

| $X_1$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | $Y_1$ | $Z_1$ | x     | y     | $A_1$  | $B_1$  | $Cr_1$ | a     | b      | c     | $L^*$ | $a^*$  | $b^*$  | $C^*ab$ | $\log 1+A_1$ | $\log 1+B_1$ | $\log 1+C_1$ | OYL CVM_ONW_0        |                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|--------|--------|--------|-------|--------|-------|-------|--------|--------|---------|--------------|--------------|--------------|----------------------|--------------------|
| CIE Illuminant E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       |       |       |       |        |        |        |       |        |       |       |        |        |         |              |              |              |                      |                    |
| 0.614                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.357 | 0.0   | 0.632 | 0.367 | 0.257  | 0.142  | 0.294  | 0.71  | 0.39   | 0.82  | 66.3  | 70.3   | 113.7  | 133.7   | 0.099        | 0.057        | 0.112        | %O=JR                | 00 575_770         |
| 0.831                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.867 | 0.015 | 0.485 | 0.505 | -0.035 | 0.34   | 0.342  | -0.04 | 0.39   | 0.39  | 94.6  | -6.6   | 140.9  | 141.1   | -0.015       | 0.127        | 0.127        | %Y=J=JG+JR           | 01 515_770         |
| 0.216                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.509 | 0.015 | 0.292 | 0.687 | -0.293 | 0.197  | 0.353  | -0.57 | 0.38   | 0.69  | 76.6  | -99.1  | 110.4  | 148.3   | -0.15        | 0.078        | 0.131        | %L=JG                | 02 515_575         |
| 0.085                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.25  | 0.11  | 0.19  | 0.561 | -0.165 | 0.055  | 0.174  | -0.66 | 0.22   | 0.69  | 57.1  | -95.3  | 30.0   | 99.9    | -0.078       | 0.023        | 0.069        | %Gs                  | 03 0,35*JG+0,65*BG |
| 0.014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.11  | 0.162 | 0.049 | 0.385 | -0.096 | -0.02  | 0.098  | -0.87 | -0.18  | 0.89  | 39.7  | -119.2 | -13.0  | 119.9   | -0.044       | -0.009       | 0.04         | %Cs=BG               | 04 475_515         |
| 0.168                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.132 | 0.984 | 0.13  | 0.103 | 0.035  | -0.34  | 0.342  | 0.26  | -2.57  | 2.58  | 43.1  | 21.1   | -96.9  | 99.2    | 0.015        | -0.18        | 0.127        | %V=B=BR+BG           | 05 380_515         |
| 0.154                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.021 | 0.822 | 0.154 | 0.021 | 0.132  | -0.32  | 0.346  | 6.09  | -14.73 | 15.94 | 16.3  | 128.5  | -131.5 | 183.9   | 0.054        | -0.167       | 0.129        | %Ms=BR               | 06 380_475         |
| 0.55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.31  | 0.115 | 0.563 | 0.318 | 0.239  | 0.078  | 0.252  | 0.77  | 0.25   | 0.81  | 62.5  | 71.1   | 38.0   | 80.7    | 0.093        | 0.032        | 0.097        | %Rs                  | 07 0,14*BR+0,86*JR |
| 0.614                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.357 | 0.0   | 0.632 | 0.367 | 0.257  | 0.142  | 0.294  | 0.71  | 0.39   | 0.82  | 66.3  | 70.3   | 113.7  | 133.7   | 0.099        | 0.057        | 0.112        | %O=JR                | 08 575_770         |
| 0.001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.001 | 0.001 | 0.332 | 0.332 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0   | 0.9   | 0.0    | 0.0    | 0.0     | 0.0          | 0.0          | 0.0          | %N0( $\beta=0,001$ ) | 09 380_770         |
| 1.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1.0   | 1.0   | 0.333 | 0.333 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0   | 100.0 | 0.0    | 0.0    | 0.0     | 0.0          | 0.0          | 0.0          | %W1( $\beta=1,000$ ) | 10 380_770         |
| CIE Standard Illuminant D65                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |       |       |       |       |        |        |        |       |        |       |       |        |        |         |              |              |              |                      |                    |
| 0.548                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.323 | 0.0   | 0.628 | 0.37  | 0.241  | 0.14   | 0.279  | 0.74  | 0.43   | 0.86  | 63.6  | 73.0   | 109.1  | 131.3   | 0.093        | 0.057        | 0.106        | %O=JR                | 00 575_770         |
| 0.768                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.852 | 0.016 | 0.469 | 0.52  | -0.040 | 0.364  | 0.367  | -0.04 | 0.42   | 0.43  | 94.0  | -8.2   | 140.2  | 140.5   | -0.018       | 0.135        | 0.135        | %Y=J=JG+JR           | 01 515_770         |
| 0.22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.529 | 0.016 | 0.288 | 0.69  | -0.282 | 0.224  | 0.36   | -0.53 | 0.42   | 0.68  | 77.8  | -97.1  | 112.7  | 148.8   | -0.144       | 0.087        | 0.133        | %L=JG                | 02 515_575         |
| 0.087                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.264 | 0.125 | 0.183 | 0.554 | -0.163 | 0.065  | 0.176  | -0.61 | 0.24   | 0.66  | 58.5  | -95.0  | 31.2   | 100.0   | -0.077       | 0.027        | 0.07         | %Gs                  | 03 0,35*JG+0,65*BG |
| 0.016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.122 | 0.183 | 0.05  | 0.379 | -0.1   | -0.02  | 0.102  | -0.81 | -0.16  | 0.83  | 41.5  | -119.5 | -11.2  | 120.0   | -0.045       | -0.008       | 0.042        | %Cs=BG               | 04 475_515         |
| 0.181                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.147 | 1.072 | 0.129 | 0.105 | 0.041  | -0.364 | 0.367  | 0.28  | -2.47  | 2.49  | 45.2  | 23.9   | -93.3  | 96.4    | 0.017        | -0.197       | 0.135        | %V=B=BR+BG           | 05 380_515         |
| 0.165                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.024 | 0.888 | 0.153 | 0.023 | 0.141  | -0.344 | 0.372  | 5.7   | -13.87 | 15.0  | 17.8  | 133.2  | -128.5 | 185.1   | 0.057        | -0.183       | 0.137        | %Ms=BR               | 06 380_475         |
| 0.494                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.281 | 0.124 | 0.549 | 0.312 | 0.227  | 0.072  | 0.238  | 0.8   | 0.25   | 0.84  | 60.0  | 74.5   | 33.9   | 81.8    | 0.088        | 0.03         | 0.092        | %Rs                  | 07 0,14*BR+0,86*JR |
| 0.548                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.323 | 0.0   | 0.628 | 0.37  | 0.241  | 0.14   | 0.279  | 0.74  | 0.43   | 0.86  | 63.6  | 73.0   | 109.1  | 131.3   | 0.093        | 0.057        | 0.106        | %O=JR                | 08 575_770         |
| 0.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.001 | 0.001 | 0.311 | 0.327 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0   | 0.9   | 0.0    | 0.0    | 0.0     | 0.0          | 0.0          | 0.0          | %N0( $\beta=0,001$ ) | 09 380_770         |
| 0.95                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1.0   | 1.088 | 0.312 | 0.329 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0   | 100.0 | 0.0    | 0.0    | 0.0     | 0.0          | 0.0          | 0.0          | %W1( $\beta=1,000$ ) | 10 380_770         |
| CIE Illuminant D50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       |       |       |       |        |        |        |       |        |       |       |        |        |         |              |              |              |                      |                    |
| 0.609                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.354 | 0.0   | 0.632 | 0.367 | 0.268  | 0.116  | 0.292  | 0.75  | 0.32   | 0.82  | 66.0  | 75.4   | 113.1  | 135.9   | 0.103        | 0.047        | 0.111        | %O=JR                | 00 575_770         |
| 0.829                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.873 | 0.015 | 0.482 | 0.508 | -0.012 | 0.281  | 0.282  | -0.01 | 0.32   | 0.32  | 94.8  | -2.3   | 137.9  | 137.9   | -0.005       | 0.107        | 0.107        | %Y=J=JG+JR           | 01 515_770         |
| 0.22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.519 | 0.015 | 0.291 | 0.688 | -0.28  | 0.165  | 0.325  | -0.54 | 0.31   | 0.62  | 77.2  | -96.2  | 107.9  | 144.6   | -0.143       | 0.066        | 0.122        | %L=JG                | 02 515_575         |
| 0.085                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.251 | 0.106 | 0.193 | 0.566 | -0.150 | 0.04   | 0.161  | -0.62 | 0.16   | 0.64  | 57.2  | -92.3  | 25.2   | 95.7    | -0.074       | 0.017        | 0.065        | %Gs                  | 03 0,35*JG+0,65*BG |
| 0.013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.107 | 0.155 | 0.049 | 0.388 | -0.09  | -0.020 | 0.093  | -0.83 | -0.24  | 0.87  | 39.1  | -117.0 | -19.5  | 118.6   | -0.041       | -0.011       | 0.039        | %Cs=BG               | 04 475_515         |
| 0.134                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.126 | 0.809 | 0.125 | 0.118 | 0.012  | -0.280 | 0.282  | 0.09  | -2.22  | 2.22  | 42.2  | 8.1    | -98.3  | 98.6    | 0.005        | -0.143       | 0.107        | %V=B=BR+BG           | 05 380_515         |
| 0.12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.019 | 0.653 | 0.152 | 0.024 | 0.102  | -0.255 | 0.275  | 5.35  | -13.35 | 14.38 | 15.0  | 116.5  | -131.6 | 175.8   | 0.042        | -0.128       | 0.105        | %Ms=BR               | 06 380_475         |
| 0.541                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.307 | 0.091 | 0.575 | 0.326 | 0.245  | 0.064  | 0.253  | 0.79  | 0.21   | 0.82  | 62.2  | 75.0   | 38.7   | 84.4    | 0.095        | 0.027        | 0.098        | %Rs                  | 07 0,14*BR+0,86*JR |
| 0.609                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.354 | 0.0   | 0.632 | 0.367 | 0.268  | 0.116  | 0.292  | 0.75  | 0.32   | 0.82  | 66.0  | 75.4   | 113.1  | 135.9   | 0.103        | 0.047        | 0.111        | %O=JR                | 08 575_770         |
| 0.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.0   | 0.0   | 0.344 | 0.357 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0   | 0.9   | 0.0    | 0.0    | 0.0     | 0.0          | 0.0          | 0.0          | %N0( $\beta=0,001$ ) | 09 380_770         |
| 0.964                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1.0   | 0.824 | 0.345 | 0.358 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0   | 100.0 | 0.0    | 0.0    | 0.0     | 0.0          | 0.0          | 0.0          | %W1( $\beta=1,000$ ) | 10 380_770         |
| CIE Standard Illuminant A                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |       |       |       |        |        |        |       |        |       |       |        |        |         |              |              |              |                      |                    |
| 0.835                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.467 | 0.0   | 0.64  | 0.358 | 0.321  | 0.066  | 0.328  | 0.68  | 0.14   | 0.7   | 74.0  | 68.2   | 125.5  | 142.9   | 0.121        | 0.027        | 0.123        | %O=JR                | 00 575_770         |
| 1.043                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.925 | 0.012 | 0.526 | 0.467 | 0.027  | 0.126  | 0.129  | 0.02  | 0.13   | 0.14  | 97.0  | 4.2    | 130.1  | 130.2   | 0.011        | 0.051        | 0.052        | %Y=J=JG+JR           | 01 515_770         |
| 0.208                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.458 | 0.011 | 0.307 | 0.675 | -0.294 | 0.06   | 0.3    | -0.64 | 0.13   | 0.65  | 73.4  | -97.9  | 90.3   | 133.2   | -0.151       | 0.025        | 0.114        | %L=JG                | 02 515_575         |
| 0.077                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.203 | 0.059 | 0.228 | 0.597 | -0.145 | 0.005  | 0.145  | -0.71 | 0.02   | 0.71  | 52.2  | -87.2  | 7.5    | 87.5    | -0.068       | 0.002        | 0.059        | %Gs                  | 03 0,35*JG+0,65*BG |
| 0.007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.066 | 0.085 | 0.045 | 0.418 | -0.065 | -0.024 | 0.07   | -0.99 | -0.37  | 1.05  | 30.9  | -108.0 | -43.1  | 116.3   | -0.029       | -0.01        | 0.029        | %Cs=BG               | 04 475_515         |
| 0.054                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.074 | 0.343 | 0.115 | 0.157 | -0.027 | -0.120 | 0.129  | -0.36 | -1.7   | 1.74  | 32.7  | -26.3  | -113.6 | 116.6   | -0.011       | -0.058       | 0.052        | %V=B=BR+BG           | 05 380_515         |
| 0.047                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.008 | 0.258 | 0.151 | 0.025 | 0.038  | -0.102 | 0.109  | 4.81  | -12.75 | 13.63 | 7.2   | 75.2   | -139.7 | 158.7   | 0.016        | -0.046       | 0.045        | %Ms=BR               | 06 380_475         |
| 0.724                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.403 | 0.036 | 0.622 | 0.346 | 0.281  | 0.042  | 0.285  | 0.69  | 0.1    | 0.7   | 69.7  | 65.9   | 54.0   | 85.2    | 0.107        | 0.018        | 0.108        | %Rs                  | 07 0,14*BR+0,86*JR |
| 0.835                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.467 | 0.0   | 0.64  | 0.358 | 0.321  | 0.066  | 0.328  | 0.68  | 0.14   | 0.7   | 74.0  | 68.2   | 125.5  | 142.9   | 0.121        | 0.027        | 0.123        | %O=JR                | 08 575_770         |
| 0.001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.0   | 0.0   | 0.445 | 0.405 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0   | 0.9   | 0.0    | 0.0    | 0.0     | 0.0          | 0.0          | 0.0          | %N0( $\beta=0,001$ ) | 09 380_770         |
| 1.098                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.999 | 0.355 | 0.447 | 0.407 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0   | 100.0 | 0.0    | 0.0    | 0.0     | 0.0          | 0.0          | 0.0          | %W1( $\beta=1,000$ ) | 10 380_770         |
| $A = [(X/X_n) - (Y/Y_n)]Y = [a - a_n]Y \quad B = -0,4[(Z/Z_n) - (Y/Y_n)]Y = -0,4[b - b_n]Y \quad a = X/Y = x/y \quad b = -0,4 Z/Y = -0,4 z/y \quad (X, Y, Z \geq 0,89)$ $a^* = 500 [(X/X_n)^{1/3} - (Y/Y_n)^{1/3}] \quad b^* = 200 [(Y/Y_n)^{1/3} - (Z/Z_n)^{1/3}] \quad a' = (1/X_n)^{1/3} (x/y)^{1/3} \quad b' = -0,4 (1/Z_n)^{1/3} (z/y)^{1/3}$ $= 500 (a' - a'_n) Y^{1/3} \quad = 500 (b' - b'_n) Y^{1/3} \quad = 0,2191 (x/y)^{1/3} \quad = -0,08376 (z/y)^{1/3} \quad \text{CIELAB for } n=D65$ |       |       |       |       |        |        |        |       |        |       |       |        |        |         |              |              |              |                      |                    |