

see similar files: <http://farbe.li.tu-berlin.de/DE73/DE73L0NA.TXT>  
technical information: <http://farbe.li.tu-berlin.de> or <http://130.149.60.45/~farbmnetik>

TUB registration: 20180801-DE73/DE73L0NA.TXT /PS  
application for measurement of offset print output

TUB material: code=rha4ta

| CIE02 tristimulus values, chromatic values, and putities ( $n=1.4, n_0=0.5$ ).<br>Normalized Ostwald (O) tristimulus values ( $Y_w=100$ ), ordered by wavelength. |       |       |                                       |       |       |                      |           |           |              |          |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|---------------------------------------|-------|-------|----------------------|-----------|-----------|--------------|----------|----------|
| no.                                                                                                                                                               | O     | C     | tristimulus values and chromaticities |       |       | non-chromatic values |           |           | non-putities |          |          |
| $\lambda_{nm}$                                                                                                                                                    | $X$   | $Y$   | $Z$                                   | $x$   | $y$   | $X_{100}$            | $Y_{100}$ | $Z_{100}$ | $P_{nm}$     | $P_{nm}$ | $P_{nm}$ |
| 00                                                                                                                                                                | 39.6  | 31.24 | 12.19                                 | 76.69 | 0.260 | 0.101                | 63.8      | 72.3      | -84.1        | 11.10    | 310      |
| 01                                                                                                                                                                | 463   | 13.25 | 6.34                                  | 78.11 | 0.135 | 0.064                | 79.9      | 20.0      | -89.1        | 91.3     | 282      |
| 02                                                                                                                                                                | 466   | 13.27 | 8.01                                  | 79.21 | 0.132 | 0.079                | 788       | 13.4      | -88.4        | 89.4     | 278      |
| 03                                                                                                                                                                | 471   | 13.39 | 12.66                                 | 80.68 | 0.125 | 0.118                | 755       | -4.4      | -84.7        | 84.8     | 266      |
| 04                                                                                                                                                                | 475B  | 14.00 | 19.21                                 | 81.44 | 0.122 | 0.167                | 710       | -27.6     | -77.9        | 82.7     | 250      |
| 05                                                                                                                                                                | 505   | 15.61 | 27.50                                 | 81.85 | 0.124 | 0.220                | 655       | -53.3     | -68.9        | 87.1     | 232      |
| 06                                                                                                                                                                | 519   | 18.42 | 36.66                                 | 82.05 | 0.134 | 0.267                | 598       | -77.4     | -58.9        | 97.2     | 217      |
| 07                                                                                                                                                                | 483   | 20.35 | 41.45                                 | 82.11 | 0.141 | 0.288                | 570       | -88.1     | -53.6        | 103.1    | 211      |
| 08                                                                                                                                                                | 484   | 22.64 | 46.29                                 | 82.14 | 0.149 | 0.306                | 543       | -97.4     | -48.4        | 108.8    | 206      |
| 09                                                                                                                                                                | 525   | 25.29 | 51.06                                 | 82.16 | 0.159 | 0.322                | 518       | -105.0    | -43.3        | 113.6    | 202      |
| 10                                                                                                                                                                | 578   | 26.52 | 57.81                                 | 81.62 | 0.175 | 0.341                | 482       | -113.2    | -35.5        | 118.7    | 197      |
| 11                                                                                                                                                                | 490   | 26.32 | 58.17                                 | 83.51 | 0.177 | 0.393                | 429       | -126.0    | -12.6        | 126.6    | 185      |
| 12                                                                                                                                                                | 497   | 23.01 | 58.66                                 | 82.48 | 0.185 | 0.472                | 342       | -138.9    | 13.8         | 139.6    | 174      |
| 13                                                                                                                                                                | 501   | 22.62 | 59.57                                 | 83.18 | 0.192 | 0.507                | 299       | -143.1    | 23.7         | 145.0    | 170      |
| 14                                                                                                                                                                | 506   | 22.26 | 60.29                                 | 82.28 | 0.200 | 0.543                | 255       | -149.8    | 47.4         | 157.0    | 162      |
| 15                                                                                                                                                                | 515   | 21.83 | 61.02                                 | 82.06 | 0.218 | 0.610                | 170       | -149.8    | 49.8         | 157.8    | 161      |
| 16                                                                                                                                                                | 522   | 24.04 | 63.42                                 | 82.06 | 0.230 | 0.606                | 163       | -149.8    | 49.8         | 157.8    | 161      |
| 17                                                                                                                                                                | 535   | 27.22 | 66.19                                 | 82.06 | 0.263 | 0.641                | 094       | -146.3    | 61.3         | 158.7    | 157      |
| 18                                                                                                                                                                | 544   | 35.20 | 72.16                                 | 82.06 | 0.306 | 0.629                | 063       | -136.1    | 69.6         | 152.8    | 152      |
| 19                                                                                                                                                                | 561   | 45.07 | 87.80                                 | 82.06 | 0.525 | 0.472                | 032       | -103.3    | 84.1         | 111.0    | 130      |
| 20                                                                                                                                                                | 568   | 63.05 | 93.65                                 | 81.43 | 0.459 | 0.517                | 002       | -20.0     | 88.1         | 89.4     | 98       |
| 21                                                                                                                                                                | 669   | 83.03 | 91.98                                 | 81.43 | 0.559 | 0.517                | 002       | -20.0     | 88.1         | 89.4     | 98       |
| 22                                                                                                                                                                | 571   | 82.92 | 87.33                                 | 81.43 | 0.559 | 0.517                | 002       | -20.0     | 88.1         | 89.4     | 98       |
| 23                                                                                                                                                                | 573B  | 82.92 | 80.76                                 | 80.8  | 0.502 | 0.492                | 004       | 27.6      | 79.7         | 82.7     | 277      |
| 24                                                                                                                                                                | 577   | 80.69 | 72.49                                 | 0.38  | 0.522 | 0.472                | 002       | 53.3      | 68.9         | 87.1     | 232      |
| 25                                                                                                                                                                | 581   | 77.87 | 63.23                                 | 0.18  | 0.550 | 0.447                | 001       | 77.3      | 58.9         | 97.2     | 217      |
| 26                                                                                                                                                                | 584   | 75.31 | 58.19                                 | 0.18  | 0.550 | 0.447                | 001       | 77.3      | 58.9         | 97.2     | 217      |
| 27                                                                                                                                                                | 585   | 73.67 | 53.93                                 | 0.09  | 0.577 | 0.421                | 000       | 97.4      | 48.4         | 108.8    | 206      |
| 28                                                                                                                                                                | 587   | 71.01 | 48.07                                 | 0.07  | 0.591 | 0.407                | 000       | 105.0     | 43.3         | 113.6    | 202      |
| 29                                                                                                                                                                | 592B  | 66.96 | 42.18                                 | 0.01  | 0.609 | 0.385                | 010       | 113.3     | 35.5         | 118.7    | 197      |
| 30                                                                                                                                                                | 631   | 69.99 | 41.82                                 | 0.17  | 0.536 | 0.320                | 043       | 126.0     | 12.6         | 126.6    | 185      |
| 31                                                                                                                                                                | 702   | 73.73 | 41.33                                 | 0.35  | 0.474 | 0.206                | 0257      | 138.9     | 13.8         | 139.6    | 174      |
| 32                                                                                                                                                                | 703   | 73.69 | 40.70                                 | 0.35  | 0.474 | 0.206                | 0257      | 138.9     | 13.8         | 139.6    | 174      |
| 33                                                                                                                                                                | 711   | 74.05 | 39.07                                 | 0.59  | 0.541 | 0.236                | 0321      | 146.3     | 30.3         | 150.2    | 163      |
| 34                                                                                                                                                                | 727M  | 72.46 | 36.57                                 | 0.51  | 0.416 | 0.218                | 0364      | 149.6     | 47.4         | 157.0    | 162      |
| 35                                                                                                                                                                | 727M  | 72.46 | 36.57                                 | 0.51  | 0.415 | 0.210                | 0374      | 149.8     | 49.8         | 157.8    | 161      |
| 36                                                                                                                                                                | 740   | 69.08 | 33.80                                 | 0.72  | 0.393 | 0.192                | 0413      | 146.3     | 61.3         | 158.7    | 157      |
| 37                                                                                                                                                                | 740   | 69.08 | 33.80                                 | 0.72  | 0.393 | 0.192                | 0413      | 146.3     | 61.3         | 158.7    | 157      |
| 38                                                                                                                                                                | 766   | 31.24 | 12.19                                 | 76.69 | 0.260 | 0.101                | 63.8      | 72.3      | -84.1        | 11.10    | 310      |
| 39                                                                                                                                                                | 828   | 13.25 | 6.34                                  | 78.11 | 0.135 | 0.064                | 79.9      | 20.0      | -89.1        | 91.3     | 282      |
| U=D50                                                                                                                                                             | 96.31 | 99.99 | 82.24                                 | 0.354 | 0.358 | 0.358                | 0.0       | 0.0       | 0.0          | 0.0      | 0.0      |

$a^*_m = P_{nm} \cdot n_{nm} = [(b_1 - b_2) \cdot x_{nm} + (b_2 - b_3) \cdot y_{nm}] \cdot b_3 \cdot 1.4 \cdot 0.57539 - 2.5702 \cdot y_{nm} \cdot 0.0690 \cdot y_{nm}$   
 $b^*_m = P_{nm} \cdot n_{nm} = [(b_1 - b_2) \cdot x_{nm} + (b_2 - b_3) \cdot y_{nm}] \cdot b_3 \cdot 1.4 \cdot 0.51906 + 3.9636 \cdot y_{nm} \cdot 2.4040 \cdot y_{nm}$

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application for measurement of offset print output

TUB material: code=rha4ta

| CIE10 tristimulus values, chromatic values, and putities ( $n=1.4, n_0=0.5$ ).<br>Normalized Ostwald (O) tristimulus values ( $Y_w=100$ ), ordered by wavelength. |       |       |                                       |       |       |                  |          |          |          |          |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|---------------------------------------|-------|-------|------------------|----------|----------|----------|----------|----------|
| no.                                                                                                                                                               | O     | C     | tristimulus values and chromaticities |       |       | chromatic values |          |          | putities |          |          |
| $\lambda$                                                                                                                                                         | $X$   | $Y$   | $Z$                                   | $x$   | $y$   | $x_{ab}$         | $y_{ab}$ | $h_{ab}$ | $p_{ab}$ | $p_{ab}$ | $h_{ab}$ |
| 00 376                                                                                                                                                            | 55.24 | 26.06 | 71.08                                 | 0.362 | 0.171 | 0.466            | 118.6    | -66.2    | 135.9    | 330      | 0        |
| 01 458                                                                                                                                                            | 13.22 | 7.40  | 75.87                                 | 0.136 | 0.076 | 0.776            | 15.9     | -85.2    | 86.7     | 280      | 0        |
| 02 460                                                                                                                                                            | 13.26 | 8.89  | 77.33                                 | 0.133 | 0.089 | 0.777            | 10.0     | -85.2    | 85.8     | 276      | 0        |
| 03 462                                                                                                                                                            | 13.28 | 10.68 | 78.42                                 | 0.129 | 0.104 | 0.765            | 2.9      | -84.4    | 84.5     | 272      | 0        |
| 04 463                                                                                                                                                            | 13.28 | 10.68 | 78.42                                 | 0.129 | 0.104 | 0.765            | 2.9      | -84.4    | 84.5     | 272      | 0        |
| 05 468                                                                                                                                                            | 13.66 | 17.92 | 80.19                                 | 0.122 | 0.160 | 0.717            | -24.0    | -78.1    | 81.8     | 252      | 0        |
| 06 471                                                                                                                                                            | 14.70 | 24.41 | 80.73                                 | 0.122 | 0.203 | 0.673            | -45.2    | -71.4    | 84.5     | 237      | 0        |
| 07 473                                                                                                                                                            | 15.60 | 28.17 | 80.89                                 | 0.125 | 0.225 | 0.648            | -56.2    | -67.1    | 87.7     | 230      | 0        |
| 08 475                                                                                                                                                            | 18.32 | 36.37 | 81.08                                 | 0.134 | 0.267 | 0.597            | -77.1    | -58.5    | 96.7     | 217      | 0        |
| 09 477                                                                                                                                                            | 22.35 | 45.10 | 81.16                                 | 0.150 | 0.303 | 0.546            | -94.5    | -49.1    | 106.5    | 207      | 0        |
| 10 477C                                                                                                                                                           | 22.35 | 45.10 | 81.16                                 | 0.150 | 0.303 | 0.546            | -94.5    | -49.1    | 106.5    | 207      | 0        |
| 11 479                                                                                                                                                            | 27.82 | 53.94 | 81.17                                 | 0.170 | 0.331 | 0.498            | -106.4   | -39.9    | 113.6    | 200      | 0        |
| 12 480                                                                                                                                                            | 30.64 | 58.21 | 79.19                                 | 0.182 | 0.346 | 0.471            | -111.1   | -33.1    | 115.9    | 196      | 0        |
| 13 484                                                                                                                                                            | 25.67 | 56.42 | 59.80                                 | 0.180 | 0.397 | 0.421            | -122.2   | -10.8    | 122.7    | 185      | 0        |
| 14 492                                                                                                                                                            | 22.50 | 56.65 | 38.03                                 | 0.192 | 0.483 | 0.324            | -134.4   | 16.2     | 134.4    | 173      | 0        |
| 15 503                                                                                                                                                            | 21.56 | 57.40 | 24.28                                 | 0.208 | 0.555 | 0.235            | -138.4   | 33.8     | 142.5    | 166      | 0        |
| 16 512G                                                                                                                                                           | 22.19 | 58.45 | 18.53                                 | 0.223 | 0.589 | 0.186            | -139.1   | 41.8     | 145.3    | 163      | 0        |
| 17 521                                                                                                                                                            | 24.28 | 60.41 | 13.79                                 | 0.246 | 0.614 | 0.139            | -138.2   | 49.6     | 146.9    | 160      | 0        |
| 18 531                                                                                                                                                            | 29.00 | 64.47 | 10.07                                 | 0.280 | 0.622 | 0.097            | -133.2   | 57.6     | 145.1    | 156      | 0        |
| 19 541                                                                                                                                                            | 41.29 | 73.93 | 10.07                                 | 0.330 | 0.589 | 0.080            | -118.6   | 66.2     | 135.9    | 150      | 0        |
| 20 563                                                                                                                                                            | 83.41 | 92.59 | 5.28                                  | 0.460 | 0.510 | 0.029            | -15.8    | 85.2     | 86.7     | 100      | 0        |
| 21 564                                                                                                                                                            | 83.37 | 91.09 | 3.82                                  | 0.467 | 0.510 | 0.021            | -9.9     | 85.2     | 85.8     | 96       | 0        |
| 22 565                                                                                                                                                            | 83.35 | 89.31 | 2.74                                  | 0.475 | 0.509 | 0.015            | -2.9     | 84.4     | 84.5     | 91       | 0        |
| 23 565Y                                                                                                                                                           | 83.35 | 89.31 | 2.74                                  | 0.475 | 0.509 | 0.015            | -2.9     | 84.4     | 84.5     | 91       | 0        |
| 24 568                                                                                                                                                            | 82.96 | 82.07 | 0.96                                  | 0.490 | 0.494 | 0.005            | 24.0     | 78.1     | 81.8     | 72       | 0        |
| 25 571                                                                                                                                                            | 81.93 | 75.58 | 0.44                                  | 0.518 | 0.478 | 0.002            | 45.3     | 71.3     | 84.5     | 57       | 0        |
| 26 573                                                                                                                                                            | 81.03 | 71.82 | 0.27                                  | 0.529 | 0.469 | 0.001            | 56.3     | 67.3     | 87.7     | 50       | 0        |
| 27 577                                                                                                                                                            | 78.31 | 63.62 | 0.08                                  | 0.551 | 0.447 | 0.000            | 71.7     | 58.4     | 96.8     | 37       | 0        |
| 28 581                                                                                                                                                            | 74.28 | 54.89 | 0.01                                  | 0.575 | 0.424 | 0.000            | 94.5     | 49.1     | 106.6    | 27       | 0        |
| 29 581                                                                                                                                                            | 74.28 | 54.89 | 0.01                                  | 0.575 | 0.424 | 0.000            | 94.5     | 49.1     | 106.6    | 27       | 0        |
| 30 587                                                                                                                                                            | 68.81 | 46.05 | 0.00                                  | 0.599 | 0.400 | 0.000            | 106.4    | 39.9     | 113.6    | 20       | 0        |
| 31 589                                                                                                                                                            | 67.60 | 44.04 | 0.93                                  | 0.600 | 0.391 | 0.008            | 109.1    | 36.6     | 115.1    | 18       | 0        |
| 32 692                                                                                                                                                            | 70.96 | 43.57 | 21.37                                 | 0.522 | 0.320 | 0.157            | 122.2    | 10.8     | 122.7    | 5        | 0        |
| 33 697                                                                                                                                                            | 74.12 | 43.34 | 43.14                                 | 0.461 | 0.269 | 0.268            | 133.4    | -16.2    | 134.4    | 353      | 0        |
| 34 708                                                                                                                                                            | 75.07 | 42.59 | 56.88                                 | 0.430 | 0.244 | 0.365            | 138.4    | -33.8    | 142.5    | 346      | 0        |
| 35 717M                                                                                                                                                           | 74.44 | 41.54 | 62.63                                 | 0.416 | 0.232 | 0.350            | 139.2    | -41.8    | 145.3    | 343      | 0        |
| 36 726                                                                                                                                                            | 72.35 | 39.38 | 67.37                                 | 0.403 | 0.219 | 0.376            | 138.3    | -49.6    | 146.9    | 340      | 0        |
| 37 736                                                                                                                                                            | 67.62 | 35.52 | 71.08                                 | 0.388 | 0.203 | 0.408            | 133.2    | -57.7    | 145.2    | 336      | 0        |
| 38 745                                                                                                                                                            | 55.24 | 26.06 | 71.08                                 | 0.362 | 0.171 | 0.466            | 118.6    | -66.2    | 135.9    | 330      | 0        |
| 39 823                                                                                                                                                            | 13.22 | 7.40  | 75.87                                 | 0.136 | 0.076 | 0.776            | 15.9     | -85.2    | 86.7     | 280      | 0        |
| U-D50 96.63 100.00 81.17 0.347 0.359 0.359 0.0 0.0 0.0 0.0 0.0 0.0                                                                                                |       |       |                                       |       |       |                  |          |          |          |          |          |
| $a^*_{p_{ab}} = a^*_{p_{ab}}(b_{21} - b_{23})x + (b_{22} - b_{23})y + b_{23} = 1.4(3.0757x - 2.5702y - 0.0960)/y$                                                 |       |       |                                       |       |       |                  |          |          |          |          |          |
| $b^*_{p_{ab}} = b^*_{p_{ab}}(b_{21} - b_{23})x + (b_{22} - b_{23})y + b_{23} = 0.5(1.9906x + 3.8617y - 2.4046)/y$                                                 |       |       |                                       |       |       |                  |          |          |          |          |          |

| CIE10 tristimulus values, chromatic values, and putities ( $n=1.4, n_0=0.5$ ).<br>Normalized Ostwald (O) tristimulus values ( $Y_w=100$ ), ordered by wavelength. |       |       |                                       |       |     |                  |          |          |          |          |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|---------------------------------------|-------|-----|------------------|----------|----------|----------|----------|----------|
| no.                                                                                                                                                               | O     | C     | tristimulus values and chromaticities |       |     | chromatic values |          |          | putities |          |          |
| $\lambda$                                                                                                                                                         | $X$   | $Y$   | $Z$                                   | $x$   | $y$ | $x_{ab}$         | $y_{ab}$ | $h_{ab}$ | $p_{ab}$ | $p_{ab}$ | $h_{ab}$ |
| 00 376                                                                                                                                                            | 26.06 | 4.74  | -2.98                                 | 5.60  | 327 | 4.55             | -2.54    | 5.21     | 330      | 0        | 0        |
| 01 458                                                                                                                                                            | 7.40  | 2.34  | -11.96                                | 12.19 | 281 | 2.15             | -11.52   | 11.72    | 280      | 0        | 0        |
| 02 460                                                                                                                                                            | 8.89  | 1.31  | -10.02                                | 10.11 | 277 | 1.12             | -9.58    | 9.64     | 276      | 0        | 0        |
| 03 462                                                                                                                                                            | 10.68 | 0.46  | -8.35                                 | 8.36  | 273 | 0.27             | -7.90    | 7.91     | 272      | 0        | 0        |
| 04 463                                                                                                                                                            | 10.68 | 0.46  | -8.35                                 | 8.36  | 273 | 0.27             | -7.90    | 7.91     | 272      | 0        | 0        |
| 05 468                                                                                                                                                            | 17.92 | -1.15 | -4.81                                 | 4.94  | 256 | -1.34            | -4.36    | 4.56     | 252      | 0        | 0        |
| 06 471                                                                                                                                                            | 24.41 | -1.66 | -3.37                                 | 3.76  | 243 | -1.85            | -2.92    | 3.46     | 237      | 0        | 0        |
| 07 473                                                                                                                                                            | 28.17 | -1.80 | -2.83                                 | 3.36  | 237 | -1.99            | -2.39    | 3.11     | 230      | 0        | 0        |
| 08 475                                                                                                                                                            | 36.37 | -1.93 | -2.05                                 | 2.82  | 226 | -2.12            | -1.60    | 2.66     | 217      | 0        | 0        |
| 09 477                                                                                                                                                            | 45.10 | -1.90 | -1.53                                 | 2.44  | 218 | -2.09            | -1.09    | 2.36     | 207      | 0        | 0        |
| 10 477C                                                                                                                                                           | 45.10 | -1.90 | -1.53                                 | 2.44  | 218 | -2.09            | -1.09    | 2.36     | 207      | 0        | 0        |
| 11 479                                                                                                                                                            | 53.94 | -1.78 | -1.18                                 | 2.14  | 213 | -1.97            | -0.74    | 2.10     | 200      | 0        | 0        |
| 12 480                                                                                                                                                            | 58.21 | -1.71 | -1.01                                 | 1.99  | 210 | -1.90            | -0.56    | 1.99     | 196      | 0        | 0        |
| 13 484                                                                                                                                                            | 56.42 | -1.97 | -0.63                                 | 2.07  | 197 | -2.16            | -0.19    | 2.17     | 185      | 0        | 0        |
| 14 492                                                                                                                                                            | 56.65 | -0.26 | 1.34                                  | 1.62  | 184 | -1.63            | 0.14     | 1.63     | 173      | 0        | 0        |
| 15 503                                                                                                                                                            | 57.40 | -2.22 | 0.14                                  | 2.22  | 176 | -2.41            | 0.58     | 2.48     | 166      | 0        | 0        |
| 16 512G                                                                                                                                                           | 58.45 | -2.19 | 0.26                                  | 2.20  | 173 | -2.38            | 0.71     | 2.48     | 163      | 0        | 0        |
| 17 521                                                                                                                                                            | 60.61 | -2.09 | 0.37                                  | 2.12  | 169 | -2.28            | 0.81     | 2.42     | 160      | 0        | 0        |
| 18 531                                                                                                                                                            | 64.47 | -1.87 | 0.44                                  | 1.92  | 166 | -2.06            | 0.89     | 2.25     | 156      | 0        | 0        |
| 19 541                                                                                                                                                            | 73.93 | -1.48 | 0.50                                  | 1.62  | 149 | -1.63            | 0.94     | 1.63     | 150      | 0        | 0        |
| 20 563                                                                                                                                                            | 92.59 | 0.01  | 0.47                                  | 0.47  | 87  | -0.17            | 0.92     | 0.93     | 100      | 0        | 0        |
| 21 564                                                                                                                                                            | 91.09 | 0.07  | 0.48                                  | 0.49  | 80  | -0.10            | 0.93     | 0.94     | 96       | 0        | 0        |
| 22 565                                                                                                                                                            | 89.31 | 0.15  | 0.49                                  | 0.52  | 72  | -0.03            | 0.94     | 0.94     | 91       | 0        | 0        |
| 23 565Y                                                                                                                                                           | 89.31 | 0.15  | 0.49                                  | 0.52  | 72  | -0.03            | 0.94     | 0.94     | 91       | 0        | 0        |
| 24 568                                                                                                                                                            | 82.07 | 0.96  | 0.49                                  | 0.49  | 72  | 0.27             | 0.05     | 0.29     | 72       | 0        | 0        |
| 25 571                                                                                                                                                            | 75.58 | 0.78  | 0.49                                  | 0.93  | 32  | 0.59             | 0.94     | 1.11     | 57       | 0        | 0        |
| 26 573                                                                                                                                                            | 71.82 | 0.97  | 0.49                                  | 1.09  | 26  | 0.78             | 0.93     | 1.22     | 50       | 0        | 0        |
| 27 577                                                                                                                                                            | 63.62 | 1.40  | 0.47                                  | 1.47  | 18  | 1.21             | 0.91     | 1.52     | 37       | 0        | 0        |
| 28 581                                                                                                                                                            | 54.89 | 1.91  | 0.44                                  | 1.96  | 13  | 1.72             | 0.89     | 1.94     | 27       | 0        | 0        |
| 29 581                                                                                                                                                            | 54.89 | 1.91  | 0.44                                  | 1.96  | 13  | 1.72             | 0.89     | 1.94     | 27       | 0        | 0        |
| 30 587                                                                                                                                                            | 46.05 | 2.50  | 0.41                                  | 2.53  | 9   | 2.31             | 0.86     | 2.46     | 20       | 0        | 0        |
| 31 589                                                                                                                                                            | 44.04 | 2.66  | 0.38                                  | 2.69  | 8   | 2.47             | 0.83     | 2.61     | 18       | 0        | 0        |
| 32 692                                                                                                                                                            | 43.57 | 2.99  | -0.19                                 | 3.00  | 356 | 2.80             | 0.24     | 2.81     | 5        | 0        | 0        |
| 33 697                                                                                                                                                            | 43.34 | 3.26  | -0.82                                 | 3.36  | 345 | 3.07             | -0.37    | 3.10     | 353      | 0        | 0        |
| 34 708                                                                                                                                                            | 42.59 | 3.44  | -1.34                                 | 3.65  | 340 | 3.25             | -0.79    | 3.34     | 346      | 0        | 0        |
| 35 717M                                                                                                                                                           | 41.54 | 3.54  | -1.45                                 | 3.82  | 337 | 3.35             | -1.00    | 3.39     | 343      | 0        | 0        |
| 36 726                                                                                                                                                            | 39.38 | 3.70  | -1.70                                 | 4.07  | 335 | 3.51             | -1.26    | 3.73     | 340      | 0        | 0        |
| 37 736                                                                                                                                                            | 35.52 | 3.94  | -2.07                                 | 4.45  | 332 | 3.75             | -1.62    | 4.08     | 336      | 0        | 0        |
| 38 745                                                                                                                                                            | 26.06 | 4.74  | -2.98                                 | 5.60  | 327 | 4.55             | -2.54    | 5.21     | 330      | 0        | 0        |
| 39 823                                                                                                                                                            | 7.40  | 2.34  | -11.96                                | 12.19 | 281 | 2.15             | -11.52   | 11.72    | 280      | 0        | 0        |
| U-D50 100.00 0.189 -0.447 0.485 292 0.0 0.0 0.0 0.0 0.0 0.0                                                                                                       |       |       |                                       |       |     |                  |          |          |          |          |          |
| $a^*_{p_{ab}} = a^*_{p_{ab}}(b_{21} - b_{23})x + (b_{22} - b_{23})y + b_{23} = 1.4(3.0757x - 2.5702y - 0.0960)/y$                                                 |       |       |                                       |       |     |                  |          |          |          |          |          |
| $b^*_{p_{ab}} = b^*_{p_{ab}}(b_{21} - b_{23})x + (b_{22} - b_{23})y + b_{23} = 0.5(1.9906x + 3.8617y - 2.4046)/y$                                                 |       |       |                                       |       |     |                  |          |          |          |          |          |

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CIE10 tristimulus values, chromatic values, and putities ( $n=1.4, n_0=0.5$ ).  
Normalized Ostwald (O) tristimulus values ( $Y_w=100$ ), ordered by hue angle.

| no.       | O     | C     | tristimulus values and chromaticities |       |       | chromatic values |          |          | putities |          |          |
|-----------|-------|-------|---------------------------------------|-------|-------|------------------|----------|----------|----------|----------|----------|
| $\lambda$ | $X$   | $Y$   | $Z$                                   | $x$   | $y$   | $x_{ab}$         | $y_{ab}$ | $h_{ab}$ | $p_{ab}$ | $p_{ab}$ | $h_{ab}$ |
| 00 692    | 70.96 | 43.57 | 21.37                                 | 0.522 | 0.320 | 0.157            | 122.2    | 10.8     | 122.7    | 365      | 0        |
| 01 697    | 74.12 | 43.34 | 43.14                                 | 0.461 | 0.269 | 0.268            | 133.4    | -16.2    | 134.4    | 353      | 0        |
| 02 708    | 75.07 | 42.59 | 56.88                                 | 0.430 | 0.244 | 0.365            | 138.4    | -33.8    | 142.5    | 346      | 0        |
| 03 717    | 74.44 | 41.54 | 62.63                                 | 0.416 | 0.232 | 0.350            | 139.2    | -41.8    | 145.3    | 343      | 0        |
| 04 726    | 72.35 | 39.38 | 67.37                                 | 0.403 | 0.219 | 0.376            | 138.3    | -49.6    | 146.9    | 340      | 0        |
| 05 736    | 67.62 | 35.52 | 71.08                                 | 0.388 | 0.203 | 0.408            | 132.3    | -57.7    | 145.2    | 336      | 0        |
| 06 756    | 55.24 | 26.06 | 71.08                                 | 0.362 | 0.171 | 0.466            | 118.6    | -66.2    | 135.9    | 330      | 0        |
| 07 478    | 13.22 | 7.40  | 75.87                                 | 0.136 | 0.076 | 0.786            | 15.9     | -85.2    | 86.7     | 280      | 0        |
| 08 460    | 13.26 | 8.89  | 77.33                                 | 0.133 | 0.089 | 0.777            | 10.0     | -85.5    | 85.5     | 276      | 0        |
| 09 462    | 13.28 | 10.68 | 78.42                                 | 0.129 | 0.104 | 0.765            | 2.9      | -84.4    | 84.4     | 272      | 0        |
| 10 464    | 13.28 | 10.68 | 78.42                                 | 0.129 | 0.104 | 0.765            | 2.9      | -84.4    | 84.4     | 272      | 0        |
| 11 468    | 13.66 | 17.92 | 80.19                                 | 0.122 | 0.160 | 0.717            | -24.0    | -78.1    | 81.8     | 252      | 0        |
| 12 471B   | 14.70 | 24.41 | 80.73                                 | 0.121 | 0.203 | 0.673            | -45.2    | -71.4    | 84.5     | 237      | 0        |
| 13 473    | 15.30 | 26.07 | 81.08                                 | 0.125 | 0.225 | 0.648            | -56.2    | -67.3    | 87.7     | 230      | 0        |
| 14 475    | 18.32 | 36.37 | 81.08                                 | 0.134 | 0.267 | 0.597            | -71.1    | -58.5    | 96.7     | 217      | 0        |
| 15 477    | 21.35 | 45.61 | 81.08                                 | 0.145 | 0.303 | 0.549            | -86.4    | -49.6    | 106.5    | 207      | 0        |
| 16 477    | 22.35 | 45.10 | 81.16                                 | 0.150 | 0.303 | 0.546            | -90.5    | -49.9    | 113.6    | 200      | 0        |
| 17 479    | 27.82 | 53.94 | 81.17                                 | 0.170 | 0.331 | 0.498            | -104.4   | -39.9    | 116.3    | 192      | 0        |
| 18 480C   | 30.64 | 58.21 | 79.19                                 | 0.182 | 0.346 | 0.471            | -111.1   | -33.1    | 115.9    | 196      | 0        |
| 19 484    | 25.67 | 56.42 | 59.80                                 | 0.180 | 0.397 | 0.421            | -122.2   | -10.8    | 122.7    | 365      | 0        |
| 20 492    | 22.50 | 56.65 | 38.03                                 | 0.023 | 0.403 | 0.324            | -133.4   | 16.2     | 134.4    | 353      | 0        |
| 21 503    | 21.02 | 57.45 | 24.28                                 | 0.028 | 0.553 | 0.225            | -138.4   | 33.8     | 142.5    | 346      | 0        |
| 22 512    | 22.19 | 58.45 | 18.23                                 | 0.028 | 0.589 | 0.186            | -139.1   | 41.8     | 145.3    | 343      | 0        |
| 23 521C   | 24.00 | 60.61 | 13.79                                 | 0.026 | 0.614 | 0.139            | -138.2   | 49.6     | 146.9    | 340      | 0        |
| 24 531    | 29.28 | 64.47 | 10.07                                 | 0.028 | 0.622 | 0.097            | -133.2   | 57.6     | 145.1    | 356      | 0        |
| 25 541    | 34.19 | 73.93 | 10.07                                 | 0.030 | 0.589 | 0.080            | -118.6   | 66.2     | 135.9    | 330      | 0        |
| 26 549    | 38.25 | 81.08 | 10.07                                 | 0.028 | 0.589 | 0.080            | -104.4   | 39.9     | 116.3    | 192      | 0        |
| 27 564    | 83.37 | 91.09 | 3.82                                  | 0.467 | 0.510 | 0.021            | -9.9     | 85.2     | 85.8     | 96       | 0        |
| 28 565    | 83.35 | 89.31 | 2.74                                  | 0.475 | 0.509 | 0.015            | -2.9     | 84.4     | 84.5     | 91       | 0        |
| 29 565    | 83.35 | 89.31 | 2.74                                  | 0.475 | 0.509 | 0.015            | -2.9     | 84.4     | 84.5     | 91       | 0        |
| 30 568    | 82.96 | 82.02 | 0.96                                  | 0.499 | 0.494 | 0.005            | 24.0     | 78.1     | 81.8     | 72       | 0        |
| 31 573    | 82.93 | 75.56 | 0.44                                  | 0.518 | 0.478 | 0.022            | 45.3     | 71.3     | 84.5     | 59       | 0        |
| 32 578    | 83.03 | 71.82 | 0.27                                  | 0.528 | 0.469 | 0.001            | 56.3     | 67.3     | 87.7     | 46       | 0        |
| 33 577    | 78.31 | 63.62 | 0.08                                  | 0.551 | 0.447 | 0.000            | 71.1     | 58.4     | 96.7     | 37       | 0        |
| 34 581    | 74.28 | 54.89 | 0.01                                  | 0.575 | 0.424 | 0.000            | 94.5     | 49.1     | 106.6    | 27       | 0        |
| 35 581    | 74.28 | 54.89 | 0.01                                  | 0.575 | 0.424 | 0.000            | 94.5     | 49.1     | 106.6    | 27       | 0        |
| 36 587R   | 68.81 | 46.05 | 0.00                                  | 0.599 | 0.400 | 0.000            | 106.4    | 39.9     | 113.6    | 20       | 0        |
| 37 590    | 68.81 | 46.04 | 0.00                                  | 0.600 | 0.391 | 0.000            | 122.2    | 10.8     | 122.7    | 36       | 0        |
| 38 692    | 70.96 | 43.57 | 21.37                                 | 0.522 | 0.320 | 0.157            | 122.2    | 10.8     | 122.7    | 365      | 0        |
| 39 697    | 74.12 | 43.34 | 43.14                                 | 0.461 | 0.269 | 0.268            | 133.4    | -16.2    | 134.4    | 353      | 0        |

$$a = \frac{p_{ab} - p_{ab0}}{1 - p_{ab0}} = \frac{p_{ab}(b_2 - b_1) - (b_2 - b_1)p_{ab0}}{(b_2 - b_1)(1 - p_{ab0})} = \frac{1.4(0.7057x - 2.5702y - 0.0690y)}{b = \frac{p_{ab} - p_{ab0}}{1 - p_{ab0}} = \frac{p_{ab}(b_2 - b_1) - (b_2 - b_1)p_{ab0}}{(b_2 - b_1)(1 - p_{ab0})} = \frac{1.5(1.9906x + 3.8617y - 2.4046y)}$$

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see similar files: <http://farbe.li.tu-berlin.de/DE73/DE73.HTM>  
technical information: <http://farbe.li.tu-berlin.de> or <http://130.149.60.45/~farbmatrik>

| CIEF02 tristimulus values, chromatic values, and putities ( $n_s=1.4, n_0=0.5$ ).<br>Normalized Ostwald (O) tristimulus values ( $Y_w=100$ ), ordered by wavelength. |       |       |                                       |       |       |                     |        |        |                 |                 |                 |                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|---------------------------------------|-------|-------|---------------------|--------|--------|-----------------|-----------------|-----------------|-----------------|
| no.                                                                                                                                                                  | O     | C     | tristimulus values and chromaticities |       |       | nu-chromatic values |        |        | nu-putities     |                 |                 |                 |
|                                                                                                                                                                      |       |       | X                                     | Y     | Z     | x                   | y      | z      | $\lambda_{321}$ | $\lambda_{322}$ | $\lambda_{323}$ | $\lambda_{324}$ |
| 00 386                                                                                                                                                               | 51.50 | 23.94 | 74.68                                 | 0.343 | 0.159 | 0.497               | 11.1   | -72.0  | 132.4           | 327             |                 |                 |
| 01 460                                                                                                                                                               | 12.38 | 6.54  | 76.19                                 | 0.130 | 0.068 | 0.081               | 15.7   | -86.3  | 87.8            | 280             |                 |                 |
| 02 465                                                                                                                                                               | 12.41 | 9.58  | 78.25                                 | 0.123 | 0.095 | 0.780               | 3.7    | -85.2  | 85.3            | 272             |                 |                 |
| 03 467                                                                                                                                                               | 14.25 | 11.64 | 78.87                                 | 0.120 | 0.113 | 0.766               | -4.2   | -83.5  | 83.6            | 267             |                 |                 |
| 04 473                                                                                                                                                               | 13.31 | 20.43 | 79.83                                 | 0.117 | 0.179 | 0.702               | -35.1  | -74.4  | 82.3            | 244             |                 |                 |
| 05 475                                                                                                                                                               | 14.02 | 24.19 | 79.97                                 | 0.118 | 0.204 | 0.676               | -46.9  | -70.19 | 84.5            | 236             |                 |                 |
| 06 479                                                                                                                                                               | 17.82 | 36.91 | 80.16                                 | 0.132 | 0.273 | 0.594               | -80.9  | -56.2  | 98.5            | 214             |                 |                 |
| 07 479                                                                                                                                                               | 17.82 | 36.91 | 80.16                                 | 0.132 | 0.273 | 0.594               | -80.9  | -56.2  | 98.5            | 214             |                 |                 |
| 08 481                                                                                                                                                               | 21.98 | 46.03 | 80.19                                 | 0.148 | 0.310 | 0.541               | -99.2  | -46.2  | 109.4           | 205             |                 |                 |
| 09 481                                                                                                                                                               | 21.98 | 46.03 | 80.19                                 | 0.148 | 0.310 | 0.541               | -99.2  | -46.2  | 109.4           | 205             |                 |                 |
| 10 483C                                                                                                                                                              | 27.52 | 55.03 | 80.21                                 | 0.169 | 0.338 | 0.492               | -111.3 | -36.3  | 117.2           | 198             |                 |                 |
| 11 484                                                                                                                                                               | 28.85 | 57.21 | 79.07                                 | 0.174 | 0.346 | 0.478               | -114.1 | -33.0  | 118.8           | 196             |                 |                 |
| 12 489                                                                                                                                                               | 25.36 | 57.41 | 57.70                                 | 0.180 | 0.408 | 0.410               | -126.6 | -6.4   | 126.7           | 182             |                 |                 |
| 13 497                                                                                                                                                               | 22.33 | 57.50 | 36.81                                 | 0.191 | 0.492 | 0.315               | -136.8 | 19.4   | 138.1           | 171             |                 |                 |
| 14 505                                                                                                                                                               | 21.31 | 58.03 | 24.30                                 | 0.205 | 0.559 | 0.234               | -141.4 | 35.3   | 145.8           | 165             |                 |                 |
| 15 512                                                                                                                                                               | 21.41 | 58.69 | 18.79                                 | 0.216 | 0.593 | 0.190               | -142.8 | 42.7   | 149.1           | 163             |                 |                 |
| 16 521G                                                                                                                                                              | 22.42 | 59.91 | 14.10                                 | 0.232 | 0.621 | 0.146               | -142.8 | 49.5   | 151.1           | 160             |                 |                 |
| 17 524                                                                                                                                                               | 25.32 | 62.97 | 14.10                                 | 0.247 | 0.615 | 0.137               | -142.6 | 52.6   | 152.0           | 159             |                 |                 |
| 18 539                                                                                                                                                               | 30.29 | 66.55 | 7.57                                  | 0.290 | 0.637 | 0.072               | -135.0 | 63.6   | 149.3           | 154             |                 |                 |
| 19 541                                                                                                                                                               | 44.95 | 76.05 | 0.38                                  | 0.509 | 0.487 | 0.002               | -35.4  | 76.8   | 84.6            | 65              |                 |                 |
| 20 568                                                                                                                                                               | 84.08 | 93.45 | 4.02                                  | 0.463 | 0.514 | 0.022               | -15.4  | 88.7   | 90.1            | 99              |                 |                 |
| 21 568                                                                                                                                                               | 84.08 | 93.45 | 4.02                                  | 0.463 | 0.514 | 0.022               | -15.4  | 88.7   | 90.1            | 99              |                 |                 |
| 22 569                                                                                                                                                               | 84.05 | 90.41 | 1.96                                  | 0.476 | 0.512 | 0.011               | -3.4   | 87.6   | 87.7            | 92              |                 |                 |
| 23 570Y                                                                                                                                                              | 84.00 | 88.35 | 1.33                                  | 0.483 | 0.508 | 0.007               | -4.4   | 85.9   | 86.1            | 87              |                 |                 |
| 24 573                                                                                                                                                               | 83.15 | 79.56 | 0.38                                  | 0.509 | 0.487 | 0.002               | -35.4  | 76.8   | 84.6            | 65              |                 |                 |
| 25 575                                                                                                                                                               | 82.44 | 75.50 | 0.24                                  | 0.520 | 0.478 | 0.001               | -47.2  | 72.7   | 86.7            | 56              |                 |                 |
| 26 580                                                                                                                                                               | 78.64 | 63.07 | 0.05                                  | 0.554 | 0.444 | 0.000               | 81.2   | 58.5   | 100.1           | 35              |                 |                 |
| 27 580                                                                                                                                                               | 78.64 | 63.07 | 0.05                                  | 0.554 | 0.444 | 0.000               | 81.2   | 58.5   | 100.1           | 35              |                 |                 |
| 28 585                                                                                                                                                               | 74.48 | 53.96 | 0.02                                  | 0.579 | 0.420 | 0.000               | 99.5   | 48.6   | 110.7           | 26              |                 |                 |
| 29 590                                                                                                                                                               | 68.94 | 44.96 | 0.00                                  | 0.605 | 0.394 | 0.000               | 111.6  | 35.4   | 118.8           | 19              |                 |                 |
| 30 592                                                                                                                                                               | 67.61 | 42.78 | 1.14                                  | 0.606 | 0.383 | 0.010               | 114.4  | 35.4   | 119.8           | 17              |                 |                 |
| 31 694                                                                                                                                                               | 71.10 | 42.58 | 22.52                                 | 0.522 | 0.312 | 0.165               | 126.9  | 8.7    | 127.2           | 3               |                 |                 |
| 32 702                                                                                                                                                               | 74.12 | 42.49 | 43.40                                 | 0.463 | 0.265 | 0.271               | 137.0  | -17.0  | 138.1           | 352             |                 |                 |
| 33 710                                                                                                                                                               | 75.15 | 41.96 | 55.91                                 | 0.434 | 0.242 | 0.323               | 141.7  | -32.9  | 145.5           | 346             |                 |                 |
| 34 717                                                                                                                                                               | 75.05 | 41.30 | 61.43                                 | 0.422 | 0.232 | 0.345               | 143.1  | -40.3  | 148.7           | 344             |                 |                 |
| 35 726M                                                                                                                                                              | 74.04 | 40.08 | 66.11                                 | 0.410 | 0.222 | 0.366               | 143.1  | -47.1  | 150.7           | 341             |                 |                 |
| 36 729                                                                                                                                                               | 71.14 | 37.02 | 66.11                                 | 0.408 | 0.212 | 0.379               | 143.0  | -50.2  | 151.5           | 340             |                 |                 |
| 37 744                                                                                                                                                               | 66.16 | 33.43 | 72.64                                 | 0.384 | 0.194 | 0.421               | 135.3  | -61.2  | 148.5           | 335             |                 |                 |
| 38 756                                                                                                                                                               | 51.50 | 23.94 | 74.68                                 | 0.343 | 0.159 | 0.497               | 11.1   | -72.0  | 132.4           | 327             |                 |                 |
| 39 825                                                                                                                                                               | 12.38 | 6.54  | 76.19                                 | 0.130 | 0.068 | 0.081               | 15.7   | -86.3  | 87.8            | 280             |                 |                 |
| U-D50 96.46 100.00 82.22 0.346 0.358 0.358 0.0 0.0 0.0 0                                                                                                             |       |       |                                       |       |       |                     |        |        |                 |                 |                 |                 |
| $a^*_{321}=n_s \cdot n_0 \cdot n_b \cdot [(b_{21}-b_{23})x + (b_{22}-b_{23})y + b_{23}] = 1.4(3.0757x - 2.5702y - 0.0960)/y$                                         |       |       |                                       |       |       |                     |        |        |                 |                 |                 |                 |
| $b^*_{321}=n_s \cdot n_0 \cdot n_b \cdot [(b_{31}-b_{33})x + (b_{32}-b_{33})y + b_{33}] = 0.5(1.9906x + 3.8617y - 2.4046)/y$                                         |       |       |                                       |       |       |                     |        |        |                 |                 |                 |                 |

| CIEF02 tristimulus values, chromatic values, and putities ( $n_s=1.4, n_0=0.5$ ).<br>Normalized Ostwald (O) tristimulus values ( $Y_w=100$ ), ordered by wavelength. |       |       |                                       |       |       |                     |        |        |                 |                 |                 |                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|---------------------------------------|-------|-------|---------------------|--------|--------|-----------------|-----------------|-----------------|-----------------|
| no.                                                                                                                                                                  | O     | C     | tristimulus values and chromaticities |       |       | nu-chromatic values |        |        | nu-putities     |                 |                 |                 |
|                                                                                                                                                                      |       |       | X                                     | Y     | Z     | x                   | y      | z      | $\lambda_{321}$ | $\lambda_{322}$ | $\lambda_{323}$ | $\lambda_{324}$ |
| 00 386                                                                                                                                                               | 51.50 | 23.94 | 74.68                                 | 0.343 | 0.159 | 0.497               | 11.1   | -72.0  | 132.4           | 327             |                 |                 |
| 01 460                                                                                                                                                               | 12.38 | 6.54  | 76.19                                 | 0.130 | 0.068 | 0.081               | 15.7   | -86.3  | 87.8            | 280             |                 |                 |
| 02 465                                                                                                                                                               | 12.41 | 9.58  | 78.25                                 | 0.123 | 0.095 | 0.780               | 3.7    | -85.2  | 85.3            | 272             |                 |                 |
| 03 467                                                                                                                                                               | 14.25 | 11.64 | 78.87                                 | 0.120 | 0.113 | 0.766               | -4.2   | -83.5  | 83.6            | 267             |                 |                 |
| 04 473                                                                                                                                                               | 13.31 | 20.43 | 79.83                                 | 0.117 | 0.179 | 0.702               | -35.1  | -74.4  | 82.3            | 244             |                 |                 |
| 05 475                                                                                                                                                               | 14.02 | 24.19 | 79.97                                 | 0.118 | 0.204 | 0.676               | -46.9  | -70.19 | 84.5            | 236             |                 |                 |
| 06 479                                                                                                                                                               | 17.82 | 36.91 | 80.16                                 | 0.132 | 0.273 | 0.594               | -80.9  | -56.2  | 98.5            | 214             |                 |                 |
| 07 479                                                                                                                                                               | 17.82 | 36.91 | 80.16                                 | 0.132 | 0.273 | 0.594               | -80.9  | -56.2  | 98.5            | 214             |                 |                 |
| 08 481                                                                                                                                                               | 21.98 | 46.03 | 80.19                                 | 0.148 | 0.310 | 0.541               | -99.2  | -46.2  | 109.4           | 205             |                 |                 |
| 09 481                                                                                                                                                               | 21.98 | 46.03 | 80.19                                 | 0.148 | 0.310 | 0.541               | -99.2  | -46.2  | 109.4           | 205             |                 |                 |
| 10 483C                                                                                                                                                              | 27.52 | 55.03 | 80.21                                 | 0.169 | 0.338 | 0.492               | -111.3 | -36.3  | 117.2           | 198             |                 |                 |
| 11 484                                                                                                                                                               | 28.85 | 57.21 | 79.07                                 | 0.174 | 0.346 | 0.478               | -114.1 | -33.0  | 118.8           | 196             |                 |                 |
| 12 489                                                                                                                                                               | 25.36 | 57.41 | 57.70                                 | 0.180 | 0.408 | 0.410               | -126.6 | -6.4   | 126.7           | 182             |                 |                 |
| 13 497                                                                                                                                                               | 22.33 | 57.50 | 36.81                                 | 0.191 | 0.492 | 0.315               | -136.8 | 19.4   | 138.1           | 171             |                 |                 |
| 14 505                                                                                                                                                               | 21.31 | 58.03 | 24.30                                 | 0.205 | 0.559 | 0.234               | -141.4 | 35.3   | 145.8           | 165             |                 |                 |
| 15 512                                                                                                                                                               | 21.41 | 58.69 | 18.79                                 | 0.216 | 0.593 | 0.190               | -142.8 | 42.7   | 149.1           | 163             |                 |                 |
| 16 521G                                                                                                                                                              | 22.42 | 59.91 | 14.10                                 | 0.232 | 0.621 | 0.146               | -142.8 | 49.5   | 151.1           | 160             |                 |                 |
| 17 524                                                                                                                                                               | 25.32 | 62.97 | 14.10                                 | 0.247 | 0.615 | 0.137               | -142.6 | 52.6   | 152.0           | 159             |                 |                 |
| 18 539                                                                                                                                                               | 30.29 | 66.55 | 7.57                                  | 0.290 | 0.637 | 0.072               | -135.0 | 63.6   | 149.3           | 154             |                 |                 |
| 19 541                                                                                                                                                               | 44.95 | 76.05 | 0.38                                  | 0.509 | 0.487 | 0.002               | -35.4  | 76.8   | 84.6            | 65              |                 |                 |
| 20 568                                                                                                                                                               | 84.08 | 93.45 | 4.02                                  | 0.463 | 0.514 | 0.022               | -15.4  | 88.7   | 90.1            | 99              |                 |                 |
| 21 568                                                                                                                                                               | 84.08 | 93.45 | 4.02                                  | 0.463 | 0.514 | 0.022               | -15.4  | 88.7   | 90.1            | 99              |                 |                 |
| 22 569                                                                                                                                                               | 84.05 | 90.41 | 1.96                                  | 0.476 | 0.512 | 0.011               | -3.4   | 87.6   | 87.7            | 92              |                 |                 |
| 23 570Y                                                                                                                                                              | 84.00 | 88.35 | 1.33                                  | 0.483 | 0.508 | 0.007               | -4.4   | 85.9   | 86.1            | 87              |                 |                 |
| 24 573                                                                                                                                                               | 83.15 | 79.56 | 0.38                                  | 0.509 | 0.487 | 0.002               | -35.4  | 76.8   | 84.6            | 65              |                 |                 |
| 25 575                                                                                                                                                               | 82.44 | 75.50 | 0.24                                  | 0.520 | 0.478 | 0.001               | -47.2  | 72.7   | 86.7            | 56              |                 |                 |
| 26 580                                                                                                                                                               | 78.64 | 63.07 | 0.05                                  | 0.554 | 0.444 | 0.000               | 81.2   | 58.5   | 100.1           | 35              |                 |                 |
| 27 580                                                                                                                                                               | 78.64 | 63.07 | 0.05                                  | 0.554 | 0.444 | 0.000               | 81.2   | 58.5   | 100.1           | 35              |                 |                 |
| 28 585                                                                                                                                                               | 74.48 | 53.96 | 0.02                                  | 0.579 | 0.420 | 0.000               | 99.5   | 48.6   | 110.7           | 26              |                 |                 |
| 29 590                                                                                                                                                               | 68.94 | 44.96 | 0.00                                  | 0.605 | 0.394 | 0.000               | 111.6  | 35.4   | 118.8           | 19              |                 |                 |
| 30 592                                                                                                                                                               | 67.61 | 42.78 | 1.14                                  | 0.606 | 0.383 | 0.010               | 114.4  | 35.4   | 119.8           | 17              |                 |                 |
| 31 694                                                                                                                                                               | 71.10 | 42.58 | 22.52                                 | 0.522 | 0.312 | 0.165               | 126.9  | 8.7    | 127.2           | 3               |                 |                 |
| 32 702                                                                                                                                                               | 74.12 | 42.49 | 43.40                                 | 0.463 | 0.265 | 0.271               | 137.0  | -17.0  | 138.1           | 352             |                 |                 |
| 33 710                                                                                                                                                               | 75.15 | 41.96 | 55.91                                 | 0.434 | 0.242 | 0.323               | 141.7  | -32.9  | 145.5           | 346             |                 |                 |
| 34 717                                                                                                                                                               | 75.05 | 41.30 | 61.43                                 | 0.422 | 0.232 | 0.345               | 143.1  | -40.3  | 148.7           | 344             |                 |                 |
| 35 726M                                                                                                                                                              | 74.04 | 40.08 | 66.11                                 | 0.410 | 0.222 | 0.366               | 143.1  | -47.1  | 150.7           | 341             |                 |                 |
| 36 729                                                                                                                                                               | 71.14 | 37.02 | 66.11                                 | 0.408 | 0.212 | 0.379               | 143.0  | -50.2  | 151.5           | 340             |                 |                 |
| 37 744                                                                                                                                                               | 66.16 | 33.43 | 72.64                                 | 0.384 | 0.194 | 0.421               | 135.3  | -61.2  | 148.5           | 335             |                 |                 |
| 38 756                                                                                                                                                               | 51.50 | 23.94 | 74.68                                 | 0.343 | 0.159 | 0.497               | 11.1   | -72.0  | 132.4           | 327             |                 |                 |
| 39 825                                                                                                                                                               | 12.38 | 6.54  | 76.19                                 | 0.130 | 0.068 | 0.081               | 15.7   | -86.3  | 87.8            | 280             |                 |                 |
| U-D50 96.46 100.00 82.22 0.346 0.358 0.358 0.0 0.0 0.0 0                                                                                                             |       |       |                                       |       |       |                     |        |        |                 |                 |                 |                 |
| $a^*_{321}=n_s \cdot n_0 \cdot n_b \cdot [(b_{21}-b_{23})x + (b_{22}-b_{23})y + b_{23}] = 1.4(3.0757x - 2.5702y - 0.0960)/y$                                         |       |       |                                       |       |       |                     |        |        |                 |                 |                 |                 |
| $b^*_{321}=n_s \cdot n_0 \cdot n_b \cdot [(b_{31}-b_{33})x + (b_{32}-b_{33})y + b_{33}] = 0.5(1.9906x + 3.8617y - 2.4046)/y$                                         |       |       |                                       |       |       |                     |        |        |                 |                 |                 |                 |

DE730-4N

CIEF02 tristimulus values, chromatic values, and putities ( $n_s=1.4, n_0=0.5$ ).  
Normalized Ostwald (O) tristimulus values ( $Y_w=100$ ), ordered by hue angle.

| no.             | O               | C               | tristimulus values and chromaticities |                 |                 | nu-chromatic values |                 |                 | nu-putities     |                 |                 |  |
|-----------------|-----------------|-----------------|---------------------------------------|-----------------|-----------------|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--|
| $\lambda_{321}$ | $\lambda_{322}$ | $\lambda_{323}$ | $\lambda_{324}$                       | $\lambda_{325}$ | $\lambda_{326}$ | $\lambda_{327}$     | $\lambda_{328}$ | $\lambda_{329}$ | $\lambda_{330}$ | $\lambda_{331}$ | $\lambda_{332}$ |  |
| 00 592          | 42.78           | 2.85            | 0.36                                  | 2.88            | 367             | 2.67                | 0.82            | 2.80            | 377             |                 |                 |  |
| 01 694          | 42.58           | 3.16            | -0.25                                 | 3.17            | 355             | 2.98                | 0.40            | 2.98            | 363             |                 |                 |  |
| 02 702          | 42.49           | 3.40            | -0.86                                 | 3.51            | 345             | 3.22                | -0.40           | 3.25            | 352             |                 |                 |  |
| 03 710          | 41.96           | 3.55            | -1.46                                 | 3.61            | 334             | 3.37                | -0.78           | 3.35            | 345             |                 |                 |  |
| 04 717          | 41.30           | 3.64            | -1.43                                 | 3.92            | 338             | 3.46                | -0.97           | 3.60            | 344             |                 |                 |  |
| 05 726M4        | 40.08           | 3.75            | -1.63                                 | 4.09            | 336             | 3.57                | -1.17           | 3.76            | 341             |                 |                 |  |
| 06 729          | 37.02           | 4.04            | -1.81                                 | 4.43            | 335             | 3.86                | -1.35           | 4.09            | 340             |                 |                 |  |
| 07 744          | 33.43           | 4.22            | -2.29                                 | 4.81            | 331             | 4.04                | -1.83           | 4.44            | 335             |                 |                 |  |
| 08 386          | 23.94           | 4.82            | -3.46                                 | 5.93            | 324             | 4.64                | -3.00           | 5.50            | 327             |                 |                 |  |
| 09 460          | 6.54            | 2.59            | -13.66                                | 13.91           | 280             | 2.41                | -13.21          | 4.22            | 280             |                 |                 |  |
| 10 465          | 9.58            | 0.57            | -9.36                                 | 9.37            | 273             | 0.39                | -8.90           | 8.90            | 272             |                 |                 |  |
| 11 467          | 11.64           | -0.18           | -7.64                                 | 7.64            | 268             | -0.36               | -7.18           | 7.19            | 267             |                 |                 |  |
| 12 4738         | 20.43           | -1.54           | -4.10                                 | 4.38            | 249             | -1.72               | -3.64           | 4.03            | 244             |                 |                 |  |
| 13 475          | 24.19           | -1.75           | -3.36                                 | 3.79            | 242             | -1.93               | -2.90           | 3.49            | 236             |                 |                 |  |
| 14 478          | 26.91           | -2.01           | -36.91                                | 24.01           | 240             | -2.19               | -2.19           | 2.40            | 235             |                 |                 |  |
| 15 479          | 36.91           | -2.01           | -1.98                                 | 2.82            | 224             | -2.19               | -1.52           | 2.66            | 214             |                 |                 |  |
| 16 481          | 46.03           | -1.97           | -1.46                                 | 2.45            | 216             | -2.15               | -1.00           | 2.37            | 205             |                 |                 |  |
| 17 481          | 46.03           | -1.97           | -1.46                                 | 2.45            | 216             | -2.15               | -1.00           | 2.37            | 205             |                 |                 |  |
| 18 483C         | 55.03           | -1.84           | -1.12                                 | 2.15            | 209             | -2.02               | -0.66           | 2.13            | 198             |                 |                 |  |
| 19 484          | 57.21           | -1.82           | -0.57                                 | 2.03            | 201             | -2.08               | -0.66           | 2.00            | 196             |                 |                 |  |
| 20 487          | 57.41           | -2.02           | -0.57                                 | 2.10            | 195             | -2.20               | -1.01           | 2.00            | 182             |                 |                 |  |
| 21 497          | 57.50           | -2.19           | -0.12                                 | 2.20            | 183             | -2.37               | -0.33           | 2.50            | 171             |                 |                 |  |
| 22 505          | 58.03           | -2.25           | 0.14                                  | 2.26            | 176             | -2.43               | 0.60            | 2.51            | 165             |                 |                 |  |
| 23 512C         | 58.69           | -2.25           | 0.26                                  | 2.26            | 173             | -2.43               | 0.72            | 2.54            | 163             |                 |                 |  |
| 24 521          | 59.91           | -2.06           | 0.36                                  | 2.23            | 170             | -2.38               | 0.82            | 2.52            | 160             |                 |                 |  |
| 25 527          | 62.97           | -2.08           | 0.37                                  | 2.11            | 169             | -2.43               | 0.96            | 2.57            | 158             |                 |                 |  |
| 26 539          | 66.55           | -1.84           | 0.49                                  | 1.91            | 164             | -2.02               | 0.95            | 2.24            | 154             |                 |                 |  |
| 27 551          | 76.05           | -1.27           | 0.51                                  | 1.37            | 157             | -1.45               | 0.97            | 1.75            | 146             |                 |                 |  |
| 28 568          | 93.45           | 0.01            | 0.49                                  | 0.49            | 88              | -0.16               | 0.95            | 0.96            | 99              |                 |                 |  |
| 29 568          | 93.45           | 0.01            | 0.49                                  | 0.49            | 88              | -0.16               | 0.95            | 0.96            | 99              |                 |                 |  |
| 30 555          | 90.41           | 0.14            | 0.51                                  | 0.52            | 74              | -0.03               | 0.96            | 0.97            | 82              |                 |                 |  |
| 31 567          | 88.35           | 0.23            | 0.51                                  | 0.56            | 65              | 0.05                | 0.97            | 0.97            | 87              |                 |                 |  |
| 32 573Y         | 75.96           | 0.62            | 0.50                                  | 0.78            | 38              | 0.44                | 0.96            | 1.06            | 65              |                 |                 |  |
| 33 575          | 75.80           | 0.80            | 0.49                                  | 0.94            | 31              | 0.62                | 0.95            | 1.14            | 56              |                 |                 |  |
| 34 580          | 63.07           | 1.46            | 0.46                                  | 1.54            | 17              | 1.28                | 0.92            | 1.58            | 35              |                 |                 |  |
| 35 580          | 63.07           | 1.46            | 0.46                                  | 1.54            | 17              | 1.28                | 0.92            | 1.58            | 35              |                 |                 |  |
| 36 592          | 42.78           | 2.85            | 0.36                                  | 2.88            | 7               | 2.67                | 0.82            | 2.80            | 17              |                 |                 |  |
| 38 594          | 42.58           | 3.16            | -0.25                                 | 3.17            | 4               | 2.98                | 0.20            | 2.98            | 3               |                 |                 |  |

$$U=D50 \quad 0.100 \quad 0.180 \quad -0.459 \quad 0.493 \quad 291 \quad 0.0 \quad 0.0 \quad 0.0 \quad 0.0 \quad 0.0 \quad 0.0$$

$$a=P_{-1}P_{-2}P_{-3}(b_{21}-b_{23})+(b_{22}-b_{23})+b_{23}/1.4(3.075x-2.570z-0.090)y$$

$$b=P_{-1}P_{-2}P_{-3}(b_{31}-b_{33})+(b_{32}-b_{33})+b_{33}/1.4(0.984x-0.905y+2.05z)$$

DE730-BN



see similar files: <http://farbe.li.tu-berlin.de/DE73/DE73L0NA.TXT>  
technical information: <http://farbe.li.tu-berlin.de> or <http://130.149.60.45/~farbmetrik>

| R17M tristimulus values, chromatic values, and putities ( $n=1.4, n_0=0.5$ ).<br>Normalized Oswald (O) tristimulus values ( $Y_w=100$ ), ordered by wavelength.                                            |      |   |                                       |        |       |                    |       |       |                |                |                |                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|---------------------------------------|--------|-------|--------------------|-------|-------|----------------|----------------|----------------|----------------|
| no.                                                                                                                                                                                                        | O    | C | tristimulus values and chromaticities |        |       | n-chromatic values |       |       | n-purities     |                |                |                |
|                                                                                                                                                                                                            |      |   | X                                     | Y      | Z     | x                  | y     | z     | $\lambda_{ab}$ | $\lambda_{bg}$ | $\lambda_{br}$ | $\lambda_{br}$ |
| 00                                                                                                                                                                                                         | 373  |   | 50.84                                 | 23.58  | 64.46 | 0.366              | 0.169 | 0.464 | 113.4          | -60.5          | 128.6          | 331            |
| 01                                                                                                                                                                                                         | 450  |   | 26.22                                 | 10.37  | 70.14 | 0.245              | 0.097 | 0.657 | 60.4           | -77.6          | 98.3           | 307            |
| 02                                                                                                                                                                                                         | 463  |   | 19.81                                 | 9.03   | 72.37 | 0.195              | 0.089 | 0.715 | 38.4           | -80.5          | 89.3           | 295            |
| 03                                                                                                                                                                                                         | 465  |   | 19.87                                 | 11.18  | 74.25 | 0.188              | 0.106 | 0.705 | 30.2           | -80.3          | 85.8           | 290            |
| 04                                                                                                                                                                                                         | 470B |   | 20.04                                 | 16.46  | 77.00 | 0.176              | 0.145 | 0.678 | 10.4           | -77.5          | 78.2           | 277            |
| 05                                                                                                                                                                                                         | 474  |   | 20.76                                 | 23.15  | 78.71 | 0.169              | 0.188 | 0.641 | -12.2          | -71.9          | 72.9           | 260            |
| 06                                                                                                                                                                                                         | 477  |   | 22.69                                 | 31.32  | 79.75 | 0.169              | 0.234 | 0.596 | -35.5          | -64.0          | 73.2           | 240            |
| 07                                                                                                                                                                                                         | 479  |   | 24.27                                 | 35.77  | 80.07 | 0.173              | 0.255 | 0.571 | -45.9          | -59.7          | 75.2           | 232            |
| 08                                                                                                                                                                                                         | 481  |   | 28.86                                 | 45.22  | 80.48 | 0.186              | 0.292 | 0.520 | -62.8          | -49.9          | 80.3           | 218            |
| 09                                                                                                                                                                                                         | 482  |   | 30.21                                 | 48.30  | 79.14 | 0.191              | 0.306 | 0.501 | -68.8          | -45.0          | 82.2           | 213            |
| 10                                                                                                                                                                                                         | 487C |   | 26.13                                 | 48.90  | 65.44 | 0.186              | 0.348 | 0.465 | -86.2          | -27.0          | 90.4           | 197            |
| 11                                                                                                                                                                                                         | 496  |   | 20.48                                 | 50.06  | 44.06 | 0.178              | 0.436 | 0.384 | -111.4         | 1.1            | 111.4          | 179            |
| 12                                                                                                                                                                                                         | 500  |   | 20.60                                 | 52.31  | 38.55 | 0.184              | 0.469 | 0.345 | -118.7         | 10.4           | 119.2          | 174            |
| 13                                                                                                                                                                                                         | 509  |   | 19.40                                 | 53.50  | 28.42 | 0.191              | 0.528 | 0.280 | -126.9         | 24.2           | 129.2          | 169            |
| 14                                                                                                                                                                                                         | 511  |   | 21.83                                 | 56.54  | 28.46 | 0.204              | 0.529 | 0.268 | -128.3         | 27.2           | 131.2          | 168            |
| 15                                                                                                                                                                                                         | 518  |   | 24.65                                 | 60.36  | 24.01 | 0.226              | 0.553 | 0.220 | -130.6         | 36.4           | 135.5          | 164            |
| 16                                                                                                                                                                                                         | 530G |   | 29.99                                 | 65.40  | 16.35 | 0.268              | 0.585 | 0.146 | -126.5         | 50.4           | 136.1          | 158            |
| 17                                                                                                                                                                                                         | 538  |   | 43.18                                 | 76.41  | 16.37 | 0.317              | 0.562 | 0.120 | -113.4         | 60.5           | 128.6          | 151            |
| 18                                                                                                                                                                                                         | 553  |   | 67.80                                 | 89.62  | 10.69 | 0.403              | 0.533 | 0.063 | -60.4          | 77.6           | 98.3           | 127            |
| 19                                                                                                                                                                                                         | 557  |   | 74.22                                 | 90.96  | 8.45  | 0.427              | 0.523 | 0.048 | -59.9          | 59.5           | 75.2           | 12             |
| 20                                                                                                                                                                                                         | 558  |   | 74.15                                 | 88.81  | 6.58  | 0.437              | 0.523 | 0.038 | -30.2          | 80.3           | 85.8           | 110            |
| 21                                                                                                                                                                                                         | 561  |   | 73.98                                 | 83.52  | 3.84  | 0.458              | 0.517 | 0.023 | -10.4          | 77.4           | 78.1           | 97             |
| 22                                                                                                                                                                                                         | 565  |   | 73.26                                 | 76.83  | 2.11  | 0.481              | 0.504 | 0.013 | 12.3           | 71.9           | 72.9           | 80             |
| 23                                                                                                                                                                                                         | 570Y |   | 71.33                                 | 68.67  | 1.09  | 0.505              | 0.486 | 0.007 | 35.5           | 64.0           | 73.2           | 60             |
| 24                                                                                                                                                                                                         | 572  |   | 69.75                                 | 64.22  | 0.76  | 0.517              | 0.476 | 0.005 | 45.9           | 59.5           | 75.2           | 52             |
| 25                                                                                                                                                                                                         | 578  |   | 65.16                                 | 54.77  | 0.35  | 0.541              | 0.455 | 0.002 | 62.8           | 49.9           | 80.3           | 38             |
| 26                                                                                                                                                                                                         | 581  |   | 63.81                                 | 51.69  | 1.69  | 0.544              | 0.441 | 0.014 | 86.2           | 45.0           | 82.2           | 33             |
| 27                                                                                                                                                                                                         | 600  |   | 67.89                                 | 51.09  | 15.38 | 0.505              | 0.380 | 0.114 | 86.2           | 27.0           | 90.4           | 17             |
| 28                                                                                                                                                                                                         | 705  |   | 73.42                                 | 47.68  | 42.28 | 0.449              | 0.291 | 0.258 | 118.7          | -10.4          | 119.2          | 354            |
| 29                                                                                                                                                                                                         | 717  |   | 74.62                                 | 46.49  | 52.41 | 0.443              | 0.267 | 0.258 | 126.9          | -24.2          | 129.2          | 349            |
| 30                                                                                                                                                                                                         | 716  |   | 72.19                                 | 43.45  | 52.37 | 0.429              | 0.258 | 0.311 | 128.3          | -27.2          | 131.2          | 348            |
| 31                                                                                                                                                                                                         | 723  |   | 69.37                                 | 39.63  | 56.82 | 0.418              | 0.238 | 0.342 | 130.6          | -36.4          | 135.5          | 344            |
| 32                                                                                                                                                                                                         | 735  |   | 64.03                                 | 34.59  | 64.49 | 0.392              | 0.212 | 0.395 | 126.5          | -50.4          | 136.2          | 338            |
| 33                                                                                                                                                                                                         | 743  |   | 50.84                                 | 23.58  | 64.46 | 0.366              | 0.169 | 0.464 | 113.4          | -60.5          | 128.6          | 331            |
| 34                                                                                                                                                                                                         | 705  |   | 26.22                                 | 10.37  | 70.14 | 0.245              | 0.097 | 0.657 | 60.4           | -77.6          | 98.3           | 307            |
| U=D50                                                                                                                                                                                                      |      |   | 94.03                                 | 100.00 | 80.83 | 0.342              | 0.363 | 0.363 | 0.0            | 0.0            | 0.0            | 0              |
| DE730-3N                                                                                                                                                                                                   |      |   |                                       |        |       |                    |       |       |                |                |                |                |
| $a^*P_{nm}=n_aP_n=n_b[(b_{21}-b_{23})x^*(b_{22}-b_{23})y^*(b_{23})y]=1.4(3.0757x-2.5702y-0.0960)/y$<br>$b^*P_{nm}=n_bP_n=n_b[(b_{31}-b_{33})x^*(b_{32}-b_{33})y^*(b_{33})y]=0.5(1.9906x+3.8617y-2.4046)/y$ |      |   |                                       |        |       |                    |       |       |                |                |                |                |

| R17M tristimulus values, chromatic values, and putities ( $n=1.4, n_0=0.5$ ).<br>Normalized Oswald (O) tristimulus values ( $Y_w=100$ ), ordered by wavelength.                                            |      |   |                                       |       |        |                    |       |       |                |                |                |                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|---------------------------------------|-------|--------|--------------------|-------|-------|----------------|----------------|----------------|----------------|
| no.                                                                                                                                                                                                        | O    | C | tristimulus values and chromaticities |       |        | n-chromatic values |       |       | n-purities     |                |                |                |
|                                                                                                                                                                                                            |      |   | X                                     | Y     | Z      | x                  | y     | z     | $\lambda_{ab}$ | $\lambda_{bg}$ | $\lambda_{br}$ | $\lambda_{br}$ |
| 00                                                                                                                                                                                                         | 373  |   | 50.84                                 | 23.58 | 64.46  | 0.366              | 0.169 | 0.464 | 113.4          | -60.5          | 128.6          | 331            |
| 01                                                                                                                                                                                                         | 450  |   | 26.22                                 | 10.37 | 70.14  | 0.245              | 0.097 | 0.657 | 60.4           | -77.6          | 98.3           | 307            |
| 02                                                                                                                                                                                                         | 463  |   | 19.81                                 | 9.03  | 72.37  | 0.195              | 0.089 | 0.715 | 38.4           | -80.5          | 89.3           | 295            |
| 03                                                                                                                                                                                                         | 465  |   | 19.87                                 | 11.18 | 74.25  | 0.188              | 0.106 | 0.705 | 30.2           | -80.3          | 85.8           | 290            |
| 04                                                                                                                                                                                                         | 470B |   | 20.04                                 | 16.46 | 77.00  | 0.176              | 0.145 | 0.678 | 10.4           | -77.5          | 78.2           | 277            |
| 05                                                                                                                                                                                                         | 474  |   | 20.76                                 | 23.15 | 78.71  | 0.169              | 0.188 | 0.641 | -12.2          | -71.9          | 72.9           | 260            |
| 06                                                                                                                                                                                                         | 477  |   | 22.69                                 | 31.32 | 79.75  | 0.169              | 0.234 | 0.596 | -35.5          | -64.0          | 73.2           | 240            |
| 07                                                                                                                                                                                                         | 479  |   | 24.27                                 | 35.77 | 80.07  | 0.173              | 0.255 | 0.571 | -45.9          | -59.7          | 75.2           | 232            |
| 08                                                                                                                                                                                                         | 481  |   | 28.86                                 | 45.22 | 80.48  | 0.186              | 0.292 | 0.520 | -62.8          | -49.9          | 80.3           | 218            |
| 09                                                                                                                                                                                                         | 482  |   | 30.21                                 | 48.30 | 79.14  | 0.191              | 0.306 | 0.501 | -68.8          | -45.0          | 82.2           | 213            |
| 10                                                                                                                                                                                                         | 487C |   | 26.13                                 | 48.90 | 65.44  | 0.186              | 0.348 | 0.465 | -86.2          | -27.0          | 90.4           | 197            |
| 11                                                                                                                                                                                                         | 496  |   | 20.48                                 | 50.06 | 44.06  | 0.178              | 0.436 | 0.384 | -111.4         | 1.1            | 111.4          | 179            |
| 12                                                                                                                                                                                                         | 500  |   | 20.60                                 | 52.31 | 38.55  | 0.184              | 0.469 | 0.345 | -118.7         | 10.4           | 119.2          | 174            |
| 13                                                                                                                                                                                                         | 509  |   | 19.40                                 | 53.50 | 28.42  | 0.191              | 0.528 | 0.280 | -126.9         | 24.2           | 129.2          | 169            |
| 14                                                                                                                                                                                                         | 511  |   | 21.83                                 | 56.54 | 28.46  | 0.204              | 0.529 | 0.268 | -128.3         | 27.2           | 131.2          | 168            |
| 15                                                                                                                                                                                                         | 518  |   | 24.65                                 | 60.36 | 24.01  | 0.226              | 0.553 | 0.220 | -130.6         | 36.4           | 135.5          | 164            |
| 16                                                                                                                                                                                                         | 530G |   | 29.99                                 | 65.40 | 16.35  | 0.268              | 0.585 | 0.146 | -126.5         | 50.4           | 136.1          | 158            |
| 17                                                                                                                                                                                                         | 538  |   | 43.18                                 | 76.41 | 16.37  | 0.317              | 0.562 | 0.120 | -113.4         | 60.5           | 128.6          | 151            |
| 18                                                                                                                                                                                                         | 553  |   | 67.80                                 | 89.62 | 10.69  | 0.403              | 0.533 | 0.063 | -60.4          | 77.6           | 98.3           | 127            |
| 19                                                                                                                                                                                                         | 557  |   | 74.22                                 | 90.96 | 8.45   | 0.427              | 0.523 | 0.048 | -59.9          | 59.5           | 75.2           | 12             |
| 20                                                                                                                                                                                                         | 558  |   | 74.15                                 | 88.81 | 6.58   | 0.437              | 0.523 | 0.038 | -30.2          | 80.3           | 85.8           | 110            |
| 21                                                                                                                                                                                                         | 561  |   | 73.98                                 | 83.52 | 3.84   | 0.458              | 0.517 | 0.023 | -10.4          | 77.4           | 78.1           | 97             |
| 22                                                                                                                                                                                                         | 565  |   | 73.26                                 | 76.83 | 2.11   | 0.481              | 0.504 | 0.013 | 12.3           | 71.9           | 72.9           | 80             |
| 23                                                                                                                                                                                                         | 570Y |   | 71.33                                 | 68.67 | 1.09   | 0.505              | 0.486 | 0.007 | 35.5           | 64.0           | 73.2           | 60             |
| 24                                                                                                                                                                                                         | 572  |   | 69.75                                 | 64.22 | 0.76   | 0.517              | 0.476 | 0.005 | 45.9           | 59.5           | 75.2           | 52             |
| 25                                                                                                                                                                                                         | 578  |   | 65.16                                 | 54.77 | 0.35   | 0.541              | 0.455 | 0.002 | 62.8           | 49.9           | 80.3           | 38             |
| 26                                                                                                                                                                                                         | 581  |   | 63.81                                 | 51.69 | 1.69   | 0.544              | 0.441 | 0.014 | 86.2           | 45.0           | 82.2           | 33             |
| 27                                                                                                                                                                                                         | 600  |   | 67.89                                 | 51.09 | 15.38  | 0.505              | 0.380 | 0.114 | 86.2           | 27.0           | 90.4           | 17             |
| 28                                                                                                                                                                                                         | 705  |   | 73.42                                 | 47.68 | 42.28  | 0.449              | 0.291 | 0.258 | 118.7          | -10.4          | 119.2          | 354            |
| 29                                                                                                                                                                                                         | 717  |   | 74.62                                 | 46.49 | 52.41  | 0.443              | 0.267 | 0.258 | 126.9          | -24.2          | 129.2          | 349            |
| 30                                                                                                                                                                                                         | 716  |   | 72.19                                 | 43.45 | 52.37  | 0.429              | 0.258 | 0.311 | 128.3          | -27.2          | 131.2          | 348            |
| 31                                                                                                                                                                                                         | 723  |   | 69.37                                 | 39.63 | 56.82  | 0.418              | 0.238 | 0.342 | 130.6          | -36.4          | 135.5          | 344            |
| 32                                                                                                                                                                                                         | 735  |   | 64.03                                 | 34.59 | 64.49  | 0.392              | 0.212 | 0.395 | 126.5          | -50.4          | 136.2          | 338            |
| 33                                                                                                                                                                                                         | 743  |   | 50.84                                 | 23.58 | 64.46  | 0.366              | 0.169 | 0.464 | 113.4          | -60.5          | 128.6          | 331            |
| 34                                                                                                                                                                                                         | 705  |   | 26.22                                 | 10.37 | 70.14  | 0.245              | 0.097 | 0.657 | 60.4           | -77.6          | 98.3           | 307            |
| U=D50                                                                                                                                                                                                      |      |   | 100.00                                | 0.081 | -0.437 | 0.445              | 280   | 0.0   | 0.0            | 0.0            | 0.0            | 0              |
| DE730-4N                                                                                                                                                                                                   |      |   |                                       |       |        |                    |       |       |                |                |                |                |
| $a^*P_{nm}=n_aP_n=n_b[(b_{21}-b_{23})x^*(b_{22}-b_{23})y^*(b_{23})y]=1.4(3.0757x-2.5702y-0.0960)/y$<br>$b^*P_{nm}=n_bP_n=n_b[(b_{31}-b_{33})x^*(b_{32}-b_{33})y^*(b_{33})y]=0.5(1.9906x+3.8617y-2.4046)/y$ |      |   |                                       |       |        |                    |       |       |                |                |                |                |

| R17M tristimulus values, chromatic values, and putities ( $n=1.4, n_0=0.5$ ).<br>Normalized Oswald (O) tristimulus values ( $Y_w=100$ ), ordered by hue angle.                               |      |   |                                       |       |       |       |       |       |                    |                |                |                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|---------------------------------------|-------|-------|-------|-------|-------|--------------------|----------------|----------------|----------------|
| no.                                                                                                                                                                                          | O    | C | tristimulus values and chromaticities |       |       |       |       |       | n-chromatic values |                |                |                |
|                                                                                                                                                                                              |      |   | X                                     | Y     | Z     | x     | y     | z     | $\lambda_{ab}$     | $\lambda_{bg}$ | $\lambda_{br}$ | $\lambda_{br}$ |
| 00                                                                                                                                                                                           | 600  |   | 67.89                                 | 51.09 | 15.38 | 0.505 | 0.380 | 0.114 | 86.2               | 27.0           | 90.4           | 377            |
| 01                                                                                                                                                                                           | 705  |   | 73.42                                 | 47.68 | 42.28 | 0.449 | 0.291 | 0.258 | 118.7              | -10.4          | 119.2          | 354            |
| 02                                                                                                                                                                                           | 714  |   | 74.62                                 | 46.49 | 52.41 | 0.443 | 0.267 | 0.258 | 126.9              | -24.2          | 129.2          | 349            |
| 03                                                                                                                                                                                           | 716  |   | 72.19                                 | 43.45 | 52.37 | 0.429 | 0.258 | 0.311 | 128.3              | -27.2          | 131.2          | 348            |
| 04                                                                                                                                                                                           | 723  |   | 69.37                                 | 39.63 | 56.82 | 0.418 | 0.238 | 0.342 | 130.6              | -36.4          | 135.5          | 344            |
| 05                                                                                                                                                                                           | 735G |   | 64.03                                 | 34.59 | 64.49 | 0.392 | 0.212 | 0.395 | 126.5              | -50.4          | 136.2          | 338            |
| 06                                                                                                                                                                                           | 373  |   | 50.84                                 | 23.58 | 64.46 | 0.366 | 0.169 | 0.464 | 113.4              | -60.5          | 128.6          | 331            |
| 07                                                                                                                                                                                           | 450  |   | 26.22                                 | 10.37 | 70.14 | 0.245 | 0.097 | 0.657 | 60.4               | -77.6          | 98.3           | 307            |
| 08                                                                                                                                                                                           | 463  |   | 19.81                                 | 9.03  | 72.37 | 0.195 | 0.089 | 0.715 | 38.4               | -80.5          | 89.3           | 295            |
| 09                                                                                                                                                                                           | 465  |   | 19.87                                 | 11.18 | 74.25 | 0.188 | 0.106 | 0.705 | 30.2               | -80.3          | 85.8           | 290            |
| 10                                                                                                                                                                                           | 470  |   | 20.04                                 | 16.46 | 77.00 | 0.176 | 0.145 | 0.678 | 10.4               | -77.5          | 78.2           | 277            |
| 11                                                                                                                                                                                           | 474  |   | 20.76                                 | 23.15 | 78.71 | 0.169 | 0.188 | 0.641 | -12.2              | -71.9          | 72.9           | 260            |
| 12                                                                                                                                                                                           | 477B |   | 22.69                                 | 31.32 | 79.75 | 0.168 | 0.234 | 0.596 | -35.5              | -64.0          | 73.2           | 240            |
| 13                                                                                                                                                                                           | 479  |   | 24.27                                 | 35.77 | 80.07 | 0.173 | 0.255 | 0.571 | -45.9              | -59.5          | 75.2           | 232            |
| 14                                                                                                                                                                                           | 481  |   | 28.86                                 | 45.22 | 80.48 | 0.186 | 0.292 | 0.520 | -62.8              | -49.3          | 80.3           | 218            |
| 15                                                                                                                                                                                           | 482  |   | 30.21                                 | 48.30 | 79.14 | 0.191 | 0.306 | 0.501 | -68.8              | -45.0          | 82.2           | 213            |
| 16                                                                                                                                                                                           | 487  |   | 26.13                                 | 48.90 | 65.44 | 0.186 | 0.348 | 0.465 | -86.2              | -27.0          | 90.4           | 197            |
| 17                                                                                                                                                                                           | 496  |   | 20.48                                 | 50.06 | 44.06 | 0.178 | 0.436 | 0.384 | -111.4             | -1.1           | 114.7          | 179            |
| 18                                                                                                                                                                                           | 500  |   | 19.81                                 | 50.06 | 38.55 | 0.184 | 0.469 | 0.345 | -118.7             | -10.4          | 119.2          | 174            |
| 19                                                                                                                                                                                           | 509  |   | 19.40                                 | 53.50 | 28.42 | 0.191 | 0.528 | 0.280 | -126.9             | -24.2          | 129.2          | 169            |
| 20                                                                                                                                                                                           | 511  |   | 21.83                                 | 56.54 | 28.46 | 0.204 | 0.529 | 0.266 | -128.3             | -27.2          | 131.2          | 168            |
| 21                                                                                                                                                                                           | 518  |   | 24.65                                 | 60.36 | 24.01 | 0.226 | 0.553 | 0.220 | -130.6             | -36.4          | 135.5          | 164            |
| 22                                                                                                                                                                                           | 533  |   | 29.99                                 | 65.40 | 16.35 | 0.268 | 0.585 | 0.146 | -126.5             | -50.4          | 136.2          | 158            |
| 23                                                                                                                                                                                           | 538G |   | 43.18                                 | 76.41 | 16.37 | 0.317 | 0.562 | 0.120 | -113.4             | -60.5          | 128.6          | 151            |
| 24                                                                                                                                                                                           | 550  |   | 60.80                                 | 89.62 | 10.69 | 0.403 | 0.533 | 0.063 | -60.4              | -77.6          | 98.3           | 127            |
| 25                                                                                                                                                                                           | 557  |   | 74.22                                 | 90.96 | 8.45  | 0.427 | 0.523 | 0.048 | -38.4              | -80.5          | 89.3           | 115            |
| 26                                                                                                                                                                                           | 558  |   | 74.15                                 | 88.81 | 6.58  | 0.437 | 0.523 | 0.038 | -30.2              | -80.3          | 85.8           | 110            |
| 27                                                                                                                                                                                           | 563  |   | 75.98                                 | 83.38 | 3.87  | 0.454 | 0.504 | 0.031 | -10.4              | -77.5          | 78.2           | 107            |
| 28                                                                                                                                                                                           | 565  |   | 76.25                                 | 76.83 | 2.11  | 0.481 | 0.504 | 0.013 | 12.2               | -71.9          | 72.9           | 80             |
| 29                                                                                                                                                                                           | 570  |   | 71.71                                 | 66.42 | 0.97  | 0.505 | 0.486 | 0.007 | 35.5               | -64.0          | 73.2           | 60             |
| 30                                                                                                                                                                                           | 577  |   | 69.75                                 | 64.22 | 0.76  | 0.517 | 0.476 | 0.005 | 45.9               | -59.5          | 75.2           | 52             |
| 31                                                                                                                                                                                           | 578  |   | 65.16                                 | 54.77 | 0.35  | 0.541 | 0.455 | 0.002 | 62.8               | -49.3          | 80.3           | 38             |
| 32                                                                                                                                                                                           | 580  |   | 63.81                                 | 51.69 | 0.19  | 0.544 | 0.461 | 0.001 | 118.7              | -10.4          | 119.2          | 33             |
| 33                                                                                                                                                                                           | 600  |   | 69.37                                 | 50.89 | 0.00  | 0.469 | 0.388 | 0.144 | 86.2               | 27.0           | 90.4           | 3              |
| 34                                                                                                                                                                                           | 705  |   | 73.42                                 | 47.68 | 42.28 | 0.449 | 0.291 | 0.258 | 118.7              | -10.4          | 119.2          | -5             |
| U-D50    94.03   100.00   80.83    0.24   0.363   0.363        0.0   0.0   0.0   0.0                                                                                                         |      |   |                                       |       |       |       |       |       |                    |                |                |                |
| $a^*_{D50} = m_{D50} \cdot [0.1(d_{21}-b_{21})+b_{22}]+b_{23}+0.04(1.3757x-2.5702y+0.0960y)$<br>$b^*_{D50} = m_{D50} \cdot [0.1(d_{21}-b_{21})+b_{22}]+b_{23}+0.04(1.9906x+3.8617y-2.4046y)$ |      |   |                                       |       |       |       |       |       |                    |                |                |                |
| DE70-90                                                                                                                                                                                      |      |   |                                       |       |       |       |       |       |                    |                |                |                |

