6                  | 63.3                  | 86.6                  | 107.3                               | 53.8                  | 1.00                     | 0.34                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |
| 050                                                                                                                                                                                                                | 41.7     | 0.585    | 0.386    | 1.517    | -0.029   | 0.697                  | 23.6     | 16.9     | 29.1                   | 35.6                  | 70.6                  | 63.0                  | 88.8                  | 108.9                               | 54.6                  | 1.00                     | 0.36                      | 0.00 | 0.00 | 0.00  |  |  |  |  |  |

| rgb <sub>cab</sub> and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65                                    |                  |                                        |       |       |               |       |       |               |      |       |               |                 |       |       |       |      |      |                   |                   |                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------|-------|-------|---------------|-------|-------|---------------|------|-------|---------------|-----------------|-------|-------|-------|------|------|-------------------|-------------------|--------------------|
| Yxy, abc <sub>AB</sub> , ABC <sub>AB</sub> , LabC <sub>ab</sub> data for relative spacing of elementary hue h <sub>ab</sub> of CIELAB for CIE 2 degree observer |                  |                                        |       |       |               |       |       |               |      |       |               |                 |       |       |       |      |      |                   |                   |                    |
| Elementary hue circle with 4 intended elementary hue angles: h <sub>ab</sub> = 25.6, 92.4, 162.1, 271.5 of CIELAB, and 90 intended hue angles:                  |                  |                                        |       |       |               |       |       |               |      |       |               |                 |       |       |       |      |      |                   |                   |                    |
| no.                                                                                                                                                             | 90.01, ..., 179, | CIELAB data of CIE test colours 9 (R): | 40.0  | 58.9  | 28.3, 10 (Y): | 81.3  | -3.0  | 71.8, 11 (G): | 52.2 | -42.3 | 13.6, 12 (B): | 30.5            | 1.2   | -46.3 |       |      |      |                   |                   |                    |
| no.                                                                                                                                                             | ab               | Y                                      | x     | y     | a             | b     | c     | AB            | A    | B     | AB            | h <sub>AB</sub> | Y     | a*    | b*    | C*   | ab   | rgb <sub>ab</sub> | rgb <sub>ab</sub> | Code <sub>ab</sub> |
| 990                                                                                                                                                             | 80.7             | 0.483                                  | 0.509 | 0.948 | -0.005        | 0.43  | -0.1  | 34.7          | 34.7 | 90.3  | 92.0          | -0.3            | 143.4 | 143.4 | 90.1  | 1.00 | 0.96 | 0.00              | % R90Y            |                    |
| 991                                                                                                                                                             | 81.9             | 0.479                                  | 0.512 | 0.905 | -0.005        | 0.43  | -1.2  | 35.2          | 35.2 | 92.0  | 92.5          | -2.5            | 143.0 | 143.0 | 91.0  | 1.00 | 0.97 | 0.00              | % R91Y            |                    |
| 992                                                                                                                                                             | 83.5             | 0.477                                  | 0.516 | 0.919 | -0.006        | 0.43  | -2.6  | 35.8          | 35.9 | 94.1  | 93.2          | -5.2            | 142.2 | 142.3 | 92.1  | 1.00 | 0.99 | 0.00              | % R92Y            |                    |
| 993                                                                                                                                                             | 84.8             | 0.47                                   | 0.519 | 0.906 | -0.007        | 0.43  | -3.7  | 36.3          | 36.5 | 95.8  | 93.8          | -7.4            | 140.8 | 141.0 | 93.0  | 0.99 | 1.00 | 0.00              | % R90G            |                    |
| 994                                                                                                                                                             | 86.0             | 0.466                                  | 0.522 | 0.893 | -0.008        | 0.43  | -4.8  | 36.7          | 37.0 | 97.5  | 94.3          | -9.6            | 138.9 | 139.2 | 93.9  | 0.97 | 1.00 | 0.00              | % R92G            |                    |
| 995                                                                                                                                                             | 87.3             | 0.462                                  | 0.524 | 0.881 | -0.009        | 0.431 | -6.0  | 37.1          | 37.6 | 99.2  | 94.8          | -11.9           | 136.8 | 137.3 | 94.9  | 0.96 | 1.00 | 0.00              | % R93G            |                    |
| 996                                                                                                                                                             | 88.6             | 0.457                                  | 0.526 | 0.868 | -0.011        | 0.432 | -7.2  | 37.5          | 38.2 | 100.9 | 95.4          | -14.1           | 134.5 | 135.3 | 96.0  | 0.94 | 1.00 | 0.00              | % R95G            |                    |
| 997                                                                                                                                                             | 89.8             | 0.453                                  | 0.528 | 0.857 | -0.013        | 0.432 | -8.3  | 37.9          | 38.8 | 102.6 | 95.9          | -16.3           | 132.3 | 133.3 | 97.0  | 0.93 | 1.00 | 0.00              | % R96G            |                    |
| 998                                                                                                                                                             | 91.1             | 0.448                                  | 0.530 | 0.845 | -0.015        | 0.432 | -9.5  | 38.2          | 39.4 | 104.8 | 96.4          | -18.5           | 129.5 | 130.8 | 98.1  | 0.91 | 1.00 | 0.00              | % R98G            |                    |
| 999                                                                                                                                                             | 92.0             | 0.444                                  | 0.53  | 0.836 | -0.018        | 0.432 | -10.4 | 38.3          | 39.7 | 105.2 | 96.8          | -20.2           | 126.4 | 128.0 | 99.0  | 0.9  | 1.00 | 0.00              | % Y90G            |                    |
| 100                                                                                                                                                             | 93.8             | 0.445                                  | 0.526 | 0.846 | -0.021        | 0.426 | -9.8  | 38.8          | 40.0 | 104.1 | 97.5          | -18.6           | 123.6 | 125.0 | 98.5  | 0.89 | 1.00 | 0.00              | % Y91G            |                    |
| 101                                                                                                                                                             | 93.8             | 0.435                                  | 0.529 | 0.822 | -0.026        | 0.429 | -12.0 | 38.4          | 40.2 | 107.3 | 97.5          | -23.0           | 119.1 | 121.3 | 100.9 | 0.87 | 1.00 | 0.00              | % Y12G            |                    |
| 102                                                                                                                                                             | 93.4             | 0.432                                  | 0.532 | 0.813 | -0.026        | 0.431 | -12.8 | 38.2          | 40.2 | 108.5 | 97.3          | -24.7           | 118.5 | 121.0 | 101.8 | 0.86 | 1.00 | 0.00              | % Y13G            |                    |
| 103                                                                                                                                                             | 92.9             | 0.429                                  | 0.534 | 0.804 | -0.027        | 0.434 | -13.6 | 37.9          | 40.3 | 109.7 | 97.2          | -26.4           | 117.9 | 120.8 | 102.6 | 0.84 | 1.00 | 0.00              | % Y15G            |                    |
| 104                                                                                                                                                             | 92.5             | 0.426                                  | 0.536 | 0.794 | -0.027        | 0.436 | -14.4 | 37.9          | 40.4 | 110.8 | 97.0          | -28.2           | 117.3 | 120.6 | 103.5 | 0.83 | 1.00 | 0.00              | % Y16G            |                    |
| 105                                                                                                                                                             | 92.0             | 0.423                                  | 0.539 | 0.785 | -0.027        | 0.44  | -15.2 | 37.5          | 40.5 | 112.0 | 96.8          | -30.0           | 116.7 | 120.5 | 104.4 | 0.81 | 1.00 | 0.00              | % Y18G            |                    |
| 106                                                                                                                                                             | 91.5             | 0.421                                  | 0.541 | 0.775 | -0.028        | 0.443 | -16.0 | 37.2          | 40.6 | 113.2 | 96.6          | -31.8           | 115.4 | 120.4 | 105.3 | 0.8  | 1.00 | 0.00              | % Y19G            |                    |
| 107                                                                                                                                                             | 91.0             | 0.416                                  | 0.544 | 0.765 | -0.028        | 0.447 | -16.8 | 37.0          | 40.7 | 114.4 | 96.4          | -33.8           | 115.4 | 120.3 | 106.3 | 0.79 | 1.00 | 0.00              | % Y20G            |                    |
| 108                                                                                                                                                             | 90.5             | 0.412                                  | 0.547 | 0.754 | -0.029        | 0.451 | -17.7 | 36.8          | 40.8 | 115.7 | 96.2          | -35.7           | 114.8 | 120.2 | 107.3 | 0.77 | 1.00 | 0.00              | % Y22G            |                    |
| 109                                                                                                                                                             | 90.0             | 0.409                                  | 0.549 | 0.744 | -0.029        | 0.455 | -18.5 | 36.5          | 40.9 | 116.9 | 96.0          | -37.7           | 114.2 | 120.2 | 108.3 | 0.76 | 1.00 | 0.00              | % Y23G            |                    |
| 110                                                                                                                                                             | 89.5             | 0.405                                  | 0.552 | 0.733 | -0.03         | 0.459 | -19.4 | 36.2          | 41.1 | 118.1 | 95.8          | -39.8           | 113.5 | 120.3 | 109.3 | 0.74 | 1.00 | 0.00              | % Y25G            |                    |
| 111                                                                                                                                                             | 88.9             | 0.401                                  | 0.555 | 0.722 | -0.03         | 0.464 | -20.2 | 36.0          | 41.3 | 119.3 | 95.5          | -41.9           | 112.8 | 120.4 | 110.3 | 0.73 | 1.00 | 0.00              | % Y26G            |                    |
| 112                                                                                                                                                             | 88.4             | 0.397                                  | 0.558 | 0.712 | -0.031        | 0.469 | -21.0 | 35.7          | 41.5 | 120.5 | 95.3          | -44.0           | 112.1 | 120.5 | 111.4 | 0.71 | 1.00 | 0.00              | % Y28G            |                    |
| 113                                                                                                                                                             | 87.8             | 0.393                                  | 0.561 | 0.701 | -0.031        | 0.474 | -21.8 | 35.4          | 41.6 | 121.6 | 95.1          | -46.1           | 111.5 | 120.6 | 112.4 | 0.7  | 1.00 | 0.00              | % Y29G            |                    |
| 114                                                                                                                                                             | 87.2             | 0.389                                  | 0.564 | 0.69  | -0.032        | 0.48  | -22.7 | 35.2          | 41.8 | 122.8 | 94.8          | -48.3           | 110.8 | 120.8 | 113.5 | 0.69 | 1.00 | 0.00              | % Y30G            |                    |
| 115                                                                                                                                                             | 86.7             | 0.385                                  | 0.567 | 0.679 | -0.032        | 0.485 | -23.5 | 34.9          | 42.1 | 123.9 | 94.6          | -50.5           | 110.1 | 121.1 | 114.6 | 0.67 | 1.00 | 0.00              | % Y32G            |                    |
| 116                                                                                                                                                             | 86.1             | 0.381                                  | 0.57  | 0.668 | -0.033        | 0.491 | -24.3 | 34.6          | 42.3 | 125.0 | 94.3          | -52.7           | 109.3 | 121.4 | 115.7 | 0.66 | 1.00 | 0.00              | % Y33G            |                    |
| 117                                                                                                                                                             | 85.5             | 0.377                                  | 0.573 | 0.657 | -0.034        | 0.497 | -25.0 | 34.3          | 42.5 | 126.1 | 94.1          | -54.9           | 108.6 | 121.7 | 116.8 | 0.64 | 1.00 | 0.00              | % Y35G            |                    |
| 118                                                                                                                                                             | 84.9             | 0.372                                  | 0.577 | 0.646 | -0.034        | 0.503 | -25.8 | 34.0          | 42.7 | 127.1 | 93.8          | -57.1           | 107.9 | 122.1 | 117.8 | 0.63 | 1.00 | 0.00              | % Y36G            |                    |
| 119                                                                                                                                                             | 84.3             | 0.368                                  | 0.58  | 0.635 | -0.035        | 0.509 | -26.5 | 33.7          | 42.9 | 128.2 | 93.6          | -59.3           | 107.2 | 122.5 | 118.9 | 0.61 | 1.00 | 0.00              | % Y38G            |                    |
| 120                                                                                                                                                             | 83.8             | 0.364                                  | 0.583 | 0.624 | -0.035        | 0.515 | -27.3 | 33.4          | 43.2 | 129.2 | 93.3          | -61.5           | 106.5 | 123.0 | 120.0 | 0.6  | 1.00 | 0.00              | % Y39G            |                    |
| 121                                                                                                                                                             | 83.2             | 0.359                                  | 0.586 | 0.613 | -0.036        | 0.522 | -28.0 | 33.2          | 43.4 | 130.3 | 93.1          | -63.8           | 105.7 | 123.5 | 121.0 | 0.59 | 1.00 | 0.00              | % Y40G            |                    |
| 122                                                                                                                                                             | 82.6             | 0.355                                  | 0.589 | 0.603 | -0.037        | 0.528 | -28.7 | 32.9          | 43.6 | 131.4 | 92.9          | -66.0           | 104.9 | 124.0 | 122.1 | 0.57 | 1.00 | 0.00              | % Y42G            |                    |
| 123                                                                                                                                                             | 82.0             | 0.351                                  | 0.592 | 0.592 | -0.037        | 0.535 | -29.3 | 32.6          | 43.9 | 131.9 | 92.5          | -68.2           | 104.3 | 124.6 | 123.1 | 0.56 | 1.00 | 0.00              | % Y43G            |                    |
| 124                                                                                                                                                             | 81.4             | 0.346                                  | 0.595 | 0.582 | -0.038        | 0.541 | -30.0 | 32.3          | 44.1 | 132.8 | 92.3          | -70.3           | 103.5 | 125.2 | 124.1 | 0.54 | 1.00 | 0.00              | % Y45G            |                    |
| 125                                                                                                                                                             | 80.8             | 0.342                                  | 0.598 | 0.572 | -0.039        | 0.548 | -30.6 | 32.0          | 44.3 | 133.6 | 92.0          | -72.5           | 102.8 | 125.8 | 125.1 | 0.53 | 1.00 | 0.00              | % Y46G            |                    |
| 126                                                                                                                                                             | 80.3             | 0.338                                  | 0.601 | 0.561 | -0.039        | 0.554 | -31.2 | 31.7          | 44.5 | 134.4 | 91.8          | -74.6           | 102.1 | 126.5 | 126.1 | 0.51 | 1.00 | 0.00              | % Y48G            |                    |
| 127                                                                                                                                                             | 79.7             | 0.333                                  | 0.604 | 0.552 | -0.04         | 0.561 | -31.7 | 31.5          | 44.7 | 135.2 | 91.5          | -76.7           | 101.3 | 127.1 | 127.1 | 0.5  | 1.00 | 0.00              | % Y49G            |                    |
| 128                                                                                                                                                             | 79.2             | 0.329                                  | 0.607 | 0.542 | -0.041        | 0.567 | -32.3 | 31.2          | 44.9 | 135.9 | 91.3          | -78.8           | 100.6 | 127.8 | 128.0 | 0.48 | 1.00 | 0.00              | % Y51G            |                    |
| 129                                                                                                                                                             | 78.6             | 0.325                                  | 0.61  | 0.532 | -0.042        | 0.574 | -32.8 | 30.9          | 45.1 | 136.7 | 91.0          | -81.0           | 99.8  | 128.6 | 129.0 | 0.47 | 1.00 | 0.00              | % Y52G            |                    |
| 130                                                                                                                                                             | 77.7             | 0.318                                  | 0.614 | 0.519 | -0.043        | 0.581 | -33.5 | 30.6          | 45.3 | 137.5 | 90.8          | -83.9           | 98.5  | 129.4 | 130.4 | 0.46 | 1.00 | 0.00              | % Y53G            |                    |
| 131                                                                                                                                                             | 76.9             | 0.312                                  | 0.617 | 0.506 | -0.045        | 0.591 | -34.1 | 30.0          | 45.4 | 138.6 | 90.2          | -86.7           | 97.2  | 130.2 | 131.7 | 0.44 | 1.00 | 0.00              | % Y55G            |                    |
| 132                                                                                                                                                             | 76.1             | 0.307                                  | 0.62  | 0.494 | -0.046        | 0.599 | -34.6 | 29.6          | 45.6 | 139.5 | 89.9          | -89.2           | 95.9  | 131.0 | 132.9 | 0.43 | 1.00 | 0.00              | % Y56G            |                    |
| 133                                                                                                                                                             | 75.3             | 0.301                                  | 0.623 | 0.483 | -0.048        | 0.606 | -35.1 | 29.2          | 45.7 | 140.2 | 89.5          | -91.6           | 94.7  | 131.8 | 134.0 | 0.41 | 1.00 | 0.00              | % Y58G            |                    |
| 134                                                                                                                                                             | 74.6             | 0.296                                  | 0.625 | 0.473 | -0.049        | 0.613 | -35.5 | 28.8          | 45.7 | 141.0 | 89.2          | -93.9           | 93.4  | 132.5 | 135.1 | 0.4  | 1.00 | 0.00              | % Y59G            |                    |
| 135                                                                                                                                                             | 73.9             | 0.291                                  | 0.627 | 0.464 | -0.051        | 0.619 | -35.9 | 28.4          | 45.8 | 141.6 | 88.9          | -96.0           | 92.2  | 133.1 | 136.1 | 0.38 | 1.00 | 0.00              | % Y61G            |                    |
| 136                                                                                                                                                             | 73.3             | 0.286                                  | 0.629 | 0.455 | -0.052        | 0.625 | -36.2 | 28.0          | 45.8 | 142.2 | 88.5          | -98.0           | 91.0  | 133.7 | 137.1 | 0.37 | 1.00 | 0.00              | % Y62G            |                    |
| 137                                                                                                                                                             | 72.6             | 0.282                                  | 0.631 | 0.447 | -0.054        | 0.631 | -36.5 | 27.6          | 45.8 | 142.8 | 88.2          | -100.0          | 89.9  | 134.3 | 138.0 | 0.36 | 1.00 | 0.00              | % Y63G            |                    |
| 138                                                                                                                                                             | 72.0             | 0.277                                  | 0.632 | 0.439 | -0.056        | 0.636 | -36.8 | 27.3          | 45.8 | 143.4 | 87.9          | -101.6          | 88.6  | 134.8 | 138.8 | 0.34 | 1.00 | 0.00              | % Y65G            |                    |
| 139                                                                                                                                                             | 71.4             | 0.274                                  | 0.633 | 0.432 | -0.058        | 0.641 | -37.0 | 26.9          | 45.8 | 143.9 | 87.7          | -103.2          | 87.4  | 135.2 | 139.7 | 0.33 | 1.00 | 0.00              | % Y66G            |                    |
| 140                                                                                                                                                             | 70.9             | 0.27                                   | 0.634 | 0.425 | -0.059        | 0.645 | -37.2 | 26.6          | 45.8 | 144.3 | 87.4          | -104.7          | 86.3  | 135.6 | 140.4 | 0.31 | 1.00 | 0.00              | % Y68G            |                    |
| 141                                                                                                                                                             | 70.3             | 0.266                                  | 0.635 | 0.419 | -0.061        | 0.649 | -37.3 | 26.3          | 45.7 | 144.8 | 87.1          | -106.1          | 85.1  | 136.0 | 141.2 | 0.3  | 1.00 | 0.00              | % Y69G            |                    |
| 142                                                                                                                                                             | 69.8             | 0.262                                  | 0.635 | 0.413 | -0.063        | 0.653 | -37.5 | 25.9          | 45.6 | 145.3 | 86.9          | -107.5          | 83.9  | 136.4 | 142.0 | 0.28 | 1.00 | 0.00              | % Y71G            |                    |
| 143                                                                                                                                                             | 69.0             | 0.256                                  | 0.636 | 0.403 | -0.067        | 0.659 | -37.7 | 25.4          | 45.5 | 146.0 | 86.5          | -109.7          | 81.9  | 136.9 | 143.2 | 0.27 | 1.00 | 0.00              | % Y72G            |                    |
| 144                                                                                                                                                             | 68.3             | 0.251                                  | 0.636 | 0.395 | -0.07         | 0.664 | -37.9 | 24.9          | 45.3 | 146.6 | 86.1          | -111.7          | 80.0  | 137.4 | 144.3 | 0.26 | 1.00 | 0.00              | % Y73G            |                    |
| 145                                                                                                                                                             | 67.6             | 0.246                                  | 0.635 | 0.387 | -0.074        | 0.668 | -38.0 | 24.4          | 45.2 | 147.3 | 85.8          | -113.4          | 78.3  | 137.7 | 145.4 | 0.24 | 1.00 | 0.00              | % Y75G            |                    |
| 146                                                                                                                                                             | 67.0             | 0.241                                  | 0.634 | 0.38  | -0.076        | 0.672 | -38.1 | 23.9          | 45.0 | 148.0 | 85.5          | -114.8          | 76.2  | 137.9 | 146.3 | 0.23 | 1.00 | 0.00              | % Y76G            |                    |
| 147                                                                                                                                                             | 66.4             | 0.237                                  | 0.632 | 0.373 | -0.078        | 0.675 | -38.2 | 23.5          | 44.8 | 148.5 | 85.2          | -116.2          | 74.5  | 138.0 | 147.2 | 0.21 | 1.00 | 0.00              | % Y78G            |                    |
| 148                                                                                                                                                             | 65.9             | 0.233                                  | 0.631 | 0.37  | -0.085        | 0.677 | -38.2 | 23.0          | 44.6 | 148.9 | 84.9          | -117.4          | 72.7  | 138.1 | 148.2 | 0.2  | 1.00 | 0.00              | % Y79G            |                    |
| 149                                                                                                                                                             | 65.4             | 0.229                                  | 0.628 | 0.365 | -0.09         | 0.679 | -38.2 | 22.6          | 44.4 | 149.4 | 84.7          | -118.4          | 70.9  | 138.0 | 149.0 | 0.18 | 1.00 | 0.00              | % Y81G            |                    |
| 150                                                                                                                                                             | 65.4             | 0.229                                  | 0.628 | 0.365 | -0.09         | 0.679 | -38.2 | 22.6          | 44.4 | 149.4 | 84.7          | -118.4          | 70.9  | 138.0 | 149.0 | 0.17 | 1.00 | 0.00              | % Y82G            |                    |
| 151                                                                                                                                                             | 65.4             | 0.229                                  | 0.628 | 0.365 | -0.09         | 0.679 | -38.2 | 22.6          | 44.4 | 149.4 | 84.7          | -118.4          | 70.9  | 138.0 | 149.0 | 0.15 | 1.00 | 0.00              | % Y84G            |                    |
| 152                                                                                                                                                             | 65.4             | 0.229                                  | 0.628 | 0.365 |               |       |       |               |      |       |               |                 |       |       |       |      |      |                   |                   |                    |

**rgb<sub>cab</sub>** and CIE data of a elementary hie circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65

**Xyy<sub>cab</sub>, ABC<sub>AB</sub>, LabC<sub>ab</sub>** h<sub>ab</sub> data for relative spacing of elementary hie h<sub>ab</sub> of CIELAB for CIE 2 degree observer

**Elementary hie circle with 4 centered elementary hie angles: h<sub>ab</sub> = 25.6, 92.4, 162.1, 271.5 of CIE** **100, 90** intended hue angles:

**180, 181, ..., 269, CIELAB data of CIE test colours 9 (R): 40.0 58.9 28.3, 10 (Y): 81.3 -3.0 71.8, 11 (G): 52.2 -42.3 13.6, 12 (B): 30.5 1.2 -46.3**

| no. | ab   | Y     | x     | y     | a      | b     | C <sub>ab</sub> | A     | B    | C <sub>AB</sub> | h <sub>AB</sub> | L*     | a*    | b*    | C <sub>ab</sub> | h <sub>AB</sub> | rgb <sub>cab</sub> | Code <sub>ab</sub> |      |
|-----|------|-------|-------|-------|--------|-------|-----------------|-------|------|-----------------|-----------------|--------|-------|-------|-----------------|-----------------|--------------------|--------------------|------|
| 180 | 59.2 | 0.168 | 0.394 | 0.416 | -0.423 | 0.534 | -31.6           | 0.7   | 31.6 | 178.6           | 81.4            | -100.9 | 1.5   | 199.9 | 179.0           | 0.00            | 1.00               | 0.32               | G168 |
| 181 | 59.1 | 0.168 | 0.397 | 0.422 | -0.436 | 0.528 | -31.2           | 0.8   | 31.2 | 180.0           | 81.3            | -99.4  | 0.0   | 99.4  | 180.0           | 0.00            | 1.00               | 0.34               | G17B |
| 182 | 59.1 | 0.167 | 0.391 | 0.427 | -0.449 | 0.522 | -30.9           | -0.8  | 30.9 | 181.5           | 81.3            | -98.0  | -1.7  | 98.0  | 181.0           | 0.00            | 1.00               | 0.36               | G18B |
| 183 | 59.1 | 0.167 | 0.386 | 0.433 | -0.462 | 0.517 | -30.5           | -1.6  | 30.5 | 183.0           | 81.3            | -96.5  | -3.4  | 96.6  | 182.0           | 0.00            | 1.00               | 0.38               | G19B |
| 184 | 59.0 | 0.167 | 0.38  | 0.439 | -0.476 | 0.512 | -30.1           | -2.4  | 30.2 | 184.5           | 81.3            | -95.0  | -5.0  | 95.2  | 183.0           | 0.00            | 1.00               | 0.39               | G19B |
| 185 | 59.0 | 0.166 | 0.374 | 0.445 | -0.489 | 0.507 | -29.8           | -3.2  | 29.9 | 186.1           | 81.3            | -93.6  | -6.7  | 93.8  | 184.0           | 0.00            | 1.00               | 0.41               | G20B |
| 186 | 59.0 | 0.166 | 0.368 | 0.451 | -0.503 | 0.503 | -29.4           | -4.0  | 29.7 | 187.7           | 81.3            | -92.1  | -8.3  | 92.5  | 185.1           | 0.00            | 1.00               | 0.43               | G21B |
| 187 | 58.9 | 0.166 | 0.363 | 0.457 | -0.517 | 0.499 | -29.0           | -4.8  | 29.4 | 189.4           | 81.2            | -90.6  | -9.9  | 91.2  | 186.2           | 0.00            | 1.00               | 0.45               | G22B |
| 188 | 58.9 | 0.166 | 0.358 | 0.463 | -0.531 | 0.496 | -28.7           | -5.6  | 29.2 | 191.1           | 81.2            | -89.2  | -11.5 | 89.9  | 187.3           | 0.00            | 1.00               | 0.47               | G23B |
| 189 | 58.9 | 0.165 | 0.352 | 0.469 | -0.545 | 0.493 | -28.3           | -6.4  | 29.0 | 192.8           | 81.2            | -87.7  | -13.0 | 88.7  | 188.4           | 0.00            | 1.00               | 0.49               | G24B |
| 190 | 58.9 | 0.165 | 0.347 | 0.475 | -0.559 | 0.49  | -27.9           | -7.3  | 28.8 | 194.6           | 81.2            | -86.3  | -14.5 | 87.5  | 189.5           | 0.00            | 1.00               | 0.5                | G25B |
| 191 | 58.8 | 0.165 | 0.343 | 0.481 | -0.573 | 0.488 | -27.5           | -8.1  | 28.7 | 196.3           | 81.2            | -84.9  | -16.0 | 86.4  | 190.7           | 0.00            | 1.00               | 0.52               | G26B |
| 192 | 58.8 | 0.165 | 0.338 | 0.487 | -0.587 | 0.487 | -27.2           | -8.9  | 28.6 | 198.1           | 81.2            | -83.5  | -17.5 | 85.3  | 191.8           | 0.00            | 1.00               | 0.54               | G27B |
| 193 | 58.8 | 0.164 | 0.333 | 0.493 | -0.6   | 0.485 | -26.8           | -9.7  | 28.5 | 199.8           | 81.1            | -82.2  | -18.9 | 84.3  | 192.9           | 0.00            | 1.00               | 0.56               | G28B |
| 194 | 58.7 | 0.164 | 0.328 | 0.5   | -0.616 | 0.485 | -26.4           | -10.6 | 28.4 | 201.8           | 81.1            | -80.6  | -20.5 | 83.2  | 194.2           | 0.00            | 1.00               | 0.58               | G29B |
| 195 | 58.6 | 0.164 | 0.323 | 0.507 | -0.631 | 0.484 | -26.0           | -11.5 | 28.4 | 203.8           | 81.1            | -79.0  | -22.1 | 82.0  | 195.6           | 0.00            | 1.00               | 0.6                | G30B |
| 196 | 58.6 | 0.164 | 0.319 | 0.513 | -0.646 | 0.483 | -25.5           | -12.3 | 28.4 | 205.8           | 81.0            | -77.5  | -23.5 | 81.0  | 196.8           | 0.00            | 1.00               | 0.61               | G30B |
| 197 | 58.5 | 0.163 | 0.315 | 0.52  | -0.66  | 0.485 | -25.2           | -13.1 | 28.4 | 207.6           | 81.0            | -76.1  | -24.9 | 80.1  | 198.1           | 0.00            | 1.00               | 0.63               | G31B |
| 198 | 58.5 | 0.163 | 0.311 | 0.525 | -0.673 | 0.486 | -24.8           | -13.9 | 28.4 | 209.2           | 81.0            | -74.8  | -26.1 | 79.2  | 199.2           | 0.00            | 1.00               | 0.65               | G32B |
| 199 | 58.4 | 0.163 | 0.308 | 0.531 | -0.685 | 0.488 | -24.4           | -14.6 | 28.5 | 210.8           | 80.9            | -73.6  | -27.3 | 78.5  | 200.3           | 0.00            | 1.00               | 0.67               | G33B |
| 200 | 58.3 | 0.163 | 0.304 | 0.536 | -0.697 | 0.489 | -24.1           | -15.2 | 28.5 | 212.3           | 80.9            | -72.4  | -28.3 | 77.8  | 201.3           | 0.00            | 1.00               | 0.69               | G34B |
| 201 | 58.3 | 0.163 | 0.302 | 0.541 | -0.707 | 0.491 | -23.8           | -15.8 | 28.6 | 213.6           | 80.9            | -71.4  | -29.3 | 77.1  | 202.3           | 0.00            | 1.00               | 0.71               | G35B |
| 202 | 58.3 | 0.163 | 0.299 | 0.546 | -0.716 | 0.492 | -23.5           | -16.3 | 28.7 | 214.8           | 80.9            | -70.4  | -30.1 | 76.6  | 203.1           | 0.00            | 1.00               | 0.72               | G36B |
| 203 | 58.2 | 0.163 | 0.297 | 0.551 | -0.725 | 0.493 | -23.2           | -16.8 | 28.7 | 216.0           | 80.8            | -69.5  | -30.9 | 76.1  | 203.9           | 0.00            | 1.00               | 0.74               | G37B |
| 204 | 58.2 | 0.163 | 0.295 | 0.554 | -0.732 | 0.495 | -23.0           | -17.2 | 28.8 | 216.8           | 80.8            | -68.7  | -31.6 | 75.6  | 204.6           | 0.00            | 1.00               | 0.76               | G38B |
| 205 | 58.2 | 0.163 | 0.293 | 0.557 | -0.738 | 0.496 | -22.8           | -17.6 | 28.9 | 217.6           | 80.8            | -68.0  | -32.1 | 75.2  | 205.3           | 0.00            | 1.00               | 0.78               | G39B |
| 206 | 58.6 | 0.164 | 0.292 | 0.563 | -0.741 | 0.493 | -22.6           | -17.9 | 28.9 | 218.3           | 81.1            | -66.9  | -32.5 | 74.3  | 205.9           | 0.00            | 1.00               | 0.8                | G40B |
| 207 | 57.5 | 0.162 | 0.289 | 0.562 | -0.756 | 0.503 | -22.3           | -18.4 | 28.9 | 219.6           | 80.4            | -66.6  | -33.6 | 74.6  | 206.7           | 0.00            | 1.00               | 0.82               | G41B |
| 208 | 56.2 | 0.16  | 0.286 | 0.561 | -0.773 | 0.515 | -21.8           | -19.0 | 28.9 | 221.0           | 79.7            | -66.3  | -34.8 | 74.9  | 207.7           | 0.00            | 1.00               | 0.83               | G41B |
| 209 | 54.9 | 0.158 | 0.282 | 0.56  | -0.792 | 0.528 | -21.4           | -19.6 | 29.0 | 222.5           | 78.9            | -66.0  | -36.2 | 75.3  | 208.7           | 0.00            | 1.00               | 0.85               | G42B |
| 210 | 53.5 | 0.155 | 0.278 | 0.559 | -0.813 | 0.543 | -20.9           | -20.2 | 29.0 | 224.0           | 78.1            | -65.6  | -37.6 | 75.6  | 209.7           | 0.00            | 1.00               | 0.87               | G43B |
| 211 | 52.0 | 0.153 | 0.274 | 0.558 | -0.835 | 0.55  | -20.4           | -20.8 | 29.1 | 225.6           | 77.3            | -65.2  | -39.0 | 76.0  | 210.8           | 0.00            | 1.00               | 0.89               | G44B |
| 212 | 50.7 | 0.15  | 0.269 | 0.557 | -0.858 | 0.57  | -19.9           | -21.4 | 29.2 | 227.1           | 76.4            | -64.5  | -40.4 | 76.6  | 211.9           | 0.00            | 1.00               | 0.91               | G45B |
| 213 | 49.3 | 0.148 | 0.265 | 0.557 | -0.881 | 0.594 | -19.4           | -22.0 | 29.3 | 228.5           | 75.6            | -64.4  | -41.8 | 76.8  | 213.0           | 0.00            | 1.00               | 0.92               | G46B |
| 214 | 48.2 | 0.146 | 0.262 | 0.558 | -0.902 | 0.609 | -18.9           | -22.5 | 29.4 | 229.9           | 74.9            | -63.7  | -43.0 | 76.9  | 214.0           | 0.00            | 1.00               | 0.94               | G47B |
| 215 | 47.2 | 0.144 | 0.258 | 0.559 | -0.921 | 0.623 | -18.4           | -22.9 | 29.4 | 231.2           | 74.3            | -63.0  | -44.2 | 76.9  | 215.0           | 0.00            | 1.00               | 0.96               | G48B |
| 216 | 46.2 | 0.143 | 0.255 | 0.561 | -0.94  | 0.637 | -17.9           | -23.3 | 29.4 | 232.3           | 73.7            | -62.1  | -45.2 | 76.9  | 216.0           | 0.00            | 1.00               | 0.98               | G49B |
| 217 | 45.4 | 0.142 | 0.252 | 0.564 | -0.958 | 0.65  | -17.5           | -23.7 | 29.5 | 233.5           | 73.1            | -61.3  | -46.2 | 76.7  | 216.9           | 0.00            | 0.99               | 1.00               | G50B |
| 218 | 44.5 | 0.141 | 0.249 | 0.566 | -0.976 | 0.662 | -17.0           | -24.0 | 29.5 | 234.6           | 72.6            | -60.4  | -47.1 | 76.6  | 217.9           | 0.00            | 0.97               | 1.00               | G51B |
| 219 | 43.7 | 0.14  | 0.246 | 0.569 | -0.993 | 0.675 | -16.6           | -24.4 | 29.5 | 235.6           | 72.0            | -59.5  | -48.0 | 76.5  | 218.8           | 0.00            | 1.00               | 0.99               | G52B |
| 220 | 42.9 | 0.139 | 0.243 | 0.572 | -1.012 | 0.689 | -16.2           | -24.7 | 29.6 | 236.7           | 71.4            | -58.6  | -48.9 | 76.4  | 219.8           | 0.00            | 1.00               | 1.0                | G52B |
| 221 | 42.1 | 0.138 | 0.24  | 0.575 | -1.031 | 0.703 | -15.8           | -25.1 | 29.6 | 237.6           | 71.0            | -57.7  | -49.9 | 76.3  | 220.8           | 0.00            | 0.92               | 1.00               | G53B |
| 222 | 41.3 | 0.137 | 0.237 | 0.578 | -1.05  | 0.718 | -15.3           | -25.4 | 29.7 | 238.8           | 70.4            | -56.7  | -50.8 | 76.2  | 221.8           | 0.00            | 0.9                | 1.00               | G54B |
| 223 | 40.6 | 0.136 | 0.234 | 0.582 | -1.07  | 0.734 | -14.9           | -25.8 | 29.8 | 239.9           | 69.9            | -55.7  | -51.7 | 76.0  | 222.9           | 0.00            | 0.88               | 1.00               | G55B |
| 224 | 39.8 | 0.135 | 0.231 | 0.586 | -1.091 | 0.75  | -14.4           | -26.1 | 29.8 | 240.9           | 69.3            | -54.6  | -52.7 | 75.9  | 223.9           | 0.00            | 0.86               | 1.00               | G56B |
| 225 | 39.3 | 0.135 | 0.229 | 0.589 | -1.105 | 0.761 | -14.2           | -26.3 | 29.9 | 241.6           | 68.8            | -53.9  | -53.3 | 75.8  | 224.6           | 0.00            | 0.85               | 1.00               | G57B |
| 226 | 38.7 | 0.134 | 0.227 | 0.591 | -1.12  | 0.773 | -13.9           | -26.5 | 30.0 | 242.3           | 68.6            | -53.2  | -54.0 | 75.8  | 225.4           | 0.00            | 0.83               | 1.00               | G58B |
| 227 | 38.2 | 0.134 | 0.225 | 0.59  | -1.136 | 0.786 | -13.5           | -26.8 | 30.0 | 243.3           | 68.2            | -52.4  | -54.5 | 75.7  | 226.2           | 0.00            | 0.81               | 1.00               | G59B |
| 228 | 37.6 | 0.133 | 0.222 | 0.599 | -1.154 | 0.8   | -13.2           | -27.0 | 30.1 | 243.9           | 67.7            | -51.4  | -55.4 | 75.6  | 227.1           | 0.00            | 0.79               | 1.00               | G60B |
| 229 | 37.0 | 0.133 | 0.22  | 0.603 | -1.174 | 0.816 | -12.8           | -27.3 | 30.2 | 244.8           | 67.2            | -50.3  | -56.2 | 75.5  | 228.0           | 0.00            | 0.77               | 1.00               | G61B |
| 230 | 36.3 | 0.132 | 0.217 | 0.609 | -1.197 | 0.834 | -12.3           | -27.6 | 30.2 | 245.6           | 66.7            | -49.0  | -57.1 | 75.3  | 229.3           | 0.00            | 0.75               | 1.00               | G62B |
| 231 | 35.5 | 0.131 | 0.213 | 0.616 | -1.222 | 0.855 | -11.8           | -27.9 | 30.3 | 247.0           | 66.1            | -47.5  | -58.1 | 75.1  | 230.7           | 0.00            | 0.74               | 1.00               | G62B |
| 232 | 34.9 | 0.131 | 0.211 | 0.622 | -1.244 | 0.873 | -11.4           | -28.2 | 30.4 | 247.9           | 65.5            | -46.3  | -59.0 | 75.0  | 231.8           | 0.00            | 0.72               | 1.00               | G63B |
| 233 | 34.4 | 0.131 | 0.209 | 0.626 | -1.259 | 0.885 | -11.1           | -28.4 | 30.5 | 248.5           | 65.3            | -45.4  | -59.5 | 74.9  | 232.6           | 0.00            | 0.7                | 1.00               | G64B |
| 234 | 34.0 | 0.13  | 0.207 | 0.631 | -1.275 | 0.898 | -10.8           | -28.6 | 30.6 | 249.1           | 65.0            | -44.5  | -60.1 | 74.8  | 233.4           | 0.00            | 0.68               | 1.00               | G65B |
| 235 | 33.6 | 0.13  | 0.205 | 0.635 | -1.291 | 0.911 | -10.5           | -28.7 | 30.6 | 249.8           | 64.6            | -43.6  | -60.7 | 74.7  | 234.2           | 0.00            | 0.66               | 1.00               | G66B |
| 236 | 33.2 | 0.13  | 0.203 | 0.64  | -1.308 | 0.926 | -10.2           | -28.9 | 30.7 | 250.9           | 64.3            | -42.6  | -61.3 | 74.7  | 235.1           | 0.00            | 0.64               | 1.00               | G67B |
| 237 | 32.7 | 0.13  | 0.201 | 0.645 | -1.325 | 0.941 | -9.9            | -29.1 | 30.8 | 251.0           | 63.9            | -41.6  | -61.9 | 74.6  | 236.0           | 0.00            | 0.63               | 1.00               | G68B |
| 238 | 32.3 | 0.129 | 0.199 | 0.651 | -1.344 | 0.956 | -9.6            | -29.3 | 30.9 | 251.7           | 63.5            | -40.6  | -62.5 | 74.6  | 236.9           | 0.00            | 0.61               |                    |      |

| rgb* <sub>abc</sub> and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65                                                     |      |       |       |       |        |       |      |       |      |       |                 |                 |        |       |       |                  |                 |      |      |      |      |      |      |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|-------|-------|--------|-------|------|-------|------|-------|-----------------|-----------------|--------|-------|-------|------------------|-----------------|------|------|------|------|------|------|------|
| Yxy, cab <sub>AB</sub> , ABC <sub>AB</sub> , LabC* <sub>ab</sub> h <sub>ab</sub> data for relative spacing of elementary hues h <sub>ab</sub> of CIELAB for CIE 2 degree observer |      |       |       |       |        |       |      |       |      |       |                 |                 |        |       |       |                  |                 |      |      |      |      |      |      |      |
| Elementary hue circle with 42 intended elementary hue angles: h <sub>ab</sub> = 25.6, 92.4, 162.1, 271.5 of CIELAB, and 90 intended hue angles:                                   |      |       |       |       |        |       |      |       |      |       |                 |                 |        |       |       |                  |                 |      |      |      |      |      |      |      |
| 270, 271, ..., 360, CIELAB data of CIE test colours 9 (R): 40.0 58.9 28.3, 10 (Y): 81.3 -3.0 71.8, 11 (G): 52.2 -42.3 13.6, 12 (B): 30.5 1.2 -46.3                                |      |       |       |       |        |       |      |       |      |       |                 |                 |        |       |       |                  |                 |      |      |      |      |      |      |      |
| no.                                                                                                                                                                               | ab   | Y     | x     | y     | a      | b     | c    | ab    | A    | B     | C <sub>AB</sub> | h <sub>ab</sub> | L*     | a*    | b*    | C* <sub>ab</sub> | h <sub>ab</sub> | rgb* | rgb* | ab   | ab   | ab   | ab   | Code |
| 276                                                                                                                                                                               | 19.2 | 0.127 | 0.132 | 0.961 | -2.238 | 1.893 | 0.2  | -34.7 | 34.7 | 270.3 | 51.0            | 1.1             | -83.8  | 83.8  | 270.7 | 0.00             | 0.02            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | G98B |
| 271                                                                                                                                                                               | 18.9 | 0.127 | 0.133 | 0.974 | -2.272 | 1.837 | 0.4  | -34.8 | 34.8 | 270.7 | 50.6            | 2.4             | -84.4  | 84.4  | 271.6 | 0.00             | 0.0             | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | G99B |
| 272                                                                                                                                                                               | 18.6 | 0.127 | 0.128 | 0.987 | -2.307 | 1.817 | 0.6  | -34.9 | 34.9 | 271.1 | 50.3            | 3.7             | -84.9  | 85.0  | 272.4 | 0.0              | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B00R |
| 273                                                                                                                                                                               | 18.4 | 0.127 | 0.127 | 1.0   | -2.341 | 1.906 | 0.9  | -35.0 | 35.1 | 271.5 | 49.9            | 4.9             | -85.5  | 85.6  | 273.3 | 0.02             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B01R |
| 274                                                                                                                                                                               | 18.1 | 0.127 | 0.125 | 1.014 | -2.375 | 1.94  | 1.1  | -35.1 | 35.2 | 271.8 | 49.6            | 6.1             | -86.6  | 86.2  | 274.1 | 0.04             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B02R |
| 275                                                                                                                                                                               | 17.8 | 0.127 | 0.123 | 1.03  | -2.419 | 1.985 | 1.4  | -35.3 | 35.3 | 272.3 | 49.2            | 7.7             | -86.7  | 87.1  | 275.0 | 0.06             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B03R |
| 276                                                                                                                                                                               | 17.4 | 0.127 | 0.121 | 1.05  | -2.471 | 2.038 | 1.7  | -35.4 | 35.5 | 272.8 | 48.7            | 9.5             | -87.5  | 88.0  | 276.1 | 0.07             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B05R |
| 277                                                                                                                                                                               | 17.0 | 0.127 | 0.119 | 1.07  | -2.521 | 2.089 | 2.0  | -35.5 | 35.6 | 273.2 | 48.3            | 11.1            | -88.2  | 88.9  | 277.2 | 0.09             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B08R |
| 278                                                                                                                                                                               | 16.7 | 0.127 | 0.117 | 1.089 | -2.57  | 2.139 | 2.3  | -35.7 | 35.8 | 273.7 | 47.9            | 12.8            | -89.8  | 89.8  | 278.2 | 0.11             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B10R |
| 279                                                                                                                                                                               | 16.4 | 0.128 | 0.115 | 1.108 | -2.618 | 2.188 | 2.6  | -35.8 | 35.9 | 274.1 | 47.5            | 14.4            | -89.6  | 90.7  | 279.1 | 0.13             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B06R |
| 280                                                                                                                                                                               | 16.1 | 0.128 | 0.113 | 1.128 | -2.667 | 2.238 | 2.8  | -35.9 | 36.1 | 274.5 | 47.1            | 16.0            | -90.3  | 91.7  | 280.0 | 0.14             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B07R |
| 281                                                                                                                                                                               | 15.8 | 0.128 | 0.111 | 1.149 | -2.717 | 2.29  | 3.1  | -36.1 | 36.2 | 274.9 | 46.7            | 17.6            | -90.9  | 92.6  | 280.9 | 0.16             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B08R |
| 282                                                                                                                                                                               | 15.5 | 0.128 | 0.109 | 1.171 | -2.769 | 2.344 | 3.4  | -36.2 | 36.3 | 275.4 | 46.3            | 19.3            | -91.6  | 93.6  | 281.9 | 0.18             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B09R |
| 283                                                                                                                                                                               | 15.1 | 0.129 | 0.107 | 1.195 | -2.826 | 2.403 | 3.7  | -36.3 | 36.5 | 275.8 | 45.8            | 21.2            | -92.3  | 94.7  | 282.9 | 0.2              | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B10R |
| 284                                                                                                                                                                               | 14.8 | 0.129 | 0.105 | 1.222 | -2.888 | 2.468 | 4.0  | -36.4 | 36.6 | 276.3 | 45.4            | 23.1            | -93.0  | 95.9  | 283.9 | 0.21             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B18R |
| 285                                                                                                                                                                               | 14.4 | 0.129 | 0.103 | 1.252 | -2.96  | 2.542 | 4.3  | -36.5 | 36.8 | 276.8 | 44.9            | 25.3            | -93.9  | 97.2  | 285.0 | 0.23             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B11R |
| 286                                                                                                                                                                               | 14.0 | 0.13  | 0.101 | 1.286 | -3.038 | 2.624 | 4.6  | -36.7 | 37.0 | 277.3 | 44.3            | 27.9            | -94.8  | 99.7  | 286.2 | 0.25             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B12R |
| 287                                                                                                                                                                               | 13.7 | 0.13  | 0.098 | 1.322 | -3.121 | 2.712 | 5.0  | -36.8 | 37.1 | 277.8 | 43.8            | 29.9            | -95.7  | 100.2 | 287.3 | 0.27             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B13R |
| 288                                                                                                                                                                               | 13.3 | 0.13  | 0.096 | 1.36  | -3.21  | 2.804 | 5.4  | -36.9 | 37.3 | 278.3 | 43.2            | 32.4            | -96.6  | 101.9 | 288.5 | 0.28             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B14R |
| 289                                                                                                                                                                               | 12.9 | 0.131 | 0.093 | 1.4   | -3.303 | 2.902 | 5.8  | -37.0 | 37.5 | 278.9 | 42.6            | 34.8            | -97.5  | 103.6 | 289.6 | 0.3              | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B15R |
| 290                                                                                                                                                                               | 12.5 | 0.131 | 0.091 | 1.442 | -3.401 | 3.005 | 6.1  | -37.2 | 37.7 | 279.4 | 42.0            | 37.3            | -98.5  | 105.3 | 290.7 | 0.32             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B16R |
| 291                                                                                                                                                                               | 12.1 | 0.132 | 0.088 | 1.486 | -3.503 | 3.114 | 6.5  | -37.3 | 37.8 | 279.9 | 41.4            | 39.8            | -99.4  | 107.1 | 291.8 | 0.34             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B17R |
| 292                                                                                                                                                                               | 11.7 | 0.132 | 0.086 | 1.532 | -3.609 | 3.226 | 6.8  | -37.4 | 38.0 | 280.3 | 40.8            | 42.3            | -100.4 | 108.9 | 292.8 | 0.35             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B17R |
| 293                                                                                                                                                                               | 11.4 | 0.133 | 0.084 | 1.58  | -3.719 | 3.344 | 7.2  | -37.5 | 38.2 | 280.8 | 40.3            | 44.8            | -101.3 | 110.8 | 293.8 | 0.37             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B19R |
| 294                                                                                                                                                                               | 11.0 | 0.133 | 0.081 | 1.629 | -3.833 | 3.465 | 7.5  | -37.6 | 38.3 | 281.3 | 39.7            | 47.2            | -102.2 | 112.6 | 294.8 | 0.39             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B19R |
| 295                                                                                                                                                                               | 10.7 | 0.133 | 0.079 | 1.68  | -3.95  | 3.589 | 7.8  | -37.7 | 38.5 | 281.7 | 39.1            | 49.7            | -103.1 | 114.5 | 295.7 | 0.41             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B20R |
| 296                                                                                                                                                                               | 10.4 | 0.134 | 0.077 | 1.732 | -4.069 | 3.716 | 8.1  | -37.8 | 38.7 | 282.1 | 38.5            | 52.1            | -104.0 | 116.4 | 296.6 | 0.42             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B21R |
| 297                                                                                                                                                                               | 10.1 | 0.134 | 0.075 | 1.785 | -4.19  | 3.846 | 8.4  | -37.9 | 38.8 | 282.5 | 38.0            | 54.4            | -104.9 | 118.2 | 297.4 | 0.44             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B22R |
| 298                                                                                                                                                                               | 9.8  | 0.135 | 0.073 | 1.839 | -4.312 | 3.977 | 8.7  | -38.0 | 39.0 | 282.9 | 37.4            | 56.7            | -105.8 | 120.0 | 298.2 | 0.46             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B23R |
| 299                                                                                                                                                                               | 9.4  | 0.135 | 0.071 | 1.906 | -4.465 | 4.141 | 9.0  | -38.1 | 39.1 | 283.3 | 36.8            | 59.4            | -106.8 | 122.2 | 299.1 | 0.48             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B24R |
| 300                                                                                                                                                                               | 8.9  | 0.136 | 0.067 | 2.013 | -4.707 | 4.401 | 9.5  | -38.2 | 39.3 | 283.9 | 35.8            | 63.6            | -108.3 | 125.6 | 300.4 | 0.49             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B24R |
| 301                                                                                                                                                                               | 8.5  | 0.136 | 0.064 | 2.111 | -4.925 | 4.637 | 9.9  | -38.3 | 39.5 | 284.5 | 35.0            | 67.1            | -109.5 | 128.4 | 301.4 | 0.51             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B25R |
| 302                                                                                                                                                                               | 8.1  | 0.137 | 0.062 | 2.202 | -5.123 | 4.852 | 10.2 | -38.3 | 39.6 | 285.0 | 34.0            | 70.9            | -110.6 | 131.6 | 302.5 | 0.53             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B26R |
| 303                                                                                                                                                                               | 7.8  | 0.138 | 0.06  | 2.287 | -5.31  | 5.055 | 10.5 | -38.3 | 39.8 | 285.3 | 33.7            | 72.9            | -111.5 | 133.2 | 303.1 | 0.55             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B27R |
| 304                                                                                                                                                                               | 7.2  | 0.136 | 0.056 | 2.409 | -5.715 | 5.477 | 10.6 | -38.5 | 39.9 | 285.4 | 32.4            | 75.9            | -113.5 | 136.5 | 303.7 | 0.56             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B28R |
| 305                                                                                                                                                                               | 6.4  | 0.131 | 0.05  | 2.589 | -6.422 | 6.297 | 10.5 | -38.7 | 40.1 | 285.3 | 30.5            | 79.6            | -116.5 | 141.1 | 304.3 | 0.58             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B29R |
| 306                                                                                                                                                                               | 6.0  | 0.131 | 0.047 | 2.758 | -6.887 | 6.7   | 10.8 | -38.7 | 40.2 | 285.6 | 29.4            | 83.4            | -118.2 | 144.7 | 305.2 | 0.6              | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B30R |
| 307                                                                                                                                                                               | 6.0  | 0.138 | 0.048 | 2.878 | -6.779 | 6.629 | 11.7 | -38.5 | 40.2 | 286.9 | 29.5            | 87.7            | -117.6 | 146.7 | 306.7 | 0.62             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B31R |
| 308                                                                                                                                                                               | 6.5  | 0.146 | 0.05  | 2.886 | -6.338 | 6.212 | 12.5 | -38.2 | 40.2 | 288.1 | 30.5            | 90.0            | -115.7 | 146.6 | 307.8 | 0.63             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B31R |
| 309                                                                                                                                                                               | 6.8  | 0.153 | 0.053 | 2.876 | -5.951 | 5.844 | 13.2 | -38.0 | 40.2 | 289.9 | 31.5            | 91.3            | -114.0 | 146.1 | 308.7 | 0.65             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B32R |
| 310                                                                                                                                                                               | 7.1  | 0.16  | 0.056 | 2.855 | -5.572 | 5.425 | 13.9 | -37.7 | 40.3 | 290.3 | 32.6            | 92.7            | -112.2 | 145.2 | 309.7 | 0.67             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B33R |
| 311                                                                                                                                                                               | 7.8  | 0.168 | 0.059 | 2.836 | -5.207 | 5.13  | 14.8 | -37.5 | 40.3 | 291.5 | 33.7            | 94.1            | -110.2 | 145.0 | 310.5 | 0.69             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B34R |
| 312                                                                                                                                                                               | 8.4  | 0.176 | 0.062 | 2.815 | -4.857 | 4.799 | 15.7 | -37.2 | 40.4 | 292.8 | 34.8            | 95.6            | -108.2 | 144.3 | 311.4 | 0.7              | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B35R |
| 313                                                                                                                                                                               | 9.0  | 0.184 | 0.066 | 2.794 | -4.527 | 4.487 | 16.6 | -36.9 | 40.5 | 294.2 | 36.0            | 97.0            | -106.0 | 143.7 | 312.4 | 0.72             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B36R |
| 314                                                                                                                                                                               | 9.6  | 0.193 | 0.069 | 2.771 | -4.215 | 4.196 | 17.6 | -36.6 | 40.6 | 295.7 | 37.2            | 98.4            | -103.8 | 143.1 | 313.4 | 0.74             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B37R |
| 315                                                                                                                                                                               | 10.3 | 0.202 | 0.073 | 2.748 | -3.925 | 3.925 | 18.6 | -36.2 | 40.7 | 297.2 | 38.5            | 99.8            | -101.8 | 142.4 | 314.4 | 0.76             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B38R |
| 316                                                                                                                                                                               | 11.0 | 0.211 | 0.077 | 2.724 | -3.654 | 3.675 | 19.7 | -35.8 | 40.9 | 298.8 | 39.8            | 101.1           | -99.3  | 141.8 | 315.5 | 0.77             | 0.00            | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | B38R |
| 317                                                                                                                                                                               | 11.8 | 0.221 | 0.081 | 2.697 | -      |       |      |       |      |       |                 |                 |        |       |       |                  |                 |      |      |      |      |      |      |      |

| Ostwald optimal colours (o) of maximum (m) C <sub>AB</sub> for D65, Y <sub>w,10</sub> =100, Y <sub>m</sub> =520_770, CIELAB data          |                                 |                   |                   |                   |                  |        |         |                 |                                 |                                 |      |  |   | % |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------|-------------------|-------------------|------------------|--------|---------|-----------------|---------------------------------|---------------------------------|------|--|---|---|
| i <sub>1</sub> , λ <sub>1</sub>                                                                                                           | i <sub>2</sub> , λ <sub>2</sub> | L* <sub>100</sub> | a* <sub>100</sub> | b* <sub>100</sub> | C* <sub>ab</sub> | a'     | b'      | h <sub>ab</sub> | i <sub>d</sub> , λ <sub>d</sub> | i <sub>c</sub> , λ <sub>c</sub> | Code |  | % |   |
| 0 405                                                                                                                                     | 31 556                          | 79.94             | −66.31            | −34.08            | 74.56            | 0.1807 | −0.1034 | 207.2           | 15 476                          | 37 585                          | Cm   |  | % |   |
| 6 435                                                                                                                                     | 31 557                          | 80.42             | −82.6             | −17.8             | 84.5             | 0.1724 | −0.0949 | 192.1           | 16 480                          | 44 621                          |      |  | % |   |
| 10 450                                                                                                                                    | 31 559                          | 80.48             | −108.29           | 14.97             | 109.32           | 0.1591 | −0.078  | 172.1           | 18 491                          | −1 491c                         |      |  | % |   |
| 11 460                                                                                                                                    | 32 562                          | 81.44             | −111.37           | 27.39             | 114.69           | 0.1581 | −0.0717 | 166.1           | 19 498                          | −1 498c                         |      |  | % |   |
| 12 465                                                                                                                                    | 33 565                          | 82.34             | −112.77           | 40.26             | 119.75           | 0.1579 | −0.0653 | 160.3           | 21 506                          | −1 506c                         |      |  | % |   |
| 14 470                                                                                                                                    | 34 570                          | 83.48             | −109.79           | 65.41             | 127.8            | 0.1601 | −0.053  | 149.2           | 24 522                          | −1 522c                         |      |  | % |   |
| 15 475                                                                                                                                    | 35 579                          | 86.33             | −94.64            | 81.3              | 124.77           | 0.169  | −0.0462 | 139.3           | 26 533                          | −1 533c                         | Gm   |  | % |   |
| 16 480                                                                                                                                    | 41 606                          | 92.55             | −53.33            | 102.14            | 115.22           | 0.1907 | −0.0389 | 117.5           | 30 550                          | −1 550c                         |      |  | % |   |
| 16 485                                                                                                                                    | −1 484c                         | 96.94             | −20.21            | 109.71            | 111.55           | 0.2063 | −0.0374 | 100.4           | 32 560                          | 10 454                          |      |  | % |   |
| 18 490                                                                                                                                    | −1 490c                         | 95.61             | −14.83            | 124.45            | 125.34           | 0.2086 | −0.0302 | 96.7            | 32 562                          | 11 459                          | max  |  | % |   |
| 19 495                                                                                                                                    | −1 495c                         | 94.76             | −11.22            | 130.34            | 130.82           | 0.2101 | −0.0271 | 94.9            | 32 563                          | 12 461                          |      |  | % |   |
| 19 500                                                                                                                                    | −1 499c                         | 94.76             | −11.22            | 130.34            | 130.82           | 0.2101 | −0.0271 | 94.9            | 32 563                          | 12 461                          |      |  | % |   |
| 22 510                                                                                                                                    | −1 510c                         | 91.28             | 2.92              | 142.55            | 142.58           | 0.2166 | −0.0195 | 88.8            | 33 567                          | 13 466                          |      |  | % |   |
| 23 520                                                                                                                                    | −1 519c                         | 89.77             | 8.54              | 144.07            | 144.32           | 0.2192 | −0.0174 | 86.6            | 33 568                          | 13 468                          | Ym   |  | % |   |
| 26 530                                                                                                                                    | −1 530c                         | 84.06             | 27.32             | 142.33            | 144.93           | 0.2288 | −0.0115 | 79.1            | 34 573                          | 14 472                          |      |  | % |   |
| 27 540                                                                                                                                    | −1 539c                         | 81.79             | 33.86             | 139.63            | 143.68           | 0.2325 | −0.0095 | 76.3            | 35 576                          | 14 473                          |      |  | % |   |
| 28 545                                                                                                                                    | −1 544c                         | 79.35             | 40.37             | 136.19            | 142.05           | 0.2363 | −0.0075 | 73.4            | 35 578                          | 14 474                          |      |  | % |   |
| 29 550                                                                                                                                    | −1 549c                         | 76.75             | 46.79             | 132.12            | 140.16           | 0.2404 | −0.0054 | 70.4            | 36 580                          | 15 475                          |      |  | % |   |
| 31 555                                                                                                                                    | −1 555c                         | 71.13             | 58.79             | 122.64            | 136.0            | 0.2489 | 0.0     | 64.3            | 37 586                          | 15 476                          |      |  | % |   |
| 32 560                                                                                                                                    | 10 451                          | 69.5              | 84.42             | −15.9             | 85.9             | 0.2645 | −0.095  | 349.3           | −1 492c                         | 18 492                          |      |  | % |   |
| 380                                                                                                                                       | 770                             | 100.0             | 0.0               | 0.0               | 0.0              | 0.2152 | −0.0857 | 0.0             |                                 |                                 |      |  | % |   |
| Ostwald optimal colours (o) of maximum (m) C <sub>AB</sub> for D65, Y <sub>w,10</sub> =100, Y <sub>m</sub> =770_520, CIELAB complementary |                                 |                   |                   |                   |                  |        |         |                 |                                 |                                 |      |  |   | % |
| i <sub>1</sub> , λ <sub>1</sub>                                                                                                           | i <sub>2</sub> , λ <sub>2</sub> | L* <sub>100</sub> | a* <sub>100</sub> | b* <sub>100</sub> | C* <sub>ab</sub> | a'     | b'      | h <sub>ab</sub> | i <sub>d</sub> , λ <sub>d</sub> | i <sub>c</sub> , λ <sub>c</sub> | Code |  | % |   |
| 31 556                                                                                                                                    | 0 405                           | 71.84             | 57.81             | 111.35            | 125.47           | 0.2481 | −0.0221 | 62.5            | 37 585                          | 15 476                          | Rm   |  | % |   |
| 31 557                                                                                                                                    | 6 435                           | 71.27             | 68.77             | 29.56             | 74.85            | 0.2546 | −0.0689 | 23.2            | 44 621                          | 16 480                          |      |  | % |   |
| 31 559                                                                                                                                    | 10 450                          | 71.19             | 81.9              | −15.15            | 83.29            | 0.2621 | −0.0944 | 349.5           | −1 491c                         | 18 491                          |      |  | % |   |
| 32 562                                                                                                                                    | 11 460                          | 69.98             | 86.63             | −25.22            | 90.23            | 0.2655 | −0.1003 | 343.7           | −1 498c                         | 19 498                          |      |  | % |   |
| 33 565                                                                                                                                    | 12 465                          | 68.81             | 90.56             | −33.85            | 96.68            | 0.2685 | −0.1056 | 339.5           | −1 506c                         | 21 506                          |      |  | % |   |
| 34 570                                                                                                                                    | 14 470                          | 67.22             | 93.6              | −46.01            | 104.3            | 0.2714 | −0.1132 | 333.8           | −1 522c                         | 24 522                          |      |  | % |   |
| 35 579                                                                                                                                    | 15 475                          | 62.81             | 97.27             | −56.68            | 112.58           | 0.2768 | −0.1215 | 329.7           | −1 533c                         | 26 533                          | Mm   |  | % |   |
| 41 606                                                                                                                                    | 16 480                          | 49.57             | 94.8              | −81.7             | 125.15           | 0.2874 | −0.1477 | 319.2           | −1 550c                         | 30 550                          |      |  | % |   |
| −1 484c                                                                                                                                   | 16 485                          | 33.36             | 73.3              | −109.63           | 131.88           | 0.2894 | −0.1962 | 303.7           | 10 454                          | 32 560                          |      |  | % |   |
| −1 490c                                                                                                                                   | 18 490                          | 39.48             | 47.93             | −101.69           | 112.42           | 0.2584 | −0.1769 | 295.2           | 11 459                          | 32 562                          | min  |  | % |   |
| −1 495c                                                                                                                                   | 19 495                          | 42.69             | 34.2              | −96.93            | 102.79           | 0.2443 | −0.1679 | 289.4           | 12 461                          | 32 563                          |      |  | % |   |
| −1 499c                                                                                                                                   | 19 500                          | 42.69             | 34.2              | −96.93            | 102.79           | 0.2443 | −0.1679 | 289.4           | 12 461                          | 32 563                          |      |  | % |   |
| −1 510c                                                                                                                                   | 22 510                          | 52.84             | −7.33             | −80.67            | 81.0             | 0.2099 | −0.144  | 264.8           | 13 466                          | 33 567                          |      |  | % |   |
| −1 519c                                                                                                                                   | 23 520                          | 56.28             | −19.89            | −74.95            | 77.55            | 0.2014 | −0.1373 | 255.1           | 13 468                          | 33 568                          | Bm   |  | % |   |
| −1 530c                                                                                                                                   | 26 530                          | 66.39             | −49.47            | −57.84            | 76.11            | 0.1852 | −0.1206 | 229.4           | 14 472                          | 34 573                          |      |  | % |   |
| −1 539c                                                                                                                                   | 27 540                          | 69.54             | −55.96            | −52.46            | 76.71            | 0.1825 | −0.1162 | 223.1           | 14 473                          | 35 576                          |      |  | % |   |
| −1 544c                                                                                                                                   | 28 545                          | 72.53             | −60.74            | −47.32            | 77.0             | 0.1809 | −0.1123 | 217.9           | 14 474                          | 35 578                          |      |  | % |   |
| −1 549c                                                                                                                                   | 29 550                          | 75.38             | −63.87            | −42.44            | 76.68            | 0.1803 | −0.1088 | 213.6           | 15 475                          | 36 580                          |      |  | % |   |
| −1 555c                                                                                                                                   | 31 555                          | 80.53             | −65.58            | −33.56            | 73.67            | 0.1813 | −0.103  | 207.1           | 15 476                          | 37 586                          |      |  | % |   |
| 10 451                                                                                                                                    | 32 560                          | 81.82             | −103.91           | 14.76             | 104.95           | 0.1621 | −0.0782 | 171.9           | 18 492                          | −1 492c                         |      |  | % |   |
| 380                                                                                                                                       | 770                             | 100.0             | 0.0               | 0.0               | 0.0              | 0.2152 | −0.0857 | 0.0             |                                 |                                 |      |  | % |   |



| rgb <sub>tab</sub> and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65                                         |                 |                 |                 |                 |                    |                 |                 |                    |                    |                  |      |      |                     |                    |                      |                       |      |        |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|--------------------|-----------------|-----------------|--------------------|--------------------|------------------|------|------|---------------------|--------------------|----------------------|-----------------------|------|--------|-------|
| Yxy, abc <sub>AB</sub> , ABC <sub>AB</sub> , LabC <sub>ab</sub> tab data for relative spacing of elementary hue h <sub>ab</sub> of CIELAB for CIE 10 degree observer |                 |                 |                 |                 |                    |                 |                 |                    |                    |                  |      |      |                     |                    |                      |                       |      |        |       |
| Elementary hue circle with 4 intended elementary hues 9 angles: h <sub>ab</sub> = 25.9, 87.3, 158.8, 252.1 of CIELAB, and 90 intended hue angles:                    |                 |                 |                 |                 |                    |                 |                 |                    |                    |                  |      |      |                     |                    |                      |                       |      |        |       |
| 000, 001, ..., 089, CIELAB data of CIE test colours 9 (R): 39.2 54.5 26.4, 10 (Y): 79.5 3.2 71.0, 11 (G): 52.3 -39.6 15.3, 12 (B): 33.6 -12.8 -39.9                  |                 |                 |                 |                 |                    |                 |                 |                    |                    |                  |      |      |                     |                    |                      |                       |      |        |       |
| no. <sub>ab</sub>                                                                                                                                                    | x <sub>10</sub> | y <sub>10</sub> | a <sub>10</sub> | b <sub>10</sub> | c <sub>ab,10</sub> | A <sub>10</sub> | B <sub>10</sub> | C <sub>ab,10</sub> | h <sub>ab,10</sub> | L* <sub>10</sub> | a*   | b*   | C* <sub>ab,10</sub> | h <sub>ab,10</sub> | rgb <sub>ab,10</sub> | Code <sub>ab,10</sub> |      |        |       |
| 000                                                                                                                                                                  | 40.0            | 0.447           | 0.257           | 1.737           | -0.458             | 0.789           | 31.5            | -1.1               | 31.6               | 357.8            | 69.4 | 82.4 | -3.2                | 82.4               | 357.7                | 1.00                  | 0.00 | 0.48   | #B75R |
| 001                                                                                                                                                                  | 40.0            | 0.45            | 0.259           | 1.734           | -0.445             | 0.786           | 31.4            | -0.6               | 31.4               | 358.8            | 69.4 | 82.2 | -1.8                | 82.2               | 358.7                | 1.00                  | 0.00 | 0.46   | #B76R |
| 002                                                                                                                                                                  | 40.0            | 0.454           | 0.262           | 1.731           | -0.432             | 0.783           | 31.3            | -0.1               | 31.3               | 359.7            | 69.5 | 81.9 | -0.3                | 81.9               | 359.7                | 1.00                  | 0.00 | 0.44   | #B77R |
| 003                                                                                                                                                                  | 40.0            | 0.457           | 0.264           | 1.728           | -0.419             | 0.78            | 31.2            | 0.3                | 31.2               | 0.7              | 69.5 | 81.7 | 0.1                 | 81.7               | 0.7                  | 1.00                  | 0.00 | 0.42   | #B78R |
| 004                                                                                                                                                                  | 40.0            | 0.461           | 0.267           | 1.725           | -0.406             | 0.778           | 31.1            | 0.9                | 31.1               | 1.6              | 69.5 | 81.4 | 2.6                 | 81.4               | 1.8                  | 1.00                  | 0.00 | 0.4    | #B79R |
| 005                                                                                                                                                                  | 40.0            | 0.464           | 0.269           | 1.722           | -0.393             | 0.775           | 31.0            | 1.4                | 31.0               | 2.6              | 69.5 | 81.1 | 4.2                 | 81.3               | 2.9                  | 1.00                  | 0.00 | 0.38   | #B80R |
| 006                                                                                                                                                                  | 40.0            | 0.468           | 0.272           | 1.719           | -0.38              | 0.773           | 30.9            | 1.9                | 30.9               | 3.6              | 69.5 | 80.8 | 5.7                 | 81.1               | 4.0                  | 1.00                  | 0.00 | 0.36   | #B81R |
| 007                                                                                                                                                                  | 40.0            | 0.472           | 0.275           | 1.716           | -0.367             | 0.77            | 30.7            | 2.4                | 30.8               | 4.5              | 69.5 | 80.6 | 7.4                 | 80.9               | 5.2                  | 1.00                  | 0.00 | 0.35   | #B82R |
| 008                                                                                                                                                                  | 40.0            | 0.475           | 0.277           | 1.713           | -0.354             | 0.768           | 30.6            | 2.9                | 30.8               | 5.5              | 69.5 | 80.3 | 9.0                 | 80.8               | 6.4                  | 1.00                  | 0.00 | 0.33   | #B83R |
| 009                                                                                                                                                                  | 40.1            | 0.479           | 0.28            | 1.709           | -0.342             | 0.766           | 30.5            | 3.5                | 30.7               | 6.5              | 69.5 | 80.0 | 10.7                | 80.7               | 7.6                  | 1.00                  | 0.00 | 0.31   | #B84R |
| 010                                                                                                                                                                  | 40.1            | 0.483           | 0.283           | 1.706           | -0.329             | 0.764           | 30.4            | 4.0                | 30.6               | 7.5              | 69.5 | 79.7 | 12.4                | 80.7               | 8.8                  | 1.00                  | 0.00 | 0.29   | #B85R |
| 011                                                                                                                                                                  | 40.1            | 0.487           | 0.286           | 1.702           | -0.316             | 0.762           | 30.2            | 4.5                | 30.6               | 8.4              | 69.5 | 79.4 | 14.2                | 80.7               | 10.1                 | 1.00                  | 0.00 | 0.27   | #B86R |
| 012                                                                                                                                                                  | 40.1            | 0.491           | 0.289           | 1.699           | -0.304             | 0.761           | 30.1            | 5.0                | 30.5               | 9.4              | 69.5 | 79.1 | 15.9                | 80.7               | 11.4                 | 1.00                  | 0.00 | 0.25   | #B87R |
| 013                                                                                                                                                                  | 40.1            | 0.494           | 0.291           | 1.695           | -0.292             | 0.759           | 30.0            | 5.5                | 30.5               | 10.4             | 69.5 | 78.8 | 17.7                | 80.8               | 12.7                 | 1.00                  | 0.00 | 0.23   | #B88R |
| 014                                                                                                                                                                  | 40.1            | 0.498           | 0.294           | 1.691           | -0.279             | 0.758           | 29.8            | 6.0                | 30.4               | 11.3             | 69.6 | 78.5 | 19.6                | 80.9               | 14.0                 | 1.00                  | 0.00 | 0.22   | #B88R |
| 015                                                                                                                                                                  | 40.2            | 0.502           | 0.297           | 1.687           | -0.268             | 0.757           | 29.7            | 6.4                | 30.4               | 12.2             | 69.6 | 78.2 | 21.4                | 81.1               | 15.3                 | 1.00                  | 0.00 | 0.2    | #B90R |
| 016                                                                                                                                                                  | 40.2            | 0.506           | 0.3             | 1.683           | -0.256             | 0.756           | 29.6            | 6.9                | 30.4               | 13.2             | 69.6 | 77.8 | 23.3                | 81.3               | 16.6                 | 1.00                  | 0.00 | 0.18   | #B90R |
| 017                                                                                                                                                                  | 40.2            | 0.51            | 0.303           | 1.68            | -0.244             | 0.754           | 29.4            | 7.4                | 30.3               | 14.1             | 69.6 | 77.5 | 25.2                | 81.5               | 18.0                 | 1.00                  | 0.00 | 0.16   | #B91R |
| 018                                                                                                                                                                  | 40.2            | 0.514           | 0.306           | 1.676           | -0.233             | 0.753           | 29.3            | 7.8                | 30.3               | 15.0             | 69.6 | 77.2 | 27.1                | 81.8               | 19.3                 | 1.00                  | 0.00 | 0.14   | #B92R |
| 019                                                                                                                                                                  | 40.2            | 0.517           | 0.309           | 1.672           | -0.222             | 0.752           | 29.1            | 8.3                | 30.3               | 15.9             | 69.6 | 76.8 | 29.0                | 82.1               | 20.6                 | 1.00                  | 0.00 | 0.12   | #B93R |
| 020                                                                                                                                                                  | 40.3            | 0.521           | 0.312           | 1.667           | -0.211             | 0.752           | 29.0            | 8.7                | 30.3               | 16.8             | 69.6 | 76.5 | 30.9                | 82.5               | 22.0                 | 1.00                  | 0.00 | 0.1    | #B94R |
| 021                                                                                                                                                                  | 40.3            | 0.525           | 0.315           | 1.663           | -0.201             | 0.751           | 28.8            | 9.1                | 30.2               | 17.6             | 69.7 | 76.1 | 32.9                | 82.9               | 23.4                 | 1.00                  | 0.00 | 0.09   | #B95R |
| 022                                                                                                                                                                  | 40.3            | 0.528           | 0.318           | 1.659           | -0.191             | 0.75            | 28.7            | 9.6                | 30.2               | 18.5             | 69.7 | 75.8 | 34.9                | 83.4               | 24.7                 | 1.00                  | 0.00 | 0.07   | #B96R |
| 023                                                                                                                                                                  | 40.3            | 0.532           | 0.321           | 1.655           | -0.181             | 0.749           | 28.6            | 10.0               | 30.2               | 19.3             | 69.7 | 75.5 | 36.9                | 84.0               | 26.0                 | 1.00                  | 0.00 | 0.06   | #B97R |
| 024                                                                                                                                                                  | 40.3            | 0.534           | 0.324           | 1.651           | -0.171             | 0.748           | 28.4            | 10.5               | 30.2               | 20.1             | 69.7 | 75.0 | 39.0                | 84.5               | 27.4                 | 1.00                  | 0.00 | 0.03   | #B98R |
| 025                                                                                                                                                                  | 40.4            | 0.539           | 0.327           | 1.646           | -0.162             | 0.748           | 28.2            | 10.8               | 30.2               | 20.9             | 69.7 | 74.7 | 41.0                | 85.2               | 28.7                 | 1.00                  | 0.00 | 0.01   | #B99R |
| 026                                                                                                                                                                  | 40.4            | 0.542           | 0.33            | 1.642           | -0.152             | 0.747           | 28.1            | 11.1               | 30.2               | 21.7             | 69.8 | 74.3 | 43.0                | 85.9               | 30.0                 | 1.00                  | 0.00 | 0.00   | #R00Y |
| 027                                                                                                                                                                  | 40.5            | 0.546           | 0.333           | 1.638           | -0.144             | 0.746           | 27.9            | 11.5               | 30.2               | 22.4             | 69.8 | 73.9 | 45.1                | 86.6               | 31.3                 | 1.00                  | 0.01 | 0.00   | #R01Y |
| 028                                                                                                                                                                  | 40.5            | 0.549           | 0.336           | 1.633           | -0.135             | 0.745           | 27.7            | 11.9               | 30.2               | 23.1             | 69.8 | 73.5 | 47.1                | 87.4               | 32.6                 | 1.00                  | 0.03 | 0.00   | #R03Y |
| 029                                                                                                                                                                  | 40.5            | 0.552           | 0.339           | 1.629           | -0.127             | 0.745           | 27.6            | 12.2               | 30.2               | 23.8             | 69.8 | 73.2 | 49.2                | 88.2               | 33.9                 | 1.00                  | 0.05 | 0.00   | #R05Y |
| 030                                                                                                                                                                  | 40.5            | 0.555           | 0.342           | 1.624           | -0.119             | 0.744           | 27.4            | 12.5               | 30.2               | 24.5             | 69.8 | 72.8 | 51.3                | 89.1               | 35.1                 | 1.00                  | 0.06 | 0.00   | #R06Y |
| 031                                                                                                                                                                  | 40.6            | 0.558           | 0.344           | 1.62            | -0.112             | 0.743           | 27.3            | 12.8               | 30.2               | 25.2             | 69.9 | 72.4 | 53.4                | 90.0               | 36.4                 | 1.00                  | 0.08 | 0.00   | #R08Y |
| 032                                                                                                                                                                  | 40.6            | 0.561           | 0.347           | 1.615           | -0.104             | 0.742           | 27.1            | 13.1               | 30.1               | 25.9             | 69.9 | 72.0 | 55.5                | 90.9               | 37.7                 | 1.00                  | 0.09 | 0.00   | #R09Y |
| 033                                                                                                                                                                  | 40.7            | 0.564           | 0.35            | 1.611           | -0.097             | 0.741           | 26.9            | 13.4               | 30.1               | 26.5             | 69.9 | 71.6 | 57.6                | 91.9               | 38.8                 | 1.00                  | 0.11 | 0.00   | #R11Y |
| 034                                                                                                                                                                  | 40.7            | 0.566           | 0.352           | 1.606           | -0.091             | 0.74            | 26.8            | 13.7               | 30.1               | 27.1             | 69.9 | 71.2 | 59.8                | 93.0               | 40.0                 | 1.00                  | 0.13 | 0.00   | #R13Y |
| 035                                                                                                                                                                  | 40.7            | 0.569           | 0.355           | 1.602           | -0.084             | 0.739           | 26.6            | 14.0               | 30.1               | 27.7             | 70.0 | 70.8 | 61.9                | 94.1               | 41.1                 | 1.00                  | 0.14 | 0.00   | #R14Y |
| 036                                                                                                                                                                  | 40.8            | 0.571           | 0.357           | 1.597           | -0.078             | 0.738           | 26.5            | 14.3               | 30.1               | 28.3             | 70.0 | 70.4 | 64.0                | 95.2               | 42.2                 | 1.00                  | 0.16 | 0.00   | #R16Y |
| 037                                                                                                                                                                  | 40.8            | 0.573           | 0.36            | 1.592           | -0.072             | 0.736           | 26.3            | 14.5               | 30.0               | 28.9             | 70.0 | 70.0 | 66.2                | 96.3               | 43.3                 | 1.00                  | 0.18 | 0.00   | #R18Y |
| 038                                                                                                                                                                  | 40.9            | 0.576           | 0.362           | 1.588           | -0.067             | 0.735           | 26.1            | 14.8               | 30.0               | 29.4             | 70.1 | 69.6 | 68.3                | 97.5               | 44.4                 | 1.00                  | 0.19 | 0.00   | #R19Y |
| 039                                                                                                                                                                  | 40.9            | 0.578           | 0.365           | 1.583           | -0.062             | 0.733           | 26.0            | 15.0               | 30.0               | 30.0             | 70.1 | 69.2 | 70.5                | 98.6               | 45.5                 | 1.00                  | 0.21 | 0.00   | #R20Y |
| 040                                                                                                                                                                  | 40.9            | 0.58            | 0.367           | 1.579           | -0.057             | 0.732           | 25.8            | 15.2               | 30.0               | 30.6             | 70.1 | 68.8 | 72.6                | 100.0              | 46.6                 | 1.00                  | 0.22 | 0.00   | #R22Y |
| 041                                                                                                                                                                  | 41.0            | 0.581           | 0.369           | 1.574           | -0.052             | 0.73            | 25.6            | 15.4               | 29.9               | 31.0             | 70.1 | 68.4 | 74.8                | 101.3              | 47.5                 | 1.00                  | 0.24 | 0.00   | #R24Y |
| 042                                                                                                                                                                  | 41.0            | 0.583           | 0.371           | 1.569           | -0.048             | 0.728           | 25.5            | 15.6               | 29.9               | 31.5             | 70.2 | 67.9 | 77.6                | 102.6              | 48.5                 | 1.00                  | 0.26 | 0.00   | #R26Y |
| 043                                                                                                                                                                  | 41.1            | 0.584           | 0.373           | 1.564           | -0.044             | 0.727           | 25.3            | 15.8               | 29.9               | 31.9             | 70.2 | 67.5 | 79.9                | 104.0              | 49.4                 | 1.00                  | 0.27 | 0.00   | #R27Y |
| 044                                                                                                                                                                  | 41.1            | 0.586           | 0.375           | 1.56            | -0.04              | 0.725           | 25.1            | 16.0               | 29.8               | 32.4             | 70.2 | 67.1 | 81.2                | 105.3              | 50.4                 | 1.00                  | 0.29 | 0.00   | #R29Y |
| 045                                                                                                                                                                  | 41.2            | 0.587           | 0.377           | 1.555           | -0.036             | 0.723           | 25.0            | 16.1               | 29.8               | 32.8             | 70.3 | 66.7 | 83.3                | 106.7              | 51.3                 | 1.00                  | 0.31 | 0.00   | #R31Y |
| 046                                                                                                                                                                  | 41.2            | 0.588           | 0.379           | 1.55            | -0.033             | 0.721           | 24.8            | 16.3               | 29.7               | 33.3             | 70.3 | 66.3 | 85.4                | 108.2              | 52.1                 | 1.00                  | 0.32 | 0.00   | #R32Y |
| 047                                                                                                                                                                  | 41.3            | 0.589           | 0.381           | 1.546           | -0.03              | 0.72            | 24.7            | 16.5               | 29.7               | 33.7             | 70.4 | 65.9 | 87.6                | 109.6              | 53.0                 | 1.00                  | 0.34 | 0.00   | #R34Y |
| 048                                                                                                                                                                  | 41.3            | 0.59            | 0.383           | 1.541           | -0.027             | 0.718           | 24.5            | 16.6               | 29.6               | 34.1             | 70.4 | 65.5 | 89.7                | 111.0              | 53.8                 | 1.00                  | 0.35 | 0.00   | #R35Y |
| 049                                                                                                                                                                  | 41.4            | 0.591           | 0.384           | 1.536           | -0.024             | 0.714           | 24.3            | 16.7               | 29.5               | 34.5             | 70.4 | 65.0 | 91.8                | 112.5              | 54.6                 | 1.00                  | 0.37 | 0.00   | #R37Y |
| 050                                                                                                                                                                  | 41.4            | 0.592           | 0.386           | 1.532           | -0.021             | 0.712           | 24.2            | 16.9               | 29.5               | 34.9             | 70.5 | 64.6 | 93.9                | 114.0              | 55.4                 | 1.00                  | 0.39 | 0.00   | #R39Y |
| 051                                                                                                                                                                  | 41.5            | 0.592           | 0.388           | 1.527           | -0.019             | 0.709           | 24.0            | 17.0               | 29.4               | 35.2             | 70.5 | 64.2 | 96.0                | 115.5              | 56.2                 | 1.00                  | 0.4  | 0.00   | #R40Y |
| 052                                                                                                                                                                  | 41.5            | 0.593           | 0.389           | 1.522           | -0.017             | 0.707           | 23.8            | 17.1               | 29.4               | 35.6             | 70.5 | 63.8 | 98.1                | 117.0              | 56.9                 | 1.00                  | 0.42 | 0.00   | #R42Y |
| 053                                                                                                                                                                  | 41.6            | 0.593           | 0.391           | 1.518           | -0.015             | 0.704           | 23.7            | 17.2               | 29.3               | 35.9             | 70.6 | 63.4 | 100.1               | 118.5              | 57.6                 | 1.00                  | 0.44 | 0.00   | #R44Y |
| 054                                                                                                                                                                  | 41.7            | 0.594           | 0.392           | 1.513           | -0.013             | 0.701           | 23.5            | 17.3               | 29.2               | 36.3             | 70.6 | 63.0 | 102.2               | 120.0              | 58.3                 | 1.00                  | 0.45 | 0.00   | #R45Y |
| 055                                                                                                                                                                  | 41.7            | 0.594           | 0.393           | 1.508           | -0.011             | 0.699           | 23.4            | 17.4               | 29.1               | 36.6             | 70.7 | 62.6 | 104.2               | 121.6              | 59.0                 | 1.00                  | 0.47 | 0.00   | #R47Y |
| 056                                                                                                                                                                  | 41.8            | 0.594           | 0.395           | 1.504           | -0.01              | 0.696           | 23.2            | 17.5               | 29.1               | 36.9             | 70.7 | 62.1 | 106.3               | 123.1              | 59.6                 | 1.00                  | 0.48 | 0.00   | #R48Y |
| 057                                                                                                                                                                  | 41.8            | 0.594           | 0.396           | 1.499           | -0.009             | 0.693           | 23.1            | 17.6               | 29.0               | 37.3             | 70.7 | 61.7 | 108.3               | 124.7              | 60.3                 | 1.00                  | 0.5  | 0.00</ |       |

| rgb <sub>cab</sub> and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65                                                     |      |                 |                 |                 |                 |                      |                 |                 |                      |                 |                      |                 |       |       |                      |                      |                         |                     |         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|-----------------|-----------------|-----------------|----------------------|-----------------|-----------------|----------------------|-----------------|----------------------|-----------------|-------|-------|----------------------|----------------------|-------------------------|---------------------|---------|
| Yxy, abc <sub>AB</sub> , ABC <sub>AB</sub> , LabC <sub>ab</sub> h <sub>ab</sub> data for relative spacing of elementary hue h <sub>ab</sub> of CIELAB for CIE 10 degree observer |      |                 |                 |                 |                 |                      |                 |                 |                      |                 |                      |                 |       |       |                      |                      |                         |                     |         |
| Elementary hue circle with 4 intended elementary hues 9 angles: h <sub>ab</sub> = 25.9, 87.3, 158.8, 252.1 of CIELAB, and 90 intended hue angles:                                |      |                 |                 |                 |                 |                      |                 |                 |                      |                 |                      |                 |       |       |                      |                      |                         |                     |         |
| 090, 091, ..., 179, CIELAB data of CIE test colours 9 (R): 39.2 54.5 26.4, 10 (Y): 79.5 3.2 71.0, 11 (G): 52.3 -39.6 15.3, 12 (B): 33.6 -12.8 -39.9                              |      |                 |                 |                 |                 |                      |                 |                 |                      |                 |                      |                 |       |       |                      |                      |                         |                     |         |
| no.                                                                                                                                                                              | ab   | x <sub>10</sub> | y <sub>10</sub> | a <sub>10</sub> | b <sub>10</sub> | C <sub>ab</sub> 10.9 | A <sub>10</sub> | B <sub>10</sub> | C <sub>AB</sub> 10.9 | L <sub>10</sub> | h <sub>AB</sub> 10.9 | Y <sub>10</sub> | a*    | b*    | C <sub>ab</sub> 10.9 | h <sub>ab</sub> 10.9 | rgb <sub>cab</sub> 10.9 | Code <sub>lab</sub> |         |
| 090                                                                                                                                                                              | 86.6 | 0.482           | 0.588           | 0.949           | -0.006          | 0.423                | 0.0             | 34.1            | 34.1                 | 89.8            | 91.9                 | 0.1             | 140.3 | 140.3 | 89.9                 | 0.96                 | 1.00                    | 0.00                | % Y03 G |
| 091                                                                                                                                                                              | 82.0 | 0.478           | 0.511           | 0.934           | -0.007          | 0.422                | -1.1            | 34.5            | 34.6                 | 91.9            | 92.5                 | -2.3            | 138.2 | 138.2 | 90.9                 | 0.94                 | 1.00                    | 0.00                | % Y05 G |
| 092                                                                                                                                                                              | 83.4 | 0.473           | 0.514           | 0.919           | -0.009          | 0.421                | -2.4            | 35.0            | 35.1                 | 93.9            | 93.1                 | -4.8            | 136.0 | 136.1 | 92.0                 | 0.93                 | 1.00                    | 0.00                | % Y06 G |
| 093                                                                                                                                                                              | 84.7 | 0.468           | 0.517           | 0.905           | -0.01           | 0.42                 | -3.6            | 35.4            | 35.6                 | 95.8            | 93.7                 | -7.2            | 133.9 | 134.1 | 93.0                 | 0.92                 | 1.00                    | 0.00                | % Y07 G |
| 094                                                                                                                                                                              | 86.0 | 0.464           | 0.519           | 0.892           | -0.012          | 0.42                 | -4.7            | 35.8            | 36.1                 | 97.5            | 94.3                 | -9.4            | 131.9 | 132.3 | 94.0                 | 0.9                  | 1.00                    | 0.00                | % Y09 G |
| 095                                                                                                                                                                              | 87.1 | 0.46            | 0.521           | 0.882           | -0.013          | 0.42                 | -5.7            | 36.1            | 36.6                 | 99.0            | 94.7                 | -11.3           | 130.2 | 130.7 | 94.9                 | 0.89                 | 1.00                    | 0.00                | % Y10 G |
| 096                                                                                                                                                                              | 88.0 | 0.456           | 0.522           | 0.873           | -0.015          | 0.42                 | -6.5            | 36.3            | 36.9                 | 100.2           | 95.1                 | -12.9           | 127.8 | 128.5 | 95.7                 | 0.87                 | 1.00                    | 0.00                | % Y12 G |
| 097                                                                                                                                                                              | 89.3 | 0.451           | 0.522           | 0.863           | -0.019          | 0.418                | -7.5            | 36.6            | 37.3                 | 102.6           | 95.7                 | -14.8           | 123.7 | 124.6 | 96.8                 | 0.86                 | 1.00                    | 0.00                | % Y14 G |
| 098                                                                                                                                                                              | 90.2 | 0.449           | 0.522           | 0.853           | -0.023          | 0.417                | -8.6            | 36.7            | 37.6                 | 104.6           | 96.3                 | -16.2           | 119.7 | 120.7 | 97.2                 | 0.84                 | 1.00                    | 0.00                | % Y16 G |
| 099                                                                                                                                                                              | 91.8 | 0.444           | 0.518           | 0.856           | -0.028          | 0.411                | -8.4            | 36.8            | 37.7                 | 102.8           | 96.7                 | -15.2           | 115.5 | 116.7 | 97.9                 | 0.83                 | 1.00                    | 0.00                | % Y16 G |
| 100                                                                                                                                                                              | 92.3 | 0.437           | 0.518           | 0.843           | -0.033          | 0.409                | -9.6            | 36.5            | 37.8                 | 104.8           | 96.9                 | -18.6           | 111.4 | 112.9 | 99.4                 | 0.82                 | 1.00                    | 0.00                | % Y17 G |
| 101                                                                                                                                                                              | 92.1 | 0.432           | 0.52            | 0.83            | -0.035          | 0.41                 | -10.8           | 36.2            | 37.8                 | 106.6           | 96.8                 | -20.9           | 109.4 | 111.4 | 108.0                | 0.8                  | 1.00                    | 0.00                | % Y19 G |
| 102                                                                                                                                                                              | 91.7 | 0.43            | 0.522           | 0.823           | -0.036          | 0.412                | -11.4           | 36.0            | 37.8                 | 107.6           | 96.7                 | -22.3           | 109.0 | 111.3 | 101.5                | 0.79                 | 1.00                    | 0.00                | % Y20 G |
| 103                                                                                                                                                                              | 91.3 | 0.427           | 0.524           | 0.814           | -0.036          | 0.414                | -12.1           | 35.8            | 37.8                 | 108.7           | 96.5                 | -23.8           | 108.6 | 111.2 | 102.3                | 0.78                 | 1.00                    | 0.00                | % Y21 G |
| 104                                                                                                                                                                              | 90.9 | 0.424           | 0.526           | 0.806           | -0.036          | 0.417                | -12.8           | 35.6            | 37.9                 | 109.8           | 96.3                 | -25.4           | 108.2 | 111.1 | 103.2                | 0.76                 | 1.00                    | 0.00                | % Y23 G |
| 105                                                                                                                                                                              | 90.4 | 0.421           | 0.529           | 0.797           | -0.037          | 0.42                 | -13.6           | 35.4            | 37.9                 | 111.0           | 96.1                 | -27.1           | 107.8 | 111.1 | 104.1                | 0.75                 | 1.00                    | 0.00                | % Y24 G |
| 106                                                                                                                                                                              | 89.9 | 0.418           | 0.531           | 0.788           | -0.037          | 0.423                | -14.4           | 35.2            | 38.0                 | 112.2           | 95.9                 | -29.0           | 106.1 | 111.2 | 105.9                | 0.73                 | 1.00                    | 0.00                | % Y26 G |
| 107                                                                                                                                                                              | 89.3 | 0.415           | 0.534           | 0.778           | -0.037          | 0.427                | -15.1           | 35.0            | 38.1                 | 113.4           | 95.7                 | -30.6           | 107.0 | 111.3 | 105.9                | 0.72                 | 1.00                    | 0.00                | % Y27 G |
| 108                                                                                                                                                                              | 88.7 | 0.412           | 0.536           | 0.767           | -0.037          | 0.431                | -15.9           | 34.7            | 38.2                 | 114.6           | 95.4                 | -32.5           | 106.6 | 111.5 | 106.9                | 0.71                 | 1.00                    | 0.00                | % Y28 G |
| 109                                                                                                                                                                              | 88.1 | 0.408           | 0.539           | 0.757           | -0.037          | 0.435                | -16.7           | 34.4            | 38.3                 | 115.9           | 95.2                 | -34.5           | 106.3 | 111.7 | 107.9                | 0.69                 | 1.00                    | 0.00                | % Y30 G |
| 110                                                                                                                                                                              | 87.5 | 0.405           | 0.542           | 0.747           | -0.038          | 0.439                | -17.5           | 34.2            | 38.4                 | 117.2           | 94.9                 | -36.5           | 105.9 | 112.0 | 109.0                | 0.68                 | 1.00                    | 0.00                | % Y31 G |
| 111                                                                                                                                                                              | 86.8 | 0.401           | 0.545           | 0.736           | -0.038          | 0.444                | -18.4           | 33.9            | 38.6                 | 118.4           | 94.6                 | -38.5           | 105.5 | 112.3 | 110.0                | 0.66                 | 1.00                    | 0.00                | % Y33 G |
| 112                                                                                                                                                                              | 86.1 | 0.398           | 0.549           | 0.724           | -0.038          | 0.45                 | -19.2           | 33.6            | 38.7                 | 119.7           | 94.3                 | -40.7           | 105.0 | 112.6 | 111.1                | 0.65                 | 1.00                    | 0.00                | % Y34 G |
| 113                                                                                                                                                                              | 85.4 | 0.394           | 0.552           | 0.713           | -0.038          | 0.455                | -20.0           | 33.3            | 38.9                 | 120.9           | 94.0                 | -42.8           | 104.6 | 113.0 | 112.2                | 0.64                 | 1.00                    | 0.00                | % Y36 G |
| 114                                                                                                                                                                              | 84.6 | 0.39            | 0.555           | 0.703           | -0.039          | 0.461                | -20.8           | 33.0            | 39.0                 | 122.2           | 93.8                 | -45.1           | 104.1 | 113.3 | 113.1                | 0.62                 | 1.00                    | 0.00                | % Y37 G |
| 115                                                                                                                                                                              | 83.9 | 0.385           | 0.559           | 0.69            | -0.039          | 0.467                | -21.6           | 32.7            | 39.2                 | 123.4           | 93.4                 | -47.3           | 103.6 | 113.9 | 114.5                | 0.61                 | 1.00                    | 0.00                | % Y38 G |
| 116                                                                                                                                                                              | 83.1 | 0.381           | 0.562           | 0.678           | -0.039          | 0.474                | -22.4           | 32.4            | 39.4                 | 124.6           | 93.0                 | -49.6           | 103.0 | 114.4 | 115.7                | 0.59                 | 1.00                    | 0.00                | % Y40 G |
| 117                                                                                                                                                                              | 82.4 | 0.377           | 0.566           | 0.666           | -0.04           | 0.48                 | -23.2           | 32.0            | 39.6                 | 125.8           | 92.7                 | -51.9           | 102.4 | 114.9 | 116.8                | 0.58                 | 1.00                    | 0.00                | % Y41 G |
| 118                                                                                                                                                                              | 81.6 | 0.372           | 0.569           | 0.655           | -0.04           | 0.486                | -23.9           | 31.7            | 39.7                 | 127.0           | 92.4                 | -54.1           | 101.8 | 115.3 | 118.0                | 0.57                 | 1.00                    | 0.00                | % Y42 G |
| 119                                                                                                                                                                              | 81.0 | 0.368           | 0.571           | 0.645           | -0.041          | 0.492                | -24.5           | 31.4            | 39.8                 | 127.9           | 92.1                 | -56.1           | 100.9 | 115.5 | 119.0                | 0.55                 | 1.00                    | 0.00                | % Y44 G |
| 120                                                                                                                                                                              | 80.3 | 0.364           | 0.574           | 0.634           | -0.042          | 0.498                | -25.1           | 31.1            | 40.0                 | 128.9           | 91.8                 | -58.1           | 100.1 | 115.8 | 120.1                | 0.54                 | 1.00                    | 0.00                | % Y45 G |
| 121                                                                                                                                                                              | 79.7 | 0.36            | 0.577           | 0.624           | -0.043          | 0.503                | -25.7           | 30.7            | 40.1                 | 129.9           | 91.5                 | -60.1           | 99.2  | 116.0 | 121.2                | 0.52                 | 1.00                    | 0.00                | % Y47 G |
| 122                                                                                                                                                                              | 79.0 | 0.356           | 0.579           | 0.614           | -0.044          | 0.509                | -26.3           | 30.4            | 40.2                 | 130.8           | 91.2                 | -62.1           | 98.3  | 116.3 | 122.2                | 0.51                 | 1.00                    | 0.00                | % Y48 G |
| 123                                                                                                                                                                              | 78.4 | 0.352           | 0.582           | 0.604           | -0.044          | 0.515                | -26.9           | 30.1            | 40.4                 | 131.7           | 90.9                 | -64.2           | 97.4  | 116.7 | 123.3                | 0.5                  | 1.00                    | 0.00                | % Y49 G |
| 124                                                                                                                                                                              | 77.7 | 0.347           | 0.584           | 0.594           | -0.046          | 0.521                | -27.4           | 29.8            | 40.5                 | 132.6           | 90.6                 | -66.2           | 96.5  | 117.0 | 124.4                | 0.48                 | 1.00                    | 0.00                | % Y51 G |
| 125                                                                                                                                                                              | 77.1 | 0.343           | 0.587           | 0.584           | -0.047          | 0.527                | -28.0           | 29.4            | 40.6                 | 133.5           | 90.3                 | -68.2           | 95.6  | 117.4 | 125.5                | 0.47                 | 1.00                    | 0.00                | % Y52 G |
| 126                                                                                                                                                                              | 76.4 | 0.339           | 0.589           | 0.574           | -0.048          | 0.533                | -28.5           | 29.1            | 40.7                 | 134.4           | 90.0                 | -70.2           | 94.6  | 117.8 | 126.5                | 0.45                 | 1.00                    | 0.00                | % Y54 G |
| 127                                                                                                                                                                              | 75.8 | 0.334           | 0.592           | 0.565           | -0.049          | 0.539                | -29.0           | 28.8            | 40.9                 | 135.2           | 89.7                 | -72.2           | 93.6  | 118.2 | 127.6                | 0.44                 | 1.00                    | 0.00                | % Y55 G |
| 128                                                                                                                                                                              | 75.1 | 0.33            | 0.594           | 0.555           | -0.05           | 0.545                | -29.5           | 28.4            | 41.0                 | 136.0           | 89.4                 | -74.2           | 92.6  | 118.7 | 128.6                | 0.43                 | 1.00                    | 0.00                | % Y56 G |
| 129                                                                                                                                                                              | 74.5 | 0.325           | 0.596           | 0.546           | -0.051          | 0.551                | -29.9           | 28.1            | 41.1                 | 136.8           | 89.1                 | -76.1           | 91.7  | 119.2 | 129.7                | 0.41                 | 1.00                    | 0.00                | % Y58 G |
| 130                                                                                                                                                                              | 73.9 | 0.321           | 0.598           | 0.536           | -0.052          | 0.557                | -30.4           | 27.8            | 41.2                 | 137.6           | 88.8                 | -78.1           | 90.7  | 119.7 | 130.7                | 0.4                  | 1.00                    | 0.00                | % Y59 G |
| 131                                                                                                                                                                              | 73.3 | 0.317           | 0.601           | 0.527           | -0.054          | 0.563                | -30.8           | 27.4            | 41.3                 | 138.2           | 88.6                 | -80.0           | 89.6  | 120.2 | 131.7                | 0.38                 | 1.00                    | 0.00                | % Y61 G |
| 132                                                                                                                                                                              | 72.7 | 0.312           | 0.603           | 0.518           | -0.055          | 0.569                | -31.2           | 27.1            | 41.3                 | 139.0           | 88.3                 | -81.9           | 88.6  | 120.7 | 132.7                | 0.37                 | 1.00                    | 0.00                | % Y62 G |
| 133                                                                                                                                                                              | 72.1 | 0.308           | 0.604           | 0.509           | -0.057          | 0.575                | -31.6           | 26.8            | 41.4                 | 139.6           | 88.0                 | -83.7           | 87.6  | 121.2 | 133.7                | 0.36                 | 1.00                    | 0.00                | % Y63 G |
| 134                                                                                                                                                                              | 71.5 | 0.304           | 0.606           | 0.498           | -0.058          | 0.581                | -32.0           | 26.5            | 41.5                 | 140.4           | 87.7                 | -85.7           | 86.7  | 121.9 | 134.8                | 0.35                 | 1.00                    | 0.00                | % Y64 G |
| 135                                                                                                                                                                              | 70.9 | 0.299           | 0.608           | 0.487           | -0.06           | 0.586                | -32.3           | 26.1            | 41.5                 | 140.9           | 87.4                 | -87.4           | 85.6  | 122.3 | 135.5                | 0.33                 | 1.00                    | 0.00                | % Y66 G |
| 136                                                                                                                                                                              | 70.4 | 0.295           | 0.609           | 0.484           | -0.061          | 0.591                | -32.6           | 25.8            | 41.6                 | 141.5           | 87.1                 | -89.1           | 84.6  | 122.9 | 136.4                | 0.31                 | 1.00                    | 0.00                | % Y68 G |
| 137                                                                                                                                                                              | 69.8 | 0.291           | 0.611           | 0.476           | -0.063          | 0.596                | -32.9           | 25.5            | 41.6                 | 142.1           | 86.9                 | -90.8           | 83.6  | 123.4 | 137.3                | 0.3                  | 1.00                    | 0.00                | % Y69 G |
| 138                                                                                                                                                                              | 69.3 | 0.287           | 0.612           | 0.469           | -0.065          | 0.601                | -33.2           | 25.2            | 41.7                 | 142.7           | 86.6                 | -92.5           | 82.6  | 124.0 | 138.2                | 0.29                 | 1.00                    | 0.00                | % Y70 G |
| 139                                                                                                                                                                              | 68.8 | 0.283           | 0.614           | 0.461           | -0.066          | 0.606                | -33.4           | 24.9            | 41.7                 | 143.2           | 86.4                 | -94.1           | 81.6  | 124.5 | 139.0                | 0.27                 | 1.00                    | 0.00                | % Y72 G |
| 140                                                                                                                                                                              | 68.2 | 0.279           | 0.617           | 0.453           | -0.068          | 0.611                | -33.6           | 24.6            | 41.8                 | 143.7           | 86.2                 | -95.6           | 80.6  | 125.0 | 139.8                | 0.26                 | 1.00                    | 0.00                | % Y73 G |
| 141                                                                                                                                                                              | 67.7 | 0.275           | 0.619           | 0.445           | -0.069          | 0.616                | -33.8           | 24.3            | 41.9                 | 144.2           | 86.0                 | -96.9           | 79.6  | 125.5 | 140.6                | 0.25                 | 1.00                    | 0.00                | % Y74 G |
| 142                                                                                                                                                                              | 67.1 | 0.271           | 0.621           | 0.437           | -0.071          | 0.621                | -34.0           | 24.0            | 42.0                 | 144.7           | 85.8                 | -98.0           | 78.6  | 126.0 | 141.4                | 0.24                 | 1.00                    | 0.00                | % Y75 G |
| 143                                                                                                                                                                              | 66.6 | 0.267           | 0.623           | 0.429           | -0.073          | 0.626                | -34.2           | 23.7            | 42.1                 | 145.2           | 85.6                 | -99.1           | 77.6  | 126.5 | 142.2                | 0.23                 | 1.00                    | 0.00                | % Y76 G |
| 144                                                                                                                                                                              | 66.0 | 0.263           | 0.625           | 0.421           | -0.075          | 0.631                | -34.4           | 23.4            | 42.2                 | 145.7           | 85.4                 | -100.2          | 76.6  | 127.0 | 143.0                | 0.22                 | 1.00                    | 0.00                | % Y77 G |
| 145                                                                                                                                                                              | 65.4 | 0.259           | 0.627           | 0.413           | -0.077          | 0.636                | -34.6           | 23.1            | 42.3                 | 146.2           | 85.2                 | -101.3          | 75.6  | 127.5 | 143.8                | 0.21                 | 1.00                    | 0.00                | % Y78 G |
| 146                                                                                                                                                                              | 64.8 | 0.255           | 0.629           | 0.405           | -0.079          | 0.641                | -34.8           | 22.8            | 42.4                 | 146.7           | 85.0                 | -102.4          | 74.6  | 128.0 | 144.6                | 0.2                  | 1.00                    | 0.00                | % Y79 G |
| 147                                                                                                                                                                              | 64.2 | 0.251           | 0.631           | 0.397           | -0.081          | 0.646                | -35.0           | 22.5            | 42.5                 | 147.2           | 84.8                 | -103.5          | 73.6  | 128.5 | 145.4                | 0.19                 | 1.00                    | 0.00                | % Y80 G |
| 148                                                                                                                                                                              | 63.6 | 0.247           | 0.633           | 0.389           | -0.083          | 0.651                | -35.2           | 22.2            | 42.6                 | 147.7           | 84.6                 | -104.6          | 72.6  | 129.0 | 146.2                | 0.18                 | 1.00                    | 0.00                | % Y81 G |
| 149                                                                                                                                                                              | 63.0 | 0.243           | 0.635           | 0.381           | -0.085          | 0.656                | -35.4           | 21.9            | 42.7                 | 148.2           | 84.4                 | -105.7          | 71.6  | 129.5 | 147.0                | 0.17                 | 1.00                    | 0.00                | % Y82 G |
| 150                                                                                                                                                                              | 62.4 | 0.239           | 0.637           | 0.373           | -0.087          | 0.661                | -35.6           | 21.6            | 42.8                 | 148.7           | 84.2                 | -106.8          | 70.6  | 130.0 | 147.8                | 0.16                 | 1.00                    | 0.00                | % Y83 G |
| 151                                                                                                                                                                              | 61.8 | 0.235           | 0.639           | 0.365           | -0.089          | 0.666                | -35.8           | 21.3            | 42.9                 | 149.2           | 84.0                 | -107.9          | 69.6  | 130.5 | 148.6                | 0.15                 | 1.00                    | 0.00                | % Y84 G |

| rgb <sub>tab</sub> and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65                                                         |                 |                 |                 |                 |                 |                   |                 |                 |                   |                   |                 |                 |                 |                   |                   |                   |                   |                     |      |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-----------------|-----------------|-------------------|-------------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|---------------------|------|--|
| Yxy <sub>tab</sub> , abc <sub>AB</sub> , ABC <sub>AB</sub> , LabC <sub>ab</sub> tab data for relative spacing of elementary hue h <sub>ab</sub> of CIELAB for CIE 10 degree observer |                 |                 |                 |                 |                 |                   |                 |                 |                   |                   |                 |                 |                 |                   |                   |                   |                   |                     |      |  |
| Elementary hue circle with 4 intended elementary hue angles: h <sub>ab</sub> = 25.9, 87.3, 158.8, 252.1 of CIELAB, and 90 intended hue angles:                                       |                 |                 |                 |                 |                 |                   |                 |                 |                   |                   |                 |                 |                 |                   |                   |                   |                   |                     |      |  |
| 180, 181, ..., 269, CIELAB data of CIE test colours 9 (R): 39.2 54.5 26.4, 10 (Y): 79.5 3.2 71.0, 11 (G): 52.3 -39.6 15.3, 12 (B): 33.6 -12.8 -39.9                                  |                 |                 |                 |                 |                 |                   |                 |                 |                   |                   |                 |                 |                 |                   |                   |                   |                   |                     |      |  |
| no. <sub>tab</sub>                                                                                                                                                                   | x <sub>10</sub> | y <sub>10</sub> | y <sub>10</sub> | q <sub>10</sub> | b <sub>10</sub> | caB <sub>10</sub> | A <sub>10</sub> | B <sub>10</sub> | CaB <sub>10</sub> | hA <sub>B10</sub> | L <sub>10</sub> | a <sub>10</sub> | b <sub>10</sub> | C <sub>ab10</sub> | h <sub>ab10</sub> | rgb <sub>ab</sub> | h <sub>ab10</sub> | Code <sub>tab</sub> |      |  |
| 180                                                                                                                                                                                  | 41.9            | 0.557           | 0.353           | 1.577           | -0.1            | 0.71              | 26.4            | 13.8            | 29.8              | 27.5              | 70.8            | 69.2            | 57.5            | 90.0              | 39.7              | 0.00              | 1.00              | 0.45                | G22B |  |
| 181                                                                                                                                                                                  | 41.9            | 0.557           | 0.352           | 1.579           | -0.101          | 0.71              | 26.4            | 13.7            | 29.8              | 27.4              | 70.8            | 69.3            | 57.0            | 89.8              | 39.4              | 0.00              | 1.00              | 0.47                | G23B |  |
| 182                                                                                                                                                                                  | 41.9            | 0.556           | 0.352           | 1.58            | -0.103          | 0.711             | 26.5            | 13.6            | 29.8              | 27.2              | 70.8            | 69.4            | 56.5            | 89.5              | 39.1              | 0.00              | 1.00              | 0.49                | G24B |  |
| 183                                                                                                                                                                                  | 41.9            | 0.555           | 0.351           | 1.581           | -0.105          | 0.711             | 26.5            | 13.5            | 29.8              | 27.0              | 70.8            | 69.5            | 55.9            | 89.3              | 38.8              | 0.00              | 1.00              | 0.51                | G25B |  |
| 184                                                                                                                                                                                  | 41.9            | 0.555           | 0.35            | 1.582           | -0.107          | 0.711             | 26.6            | 13.5            | 29.8              | 26.9              | 70.8            | 69.6            | 55.4            | 89.0              | 38.5              | 0.00              | 1.00              | 0.53                | G26B |  |
| 185                                                                                                                                                                                  | 41.9            | 0.554           | 0.35            | 1.583           | -0.108          | 0.712             | 26.6            | 13.4            | 29.8              | 26.7              | 70.8            | 69.8            | 54.9            | 88.8              | 38.2              | 0.00              | 1.00              | 0.56                | G28B |  |
| 186                                                                                                                                                                                  | 41.8            | 0.553           | 0.349           | 1.585           | -0.11           | 0.712             | 26.6            | 13.3            | 29.8              | 26.5              | 70.7            | 69.9            | 54.4            | 88.6              | 37.9              | 0.00              | 1.00              | 0.58                | G29B |  |
| 187                                                                                                                                                                                  | 41.8            | 0.553           | 0.348           | 1.586           | -0.112          | 0.712             | 26.7            | 13.2            | 29.8              | 26.4              | 70.7            | 70.0            | 53.9            | 88.3              | 37.6              | 0.00              | 1.00              | 0.61                | G30B |  |
| 188                                                                                                                                                                                  | 41.8            | 0.552           | 0.347           | 1.587           | -0.114          | 0.713             | 26.7            | 13.1            | 29.8              | 26.2              | 70.7            | 70.1            | 53.4            | 88.0              | 37.3              | 0.00              | 1.00              | 0.62                | G31B |  |
| 189                                                                                                                                                                                  | 41.8            | 0.551           | 0.347           | 1.588           | -0.115          | 0.713             | 26.8            | 13.1            | 29.8              | 26.0              | 70.7            | 70.2            | 52.8            | 87.9              | 36.9              | 0.00              | 1.00              | 0.64                | G32B |  |
| 190                                                                                                                                                                                  | 41.8            | 0.551           | 0.346           | 1.59            | -0.117          | 0.713             | 26.8            | 13.0            | 29.8              | 25.8              | 70.7            | 70.3            | 52.3            | 87.7              | 36.6              | 0.00              | 1.00              | 0.66                | G33B |  |
| 191                                                                                                                                                                                  | 41.8            | 0.55            | 0.345           | 1.591           | -0.119          | 0.713             | 26.9            | 12.9            | 29.8              | 25.7              | 70.7            | 70.4            | 51.8            | 87.4              | 36.3              | 0.00              | 1.00              | 0.68                | G34B |  |
| 192                                                                                                                                                                                  | 41.8            | 0.549           | 0.345           | 1.592           | -0.121          | 0.714             | 26.9            | 12.8            | 29.8              | 25.5              | 70.7            | 70.5            | 51.3            | 87.2              | 36.0              | 0.00              | 1.00              | 0.71                | G35B |  |
| 193                                                                                                                                                                                  | 41.7            | 0.549           | 0.344           | 1.593           | -0.123          | 0.714             | 26.9            | 12.7            | 29.8              | 25.3              | 70.7            | 70.6            | 50.8            | 87.0              | 35.7              | 0.00              | 1.00              | 0.73                | G36B |  |
| 194                                                                                                                                                                                  | 41.7            | 0.548           | 0.343           | 1.595           | -0.125          | 0.714             | 27.0            | 12.7            | 29.8              | 25.1              | 70.7            | 70.7            | 50.3            | 86.8              | 35.4              | 0.00              | 1.00              | 0.75                | G37B |  |
| 195                                                                                                                                                                                  | 41.7            | 0.547           | 0.343           | 1.596           | -0.127          | 0.715             | 27.0            | 12.6            | 29.8              | 24.9              | 70.7            | 70.8            | 49.8            | 86.6              | 35.0              | 0.00              | 1.00              | 0.77                | G38B |  |
| 196                                                                                                                                                                                  | 41.7            | 0.546           | 0.342           | 1.597           | -0.129          | 0.715             | 27.1            | 12.5            | 29.8              | 24.8              | 70.7            | 70.9            | 49.2            | 86.4              | 34.7              | 0.00              | 1.00              | 0.79                | G39B |  |
| 197                                                                                                                                                                                  | 41.7            | 0.546           | 0.341           | 1.598           | -0.131          | 0.715             | 27.1            | 12.4            | 29.8              | 24.6              | 70.6            | 71.0            | 48.7            | 86.2              | 34.4              | 0.00              | 1.00              | 0.81                | G40B |  |
| 198                                                                                                                                                                                  | 41.7            | 0.545           | 0.34            | 1.599           | -0.133          | 0.715             | 27.2            | 12.3            | 29.8              | 24.4              | 70.6            | 71.1            | 48.2            | 86.0              | 34.1              | 0.00              | 1.00              | 0.83                | G41B |  |
| 199                                                                                                                                                                                  | 41.7            | 0.544           | 0.34            | 1.601           | -0.135          | 0.716             | 27.2            | 12.2            | 29.8              | 24.2              | 70.6            | 71.2            | 47.7            | 85.8              | 33.8              | 0.00              | 1.00              | 0.86                | G43B |  |
| 200                                                                                                                                                                                  | 41.7            | 0.543           | 0.339           | 1.602           | -0.137          | 0.716             | 27.2            | 12.1            | 29.8              | 24.0              | 70.6            | 71.4            | 47.2            | 85.6              | 33.4              | 0.00              | 1.00              | 0.88                | G44B |  |
| 201                                                                                                                                                                                  | 41.6            | 0.543           | 0.338           | 1.603           | -0.139          | 0.716             | 27.3            | 12.0            | 29.8              | 23.8              | 70.6            | 71.5            | 46.7            | 85.4              | 33.1              | 0.00              | 1.00              | 0.9                 | G45B |  |
| 202                                                                                                                                                                                  | 41.6            | 0.542           | 0.337           | 1.604           | -0.141          | 0.717             | 27.3            | 11.9            | 29.8              | 23.6              | 70.6            | 71.6            | 46.2            | 85.2              | 32.8              | 0.00              | 1.00              | 0.92                | G46B |  |
| 203                                                                                                                                                                                  | 41.6            | 0.541           | 0.337           | 1.606           | -0.143          | 0.717             | 27.4            | 11.9            | 29.8              | 23.4              | 70.6            | 71.7            | 45.6            | 85.0              | 32.4              | 0.00              | 1.00              | 0.94                | G47B |  |
| 204                                                                                                                                                                                  | 41.6            | 0.54            | 0.336           | 1.607           | -0.145          | 0.717             | 27.4            | 11.8            | 29.8              | 23.2              | 70.6            | 71.8            | 45.1            | 84.8              | 32.1              | 0.00              | 1.00              | 0.96                | G48B |  |
| 205                                                                                                                                                                                  | 41.6            | 0.54            | 0.335           | 1.608           | -0.147          | 0.717             | 27.4            | 11.7            | 29.8              | 23.0              | 70.6            | 71.9            | 44.6            | 84.6              | 31.8              | 0.00              | 1.00              | 0.98                | G49B |  |
| 206                                                                                                                                                                                  | 41.6            | 0.539           | 0.335           | 1.609           | -0.15           | 0.718             | 27.5            | 11.6            | 29.8              | 22.8              | 70.6            | 72.0            | 44.1            | 84.4              | 31.5              | 0.00              | 0.98              | 1.00                | G50B |  |
| 207                                                                                                                                                                                  | 41.6            | 0.538           | 0.334           | 1.61            | -0.152          | 0.718             | 27.5            | 11.5            | 29.8              | 22.6              | 70.6            | 72.1            | 43.6            | 84.3              | 31.1              | 0.00              | 0.96              | 1.00                | G51B |  |
| 208                                                                                                                                                                                  | 41.5            | 0.537           | 0.333           | 1.612           | -0.154          | 0.718             | 27.6            | 11.4            | 29.8              | 22.4              | 70.5            | 72.2            | 43.1            | 84.1              | 30.8              | 0.00              | 0.94              | 1.00                | G52B |  |
| 209                                                                                                                                                                                  | 41.5            | 0.536           | 0.332           | 1.613           | -0.156          | 0.719             | 27.6            | 11.3            | 29.9              | 22.2              | 70.5            | 72.3            | 42.6            | 83.9              | 30.4              | 0.00              | 0.92              | 1.00                | G53B |  |
| 210                                                                                                                                                                                  | 41.5            | 0.536           | 0.332           | 1.614           | -0.158          | 0.719             | 27.7            | 11.2            | 29.9              | 22.0              | 70.5            | 72.4            | 42.1            | 83.8              | 30.1              | 0.00              | 0.9               | 1.00                | G54B |  |
| 211                                                                                                                                                                                  | 41.5            | 0.535           | 0.331           | 1.615           | -0.161          | 0.719             | 27.7            | 11.1            | 29.9              | 21.8              | 70.5            | 72.5            | 41.5            | 83.6              | 29.8              | 0.00              | 0.88              | 1.00                | G55B |  |
| 212                                                                                                                                                                                  | 41.5            | 0.534           | 0.33            | 1.617           | -0.163          | 0.719             | 27.7            | 11.0            | 29.9              | 21.6              | 70.5            | 72.6            | 41.0            | 83.4              | 29.5              | 0.00              | 0.86              | 1.00                | G56B |  |
| 213                                                                                                                                                                                  | 41.5            | 0.533           | 0.329           | 1.618           | -0.165          | 0.72              | 27.8            | 10.9            | 29.9              | 21.4              | 70.5            | 72.7            | 40.5            | 83.3              | 29.1              | 0.00              | 0.83              | 1.00                | G58B |  |
| 214                                                                                                                                                                                  | 41.5            | 0.532           | 0.328           | 1.619           | -0.168          | 0.72              | 27.8            | 10.8            | 29.9              | 21.2              | 70.5            | 72.8            | 40.0            | 83.1              | 28.7              | 0.00              | 0.81              | 1.00                | G59B |  |
| 215                                                                                                                                                                                  | 41.5            | 0.531           | 0.328           | 1.62            | -0.17           | 0.72              | 27.9            | 10.7            | 29.9              | 21.0              | 70.5            | 72.9            | 39.5            | 83.0              | 28.4              | 0.00              | 0.79              | 1.00                | G60B |  |
| 216                                                                                                                                                                                  | 41.4            | 0.531           | 0.327           | 1.622           | -0.172          | 0.721             | 27.9            | 10.6            | 29.9              | 20.8              | 70.5            | 73.0            | 39.0            | 82.8              | 28.1              | 0.00              | 0.77              | 1.00                | G61B |  |
| 217                                                                                                                                                                                  | 41.4            | 0.53            | 0.326           | 1.623           | -0.175          | 0.721             | 28.0            | 10.5            | 29.9              | 20.6              | 70.5            | 73.2            | 38.5            | 82.7              | 27.7              | 0.00              | 0.75              | 1.00                | G62B |  |
| 218                                                                                                                                                                                  | 41.4            | 0.529           | 0.325           | 1.624           | -0.177          | 0.721             | 28.0            | 10.4            | 29.9              | 20.4              | 70.5            | 73.3            | 38.0            | 82.5              | 27.4              | 0.00              | 0.73              | 1.00                | G63B |  |
| 219                                                                                                                                                                                  | 41.4            | 0.528           | 0.325           | 1.625           | -0.179          | 0.722             | 28.0            | 10.3            | 29.9              | 20.2              | 70.4            | 73.4            | 37.5            | 82.4              | 27.0              | 0.00              | 0.71              | 1.00                | G64B |  |
| 220                                                                                                                                                                                  | 41.4            | 0.527           | 0.324           | 1.626           | -0.182          | 0.722             | 28.1            | 10.2            | 29.9              | 20.0              | 70.4            | 73.5            | 37.0            | 82.2              | 26.7              | 0.00              | 0.69              | 1.00                | G65B |  |
| 221                                                                                                                                                                                  | 41.4            | 0.526           | 0.323           | 1.628           | -0.184          | 0.722             | 28.1            | 10.1            | 29.9              | 19.7              | 70.4            | 73.6            | 36.5            | 82.1              | 26.3              | 0.00              | 0.66              | 1.00                | G66B |  |
| 222                                                                                                                                                                                  | 41.4            | 0.525           | 0.322           | 1.629           | -0.187          | 0.723             | 28.2            | 10.0            | 29.9              | 19.5              | 70.4            | 73.7            | 36.0            | 82.0              | 26.0              | 0.00              | 0.64              | 1.00                | G67B |  |
| 223                                                                                                                                                                                  | 41.4            | 0.525           | 0.322           | 1.63            | -0.189          | 0.723             | 28.2            | 9.9             | 29.9              | 19.3              | 70.4            | 73.8            | 35.4            | 81.9              | 25.6              | 0.00              | 0.62              | 1.00                | G68B |  |
| 224                                                                                                                                                                                  | 41.3            | 0.524           | 0.321           | 1.631           | -0.192          | 0.723             | 28.2            | 9.8             | 29.9              | 19.1              | 70.4            | 73.9            | 34.9            | 81.7              | 25.3              | 0.00              | 0.6               | 1.00                | G69B |  |
| 225                                                                                                                                                                                  | 41.3            | 0.523           | 0.32            | 1.633           | -0.194          | 0.724             | 28.3            | 9.6             | 29.9              | 18.8              | 70.4            | 74.0            | 34.4            | 81.6              | 24.9              | 0.00              | 0.58              | 1.00                | G70B |  |
| 226                                                                                                                                                                                  | 41.3            | 0.522           | 0.319           | 1.634           | -0.197          | 0.724             | 28.3            | 9.5             | 29.9              | 18.6              | 70.4            | 74.1            | 33.9            | 81.5              | 24.6              | 0.00              | 0.56              | 1.00                | G71B |  |
| 227                                                                                                                                                                                  | 41.3            | 0.521           | 0.318           | 1.635           | -0.2            | 0.724             | 28.4            | 9.4             | 29.9              | 18.4              | 70.4            | 74.2            | 33.4            | 81.4              | 24.2              | 0.00              | 0.53              | 1.00                | G73B |  |
| 228                                                                                                                                                                                  | 41.3            | 0.52            | 0.318           | 1.636           | -0.202          | 0.725             | 28.4            | 9.3             | 29.9              | 18.2              | 70.4            | 74.3            | 32.9            | 81.3              | 23.9              | 0.00              | 0.51              | 1.00                | G74B |  |
| 229                                                                                                                                                                                  | 41.3            | 0.519           | 0.317           | 1.637           | -0.205          | 0.725             | 28.5            | 9.2             | 29.9              | 17.9              | 70.4            | 74.4            | 32.4            | 81.2              | 23.5              | 0.00              | 0.49              | 1.00                | G75B |  |
| 230                                                                                                                                                                                  | 41.3            | 0.518           | 0.316           | 1.639           | -0.207          | 0.725             | 28.5            | 9.1             | 29.9              | 17.7              | 70.3            | 74.5            | 31.9            | 81.1              | 23.2              | 0.00              | 0.47              | 1.00                | G76B |  |
| 231                                                                                                                                                                                  | 41.3            | 0.518           | 0.316           | 1.64            | -0.21           | 0.726             | 28.6            | 9.0             | 29.9              | 17.5              | 70.3            | 74.6            | 31.4            | 81.0              | 22.9              | 0.00              | 0.45              | 1.00                | G77B |  |
| 232                                                                                                                                                                                  | 41.2            | 0.517           | 0.315           | 1.641           | -0.213          | 0.726             | 28.6            | 8.9             | 29.9              | 17.3              | 70.3            | 74.7            | 30.9            | 80.9              | 22.5              | 0.00              | 0.43              | 1.00                | G78B |  |
| 233                                                                                                                                                                                  | 41.2            | 0.516           | 0.314           | 1.642           | -0.215          | 0.726             | 28.6            | 8.8             | 29.9              | 17.0              | 70.3            | 74.8            | 30.4            | 80.8              | 22.1              | 0.00              | 0.41              | 1.00                | G79B |  |
| 234                                                                                                                                                                                  | 41.2            | 0.515           | 0.313           | 1.643           | -0.218          | 0.727             | 28.7            | 8.6             | 29.9              | 16.8              | 70.3            | 74.9            | 30.0            | 80.7              | 21.8              | 0.00              | 0.38              | 1.00                | G80B |  |
| 235                                                                                                                                                                                  | 41.2            | 0.514           | 0.312           | 1.645           | -0.221          | 0.727             | 28.7            | 8.5             | 30.0              | 16.6              | 70.3            | 75.0            | 29.5            | 80.6              | 21.4              | 0.00              | 0.36              | 1.00                | G81B |  |
| 236                                                                                                                                                                                  | 41.2            | 0.513           | 0.311           | 1.646           | -0.224          | 0.727             | 28.7            | 8.4             | 30.0              | 16.3              | 70.3            | 75.1            | 29.0            | 80.5              | 21.1              | 0.00              | 0.34              | 1.00                | G82B |  |
| 237                                                                                                                                                                                  | 41.2            | 0.512           | 0.311           | 1.647           | -0.226          | 0.728             | 28.8            | 8.3             | 30.0              | 16.1              | 70.3            | 75.2            | 28.5            | 80.4              | 20.7              | 0.00              | 0.32              | 1.00                | G83B |  |
| 238                                                                                                                                                                                  | 41.2            | 0.511           | 0.31            | 1.648           | -0.229          | 0.728             | 28.8            | 8.2             | 30.0              | 15.9              | 70.3            | 75.3            | 28.0            | 80.4              | 20.4              | 0.00              | 0.3               | 1.00                | G84B |  |
| 239                                                                                                                                                                                  | 41.2            | 0.51            | 0.309           | 1.649           | -0.232          | 0.729             | 28.9            | 8.1             | 30.0              | 15.7              | 70.3            | 75.4            | 27.5            | 80.3              | 20.1              | 0.00              | 0.28              | 1.00                | G85B |  |
| 240                                                                                                                                                                                  | 41.1            | 0.509           | 0.308           | 1.651           | -0.235          | 0.729             | 28.9            | 7.9             | 30.0              | 15.4              | 70.3            | 75.5            | 27.0            | 80.2              | 19.6              | 0.00              | 0.25              | 1.00                | G87B |  |
| 241                                                                                                                                                                                  | 41.1            | 0.508           | 0.307           | 1.652           | -0.238          | 0.729             | 28.9            | 7.8             | 30.0              | 15.1              | 70.2            | 75.6            | 26.5            | 80.1              | 19.3              | 0.00              | 0.23              | 1.00                | G88B |  |
| 242                                                                                                                                                                                  | 41.1            | 0.507           |                 |                 |                 |                   |                 |                 |                   |                   |                 |                 |                 |                   |                   |                   |                   |                     |      |  |

**rgb<sub>tab</sub>** and CIE data of a elementary hue circle according to CIE R1-47 for Ostwald colours for CIE illuminant D65

**Xyy, abc<sub>AB</sub>, ABC<sub>AB</sub>, LabC<sub>ab</sub>** data for relative spacing of elementary hue **h<sub>ab</sub>** of CIELAB for CIE 10 degree observer

Elementary hue circle with 4 intended elementary hues (angles): **h<sub>ab</sub>** = 25.9, 87.3, 158.8, 252.1 of CIELAB and 39.6 intended hue angles:

**270, 271, ..., 360**, CIELAB data of CIE test colours 9 (R): 39.2 54.5 26.4, 10 (Y): 79.5 3.2 71.0, 11 (G): 52.3 -39.6 15.3, 12 (B): 33.6 -12.8 -39.9

| no. | ab <sub>10</sub> | x <sub>10</sub> | y <sub>10</sub> | q <sub>10</sub> | b <sub>10</sub> | C <sub>tab</sub> | A <sub>10</sub> | B <sub>10</sub> | C <sub>45</sub> | hA <sub>B10</sub> | L <sub>10</sub> | a <sub>10</sub> | b <sub>10</sub> | C <sub>ab</sub> | h <sub>ab</sub> | rgb <sub>ab</sub> | Code <sub>lab</sub> |      |            |
|-----|------------------|-----------------|-----------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|---------------------|------|------------|
| 270 | 48.0             | 0.481           | 0.285           | 1.686           | -0.326          | 0.745            | 30.1            | 4.1             | 30.4            | 7.9               | 70.0            | 78.4            | 12.9            | 79.5            | 9.3             | 0.26              | 0.00                | 1.00 | % B13R *   |
| 271 | 48.0             | 0.48            | 0.284           | 1.687           | -0.329          | 0.745            | 30.1            | 4.0             | 30.4            | 7.6               | 70.0            | 78.5            | 12.4            | 79.5            | 9.0             | 0.28              | 0.00                | 1.00 | % B14R *   |
| 272 | 47.0             | 0.479           | 0.283           | 1.688           | -0.333          | 0.746            | 30.2            | 3.9             | 30.4            | 7.4               | 70.0            | 78.6            | 12.0            | 79.5            | 8.6             | 0.29              | 0.00                | 1.00 | % B14R *   |
| 273 | 47.0             | 0.478           | 0.283           | 1.689           | -0.336          | 0.747            | 30.2            | 3.7             | 30.4            | 7.1               | 70.0            | 78.7            | 11.5            | 79.5            | 8.3             | 0.31              | 0.00                | 1.00 | % B15R *   |
| 274 | 47.0             | 0.477           | 0.282           | 1.69            | -0.339          | 0.747            | 30.2            | 3.6             | 30.4            | 6.8               | 70.0            | 78.8            | 11.1            | 79.6            | 8.0             | 0.32              | 0.00                | 1.00 | % B16R *   |
| 275 | 47.0             | 0.476           | 0.281           | 1.691           | -0.342          | 0.748            | 30.3            | 3.5             | 30.5            | 6.6               | 70.0            | 78.9            | 10.6            | 79.6            | 7.7             | 0.34              | 0.00                | 1.00 | % B17R *   |
| 276 | 47.0             | 0.475           | 0.281           | 1.692           | -0.346          | 0.749            | 30.3            | 3.3             | 30.5            | 6.3               | 70.0            | 79.0            | 10.2            | 79.6            | 7.3             | 0.35              | 0.00                | 1.00 | % B17R *   |
| 277 | 47.0             | 0.474           | 0.28            | 1.693           | -0.349          | 0.75             | 30.3            | 3.2             | 30.5            | 6.1               | 69.9            | 79.1            | 9.8             | 79.7            | 7.0             | 0.37              | 0.00                | 1.00 | % B18R *   |
| 278 | 47.0             | 0.473           | 0.279           | 1.695           | -0.352          | 0.751            | 30.4            | 3.1             | 30.5            | 5.8               | 69.9            | 79.1            | 9.3             | 79.7            | 6.7             | 0.38              | 0.00                | 1.00 | % B19R *   |
| 279 | 47.0             | 0.472           | 0.278           | 1.696           | -0.356          | 0.751            | 30.4            | 2.9             | 30.6            | 5.5               | 69.9            | 79.2            | 8.9             | 79.7            | 6.4             | 0.4               | 0.00                | 1.00 | % B20R *   |
| 280 | 47.0             | 0.471           | 0.278           | 1.697           | -0.359          | 0.752            | 30.4            | 2.8             | 30.6            | 5.3               | 69.9            | 79.3            | 8.5             | 79.8            | 6.1             | 0.41              | 0.00                | 1.00 | % B20R *   |
| 281 | 46.0             | 0.471           | 0.277           | 1.698           | -0.362          | 0.753            | 30.5            | 2.7             | 30.6            | 5.0               | 69.9            | 79.4            | 8.0             | 79.8            | 5.8             | 0.43              | 0.00                | 1.00 | % B21R *   |
| 282 | 46.0             | 0.47            | 0.276           | 1.699           | -0.366          | 0.753            | 30.5            | 2.5             | 30.6            | 4.8               | 69.9            | 79.5            | 7.6             | 79.9            | 5.4             | 0.44              | 0.00                | 1.00 | % B22R *   |
| 283 | 46.0             | 0.469           | 0.275           | 1.7             | -0.369          | 0.754            | 30.5            | 2.4             | 30.6            | 4.5               | 69.9            | 79.6            | 7.2             | 79.9            | 5.1             | 0.46              | 0.00                | 1.00 | % B23R *   |
| 284 | 46.0             | 0.468           | 0.275           | 1.701           | -0.372          | 0.755            | 30.6            | 2.2             | 30.7            | 4.2               | 69.9            | 79.7            | 6.7             | 80.0            | 4.8             | 0.47              | 0.00                | 1.00 | % B23R *   |
| 285 | 46.0             | 0.467           | 0.274           | 1.702           | -0.376          | 0.756            | 30.6            | 2.1             | 30.7            | 4.0               | 69.9            | 79.8            | 6.3             | 80.0            | 4.5             | 0.49              | 0.00                | 1.00 | % B24R *   |
| 286 | 46.0             | 0.466           | 0.273           | 1.703           | -0.379          | 0.757            | 30.7            | 2.0             | 30.7            | 3.7               | 69.9            | 79.8            | 5.9             | 80.1            | 4.2             | 0.5               | 0.00                | 1.00 | % B25R *   |
| 287 | 46.0             | 0.465           | 0.273           | 1.704           | -0.382          | 0.758            | 30.7            | 1.8             | 30.7            | 3.5               | 69.9            | 79.9            | 5.5             | 80.1            | 3.9             | 0.52              | 0.00                | 1.00 | % B26R *   |
| 288 | 46.0             | 0.464           | 0.272           | 1.705           | -0.386          | 0.758            | 30.7            | 1.7             | 30.8            | 3.2               | 69.9            | 80.0            | 5.1             | 80.2            | 3.6             | 0.53              | 0.00                | 1.00 | % B26R *   |
| 289 | 46.0             | 0.463           | 0.271           | 1.706           | -0.389          | 0.759            | 30.8            | 1.6             | 30.8            | 2.9               | 69.9            | 80.1            | 4.7             | 80.2            | 3.3             | 0.55              | 0.00                | 1.00 | % B27R *   |
| 290 | 45.0             | 0.462           | 0.27            | 1.707           | -0.393          | 0.76             | 30.8            | 1.4             | 30.8            | 2.7               | 69.9            | 80.2            | 4.2             | 80.3            | 3.0             | 0.56              | 0.00                | 1.00 | % B28R *   |
| 291 | 45.0             | 0.461           | 0.27            | 1.708           | -0.396          | 0.761            | 30.8            | 1.3             | 30.9            | 2.4               | 69.8            | 80.3            | 3.8             | 80.4            | 2.7             | 0.58              | 0.00                | 1.00 | % B29R *   |
| 292 | 45.0             | 0.46            | 0.269           | 1.709           | -0.399          | 0.762            | 30.9            | 1.1             | 30.9            | 2.2               | 69.8            | 80.4            | 3.4             | 80.4            | 2.4             | 0.59              | 0.00                | 1.00 | % B29R *   |
| 293 | 45.0             | 0.458           | 0.268           | 1.71            | -0.403          | 0.763            | 30.9            | 1.0             | 30.9            | 1.9               | 69.8            | 80.4            | 3.0             | 80.5            | 2.1             | 0.61              | 0.00                | 1.00 | % B30R *   |
| 294 | 45.0             | 0.459           | 0.268           | 1.712           | -0.406          | 0.764            | 30.9            | 0.9             | 30.9            | 1.7               | 69.8            | 80.5            | 2.6             | 80.5            | 1.8             | 0.62              | 0.00                | 1.00 | % B31R *   |
| 295 | 45.0             | 0.458           | 0.267           | 1.713           | -0.41           | 0.765            | 31.0            | 0.7             | 31.0            | 1.4               | 69.8            | 80.6            | 2.2             | 80.6            | 1.5             | 0.64              | 0.00                | 1.00 | % B32R *   |
| 296 | 45.0             | 0.457           | 0.266           | 1.714           | -0.413          | 0.766            | 31.0            | 0.6             | 31.0            | 1.1               | 69.8            | 80.7            | 1.8             | 80.7            | 1.3             | 0.65              | 0.00                | 1.00 | % B32R *   |
| 297 | 45.0             | 0.456           | 0.266           | 1.715           | -0.416          | 0.767            | 31.0            | 0.5             | 31.0            | 0.9               | 69.8            | 80.8            | 1.4             | 80.8            | 1.0             | 0.67              | 0.00                | 1.00 | % B33R *   |
| 298 | 45.0             | 0.455           | 0.265           | 1.716           | -0.42           | 0.768            | 31.1            | 0.3             | 31.1            | 0.6               | 69.8            | 80.9            | 1.0             | 80.9            | 0.7             | 0.68              | 0.00                | 1.00 | % B34R *   |
| 299 | 45.0             | 0.454           | 0.264           | 1.717           | -0.423          | 0.769            | 31.1            | 0.2             | 31.1            | 0.4               | 69.8            | 80.9            | 0.6             | 80.9            | 0.4             | 0.7               | 0.00                | 1.00 | % B35R *   |
| 300 | 44.0             | 0.453           | 0.264           | 1.718           | -0.427          | 0.77             | 31.1            | 0.0             | 31.1            | 0.1               | 69.8            | 81.0            | 0.2             | 81.0            | 0.1             | 0.71              | 0.00                | 1.00 | % B35R *   |
| 301 | 44.0             | 0.452           | 0.263           | 1.719           | -0.43           | 0.771            | 31.2            | 0.0             | 31.2            | 0.0               | 69.9            | 81.1            | -0.1            | 81.1            | 0.0             | 0.73              | 0.00                | 1.00 | % B36R *   |
| 302 | 44.0             | 0.452           | 0.262           | 1.72            | -0.433          | 0.772            | 31.2            | 0.0             | 31.2            | 0.0               | 69.9            | 81.2            | -0.5            | 81.2            | 0.0             | 0.75              | 0.00                | 1.00 | % B37R *   |
| 303 | 44.0             | 0.451           | 0.262           | 1.721           | -0.437          | 0.773            | 31.2            | -0.3            | 31.2            | 0.0               | 69.9            | 81.3            | -0.8            | 81.3            | 0.0             | 0.77              | 0.00                | 1.00 | % B38R *   |
| 304 | 44.0             | 0.45            | 0.261           | 1.722           | -0.44           | 0.774            | 31.3            | -0.4            | 31.3            | 0.0               | 69.9            | 81.3            | -1.2            | 81.3            | 0.0             | 0.79              | 0.00                | 1.00 | % B38R *   |
| 305 | 44.0             | 0.449           | 0.26            | 1.723           | -0.443          | 0.775            | 31.3            | -0.5            | 31.3            | 0.0               | 69.9            | 81.4            | -1.6            | 81.4            | 0.0             | 0.81              | 0.00                | 1.00 | % B39R *   |
| 306 | 44.0             | 0.448           | 0.26            | 1.723           | -0.447          | 0.776            | 31.3            | -0.7            | 31.3            | 0.0               | 69.9            | 81.5            | -2.0            | 81.5            | 0.0             | 0.83              | 0.00                | 1.00 | % B40R *   |
| 307 | 44.0             | 0.447           | 0.259           | 1.724           | -0.45           | 0.777            | 31.4            | -0.8            | 31.4            | 0.0               | 69.9            | 81.6            | -2.4            | 81.6            | 0.0             | 0.85              | 0.00                | 1.00 | % B41R *   |
| 308 | 44.0             | 0.446           | 0.258           | 1.725           | -0.454          | 0.778            | 31.4            | -1.0            | 31.4            | 0.0               | 69.9            | 81.6            | -2.7            | 81.7            | 0.0             | 0.87              | 0.00                | 1.00 | % B41R *   |
| 309 | 44.0             | 0.446           | 0.258           | 1.726           | -0.457          | 0.779            | 31.4            | -1.1            | 31.4            | 0.0               | 69.9            | 81.7            | -3.1            | 81.8            | 0.0             | 0.89              | 0.00                | 1.00 | % B42R *   |
| 310 | 43.0             | 0.445           | 0.257           | 1.727           | -0.46           | 0.78             | 31.4            | -1.2            | 31.5            | 0.0               | 69.8            | 81.7            | -3.5            | 81.9            | 0.0             | 0.91              | 0.00                | 1.00 | % B43R *   |
| 311 | 43.0             | 0.444           | 0.257           | 1.728           | -0.464          | 0.781            | 31.5            | -1.4            | 31.5            | 0.0               | 69.8            | 81.9            | -3.8            | 82.0            | 0.0             | 0.93              | 0.00                | 1.00 | % B44R *   |
| 312 | 43.0             | 0.443           | 0.256           | 1.729           | -0.467          | 0.782            | 31.5            | -1.5            | 31.5            | 0.0               | 69.8            | 82.0            | -4.2            | 82.1            | 0.0             | 0.95              | 0.00                | 1.00 | % B44R *   |
| 313 | 43.0             | 0.442           | 0.255           | 1.73            | -0.47           | 0.783            | 31.5            | -1.6            | 31.6            | 0.0               | 69.8            | 82.0            | -4.6            | 82.2            | 0.0             | 0.97              | 0.00                | 1.00 | % B45R *   |
| 314 | 43.0             | 0.442           | 0.255           | 1.731           | -0.474          | 0.784            | 31.6            | -1.8            | 31.6            | 0.0               | 69.8            | 82.1            | -4.9            | 82.3            | 0.0             | 0.99              | 0.00                | 1.00 | % B46R *   |
| 315 | 43.0             | 0.441           | 0.254           | 1.732           | -0.477          | 0.785            | 31.6            | -1.9            | 31.7            | 0.0               | 69.8            | 82.2            | -5.3            | 82.4            | 0.0             | 1.0               | 0.00                | 1.00 | % B47R *   |
| 316 | 43.0             | 0.441           | 0.254           | 1.733           | -0.48           | 0.787            | 31.6            | -2.0            | 31.7            | 0.0               | 69.8            | 82.2            | -5.6            | 82.4            | 0.0             | 1.0               | 0.00                | 1.00 | % B47R *   |
| 317 | 43.0             | 0.439           | 0.253           | 1.734           | -0.484          | 0.788            | 31.7            | -2.2            | 31.7            | 0.0               | 69.8            | 82.3            | -6.0            | 82.5            | 0.0             | 1.0               | 0.00                | 1.00 | % B48R *   |
| 318 | 43.0             | 0.438           | 0.252           | 1.735           | -0.487          | 0.789            | 31.7            | -2.3            | 31.8            | 0.0               | 69.8            | 82.4            | -6.3            | 82.5            | 0.0             | 1.0               | 0.00                | 1.00 | % B49R *   |
| 319 | 43.0             | 0.438           | 0.252           | 1.736           | -0.49           | 0.79             | 31.7            | -2.4            | 31.8            | 0.0               | 69.8            | 82.5            | -6.7            | 82.7            | 0.0             | 1.0               | 0.00                | 1.00 | % B49R *   |
| 320 | 42.0             | 0.437           | 0.251           | 1.737           | -0.494          | 0.791            | 31.7            | -2.6            | 31.8            | 0.0               | 69.8            | 82.5            | -7.0            | 82.8            | 0.0             | 1.0               | 0.00                | 1.00 | % B50R *   |
| 321 | 42.0             | 0.436           | 0.251           | 1.737           | -0.497          | 0.792            | 31.8            | -2.7            | 31.9            | 0.0               | 69.8            | 82.6            | -7.4            | 82.9            | 0.0             | 1.0               | 0.00                | 1.00 | % B51R *   |
| 322 | 42.0             | 0.435           | 0.25            | 1.738           | -0.5            | 0.793            | 31.8            | -2.8            | 31.9            | 0.0               | 69.8            | 82.7            | -7.7            | 83.0            | 0.0             | 1.0               | 0.00                | 1.00 | % B52R *   |
| 323 | 42.0             | 0.434           | 0.25            | 1.739           | -0.503          | 0.795            | 31.8            | -3.0            | 32.0            | 0.0               | 69.8            | 82.7            | -8.0            | 83.1            | 0.0             | 1.0               | 0.00                | 1.00 | % B52R *   |
| 324 | 42.0             | 0.434           | 0.249           | 1.74            | -0.507          | 0.796            | 31.9            | -3.1            | 32.0            | 0.0               | 69.8            | 82.8            | -8.4            | 83.2            | 0.0             | 1.0               | 0.00                | 1.00 | % B53R *   |
| 325 | 42.0             | 0.433           | 0.248           | 1.741           | -0.51           | 0.797            | 31.9            | -3.2            | 32.0            | 0.0               | 69.8            | 82.9            | -8.7            | 83.3            | 0.0             | 1.0               | 0.00                | 1.00 | % B54R *   |
| 326 | 42.0             | 0.432           | 0.248           | 1.742           | -0.513          | 0.798            | 31.9            | -3.3            | 32.1            | 0.0               | 69.8            | 82.9            | -9.0            | 83.4            | 0.0             | 1.0               | 0.00                | 1.00 | % B55R *   |
| 327 | 42.0             | 0.431           | 0.247           | 1.743           | -0.516          | 0.799            | 31.9            | -3.5            | 32.1            | 0.0               | 69.8            | 83.0            | -9.4            | 83.5            | 0.0             | 1.0               | 0.00                | 1.00 | % B55R *   |
| 328 | 42.0             | 0.431           | 0.247           | 1.743           | -0.52           | 0.801            | 32.0            | -3.6            | 32.2            | 0.0               | 69.8            | 83.1            | -9.7            | 83.7            | 0.0             | 1.0               | 0.00                | 1.00 | % B56R *   |
| 329 | 42.0             | 0.43            | 0.246           | 1.744           | -0.523          | 0.802            | 32.0            | -3.7            | 32.2            | 0.0               | 69.8            | 83.2            | -10.0           | 83.8            | 0.0             | 1.0               | 0.00                | 1.00 | % B57R *</ |