

<http://farbe.li.tu-berlin.de/eep9/eep910na.txt> /.ps; only vector graphic VG; start output  
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**Equal 9 step grey scaling between  $L^*_{0aN}=17.9$  and  $L^*_{0aW}=95.9$ ,  $Y_{0ref}=3.6$ , normalisation grey U**

$L^*_{0aN}=17.9$ ,  $L^*_{0aU}=56.9$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=2.5$ ,  $Y_{0aU}=24.9$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=36.0$

$L^*_{taN}=27.6$ ,  $L^*_{taU}=57.0$ ,  $L^*_{taW}=92.5$ ,  $Y_{taN}=5.3$ ,  $Y_{taU}=24.9$ ,  $Y_{taW}=81.8$ ,  $C_{taY}=Y_{taW}:Y_{taN}=15.3$

**Regularity index according to ISO/IEC 15775:2022, annex G for 5 and 9 steps**

$g^* = 100 [\Delta L^*_{min}] / [\Delta L^*_{max}]$ ,  $L^*_{CIELAB} = 116 [Y/Y_n]^{1/3} - 16$  with  $Y \geq 0.882$ ,  $Y_n=100$

| $L^*_{CIELAB}$<br>n0.i | intended output |            |          |          | real output |                   |            |          | linearized output     |            |                   |  |
|------------------------|-----------------|------------|----------|----------|-------------|-------------------|------------|----------|-----------------------|------------|-------------------|--|
|                        | $L^*_{0a}$      | $L^*_{0r}$ | $Y_{0a}$ | $Y_{0r}$ | $L^*_{ta}$  | $\Delta L^*_{ta}$ | $L^*_{tr}$ | $Y_{ta}$ | $(L^*_{tr})^{1/1.15}$ | $L^*_{la}$ | $\Delta L^*_{la}$ |  |
| 9                      | 96.0            | 1.0        | 90.0     | 1.0      | 92.5        | 9.0               | 1.0        | 81.8     | 1.0                   | 92.5       | 8.0               |  |
| 8                      | 86.2            | 0.875      | 68.5     | 0.754    | 83.4        | 9.0               | 0.86       | 62.9     | 0.877                 | 84.5       | 8.0               |  |
| 7                      | 76.5            | 0.75       | 50.7     | 0.55     | 74.4        | 8.8               | 0.722      | 47.4     | 0.753                 | 76.4       | 8.1               |  |
| 6                      | 66.7            | 0.625      | 36.3     | 0.386    | 65.6        | 8.6               | 0.585      | 34.8     | 0.627                 | 68.3       | 8.2               |  |
| 5                      | 56.9            | 0.5        | 24.9     | 0.256    | 57.0        | 8.3               | 0.452      | 24.9     | 0.5                   | 60.1       | 8.2               |  |
| 4                      | 47.2            | 0.375      | 16.2     | 0.156    | 48.6        | 7.9               | 0.323      | 17.3     | 0.373                 | 51.9       | 8.2               |  |
| 3                      | 37.4            | 0.25       | 9.8      | 0.083    | 40.7        | 7.1               | 0.201      | 11.7     | 0.247                 | 43.7       | 8.0               |  |
| 2                      | 27.7            | 0.125      | 5.3      | 0.032    | 33.6        | 5.9               | 0.091      | 7.8      | 0.124                 | 35.7       | 8.0               |  |
| 1                      | 17.9            | 0.0        | 2.5      | 0.0      | 27.6        | 0.0               | 0.0        | 5.3      | 0.0                   | 27.6       | 0.0               |  |

$\Delta L^*_{0a}=9.7$  (i=1,2,...,8) normalisation:  $Y_{taiU}=Y_{0aU} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aU}+Y_{0ref}}$

eep90-3n

**Equal 9 step grey scaling between  $L^*_{0aN}=17.9$  and  $L^*_{0aW}=95.9$ ,  $Y_{0ref}=0.9$ , normalisation grey U**

$L^*_{0aN}=17.9$ ,  $L^*_{0aU}=56.9$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=2.5$ ,  $Y_{0aU}=24.9$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=36.0$

$L^*_{taN}=21.1$ ,  $L^*_{taU}=57.0$ ,  $L^*_{taW}=95.0$ ,  $Y_{taN}=3.3$ ,  $Y_{taU}=24.9$ ,  $Y_{taW}=87.7$ ,  $C_{taY}=Y_{taW}:Y_{taN}=26.7$

**Regularity index according to ISO/IEC 15775:2022, annex G for 5 and 9 steps**

$g^* = 100 [\Delta L^*_{min}] / [\Delta L^*_{max}]$ ,  $L^*_{CIELAB} = 116 [Y/Y_n]^{1/3} - 16$  with  $Y \geq 0.882$ ,  $Y_n=100$

| $L^*_{CIELAB}$<br>n0.i | intended output |            |          |          | real output |                   |            |          | linearized output     |            |                   |  |
|------------------------|-----------------|------------|----------|----------|-------------|-------------------|------------|----------|-----------------------|------------|-------------------|--|
|                        | $L^*_{0a}$      | $L^*_{0r}$ | $Y_{0a}$ | $Y_{0r}$ | $L^*_{ta}$  | $\Delta L^*_{ta}$ | $L^*_{tr}$ | $Y_{ta}$ | $(L^*_{tr})^{1/1.05}$ | $L^*_{la}$ | $\Delta L^*_{la}$ |  |
| 9                      | 96.0            | 1.0        | 90.0     | 1.0      | 95.0        | 9.6               | 1.0        | 87.7     | 1.0                   | 95.0       | 9.2               |  |
| 8                      | 86.2            | 0.875      | 68.5     | 0.754    | 85.5        | 9.5               | 0.87       | 66.9     | 0.876                 | 85.9       | 9.2               |  |
| 7                      | 76.5            | 0.75       | 50.7     | 0.55     | 75.9        | 9.5               | 0.741      | 49.8     | 0.751                 | 76.7       | 9.2               |  |
| 6                      | 66.7            | 0.625      | 36.3     | 0.386    | 66.4        | 9.4               | 0.613      | 35.9     | 0.626                 | 67.4       | 9.3               |  |
| 5                      | 56.9            | 0.5        | 24.9     | 0.256    | 57.0        | 9.4               | 0.485      | 24.9     | 0.5                   | 58.1       | 9.3               |  |
| 4                      | 47.2            | 0.375      | 16.2     | 0.156    | 47.6        | 9.2               | 0.358      | 16.5     | 0.375                 | 48.8       | 9.3               |  |
| 3                      | 37.4            | 0.25       | 9.8      | 0.083    | 38.4        | 8.9               | 0.233      | 10.3     | 0.249                 | 39.5       | 9.2               |  |
| 2                      | 27.7            | 0.125      | 5.3      | 0.032    | 29.5        | 8.3               | 0.113      | 6.0      | 0.124                 | 30.3       | 9.2               |  |
| 1                      | 17.9            | 0.0        | 2.5      | 0.0      | 21.1        | 0.0               | 0.0        | 3.3      | 0.0                   | 21.1       | 0.0               |  |

$\Delta L^*_{0a}=9.7$  (i=1,2,...,8) normalisation:  $Y_{taiU}=Y_{0aU} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aU}+Y_{0ref}}$

eep91-3n

**Equal 9 step grey scaling between  $L^*_{0aN}=17.9$  and  $L^*_{0aW}=95.9$ ,  $Y_{0ref}=0.4$ , normalisation grey U**

$L^*_{0aN}=17.9$ ,  $L^*_{0aU}=56.9$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=2.5$ ,  $Y_{0aU}=24.9$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=36.0$

$L^*_{taN}=19.4$ ,  $L^*_{taU}=57.0$ ,  $L^*_{taW}=95.6$ ,  $Y_{taN}=2.8$ ,  $Y_{taU}=24.9$ ,  $Y_{taW}=89.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=31.2$

**Regularity index according to ISO/IEC 15775:2022, annex G for 5 and 9 steps**

$g^* = 100 [\Delta L^*_{min}] / [\Delta L^*_{max}]$ ,  $L^*_{CIELAB} = 116 [Y/Y_n]^{1/3} - 16$  with  $Y \geq 0.882$ ,  $Y_n=100$

| $L^*_{CIELAB}$<br>n0.i | intended output |            |          |          | real output |                   |            |          | linearized output     |            |                   |  |
|------------------------|-----------------|------------|----------|----------|-------------|-------------------|------------|----------|-----------------------|------------|-------------------|--|
|                        | $L^*_{0a}$      | $L^*_{0r}$ | $Y_{0a}$ | $Y_{0r}$ | $L^*_{ta}$  | $\Delta L^*_{ta}$ | $L^*_{tr}$ | $Y_{ta}$ | $(L^*_{tr})^{1/1.02}$ | $L^*_{la}$ | $\Delta L^*_{la}$ |  |
| 9                      | 96.0            | 1.0        | 90.0     | 1.0      | 95.6        | 9.7               | 1.0        | 89.0     | 1.0                   | 95.6       | 9.5               |  |
| 8                      | 86.2            | 0.875      | 68.5     | 0.754    | 85.9        | 9.7               | 0.873      | 67.8     | 0.875                 | 86.1       | 9.5               |  |
| 7                      | 76.5            | 0.75       | 50.7     | 0.55     | 76.2        | 9.6               | 0.746      | 50.3     | 0.75                  | 76.6       | 9.5               |  |
| 6                      | 66.7            | 0.625      | 36.3     | 0.386    | 66.6        | 9.6               | 0.619      | 36.1     | 0.625                 | 67.0       | 9.5               |  |
| 5                      | 56.9            | 0.5        | 24.9     | 0.256    | 57.0        | 9.6               | 0.493      | 24.9     | 0.5                   | 57.5       | 9.5               |  |
| 4                      | 47.2            | 0.375      | 16.2     | 0.156    | 47.4        | 9.5               | 0.367      | 16.3     | 0.374                 | 47.9       | 9.5               |  |
| 3                      | 37.4            | 0.25       | 9.8      | 0.083    | 37.9        | 9.4               | 0.242      | 10.0     | 0.249                 | 38.4       | 9.5               |  |
| 2                      | 27.7            | 0.125      | 5.3      | 0.032    | 28.5        | 9.0               | 0.119      | 5.6      | 0.124                 | 28.9       | 9.4               |  |
| 1                      | 17.9            | 0.0        | 2.5      | 0.0      | 19.4        | 0.0               | 0.0        | 2.8      | 0.0                   | 19.4       | 0.0               |  |

$\Delta L^*_{0a}=9.7$  (i=1,2,...,8) normalisation:  $Y_{taiU}=Y_{0aU} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aU}+Y_{0ref}}$

eep90-7n

**Equal 9 step grey scaling between  $L^*_{0aN}=17.9$  and  $L^*_{0aW}=95.9$ ,  $Y_{0ref}=1.8$ , normalisation grey U**

$L^*_{0aN}=17.9$ ,  $L^*_{0aU}=56.9$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=2.5$ ,  $Y_{0aU}=24.9$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=36.0$

$L^*_{taN}=23.7$ ,  $L^*_{taU}=57.0$ ,  $L^*_{taW}=94.1$ ,  $Y_{taN}=4.0$ ,  $Y_{taU}=24.9$ ,  $Y_{taW}=85.6$ ,  $C_{taY}=Y_{taW}:Y_{taN}=21.3$

**Regularity index according to ISO/IEC 15775:2022, annex G for 5 and 9 steps**

$g^* = 100 [\Delta L^*_{min}] / [\Delta L^*_{max}]$ ,  $L^*_{CIELAB} = 116 [Y/Y_n]^{1/3} - 16$  with  $Y \geq 0.882$ ,  $Y_n=100$

| $L^*_{CIELAB}$<br>n0.i | intended output |            |          |          | real output |                   |            |          | linearized output     |            |                   |  |
|------------------------|-----------------|------------|----------|----------|-------------|-------------------|------------|----------|-----------------------|------------|-------------------|--|
|                        | $L^*_{0a}$      | $L^*_{0r}$ | $Y_{0a}$ | $Y_{0r}$ | $L^*_{ta}$  | $\Delta L^*_{ta}$ | $L^*_{tr}$ | $Y_{ta}$ | $(L^*_{tr})^{1/1.08}$ | $L^*_{la}$ | $\Delta L^*_{la}$ |  |
| 9                      | 96.0            | 1.0        | 90.0     | 1.0      | 94.1        | 9.4               | 1.0        | 85.6     | 1.0                   | 94.1       | 8.7               |  |
| 8                      | 86.2            | 0.875      | 68.5     | 0.754    | 84.7        | 9.3               | 0.867      | 65.5     | 0.876                 | 85.4       | 8.8               |  |
| 7                      | 76.5            | 0.75       | 50.7     | 0.55     | 75.4        | 9.3               | 0.734      | 48.9     | 0.752                 | 76.7       | 8.8               |  |
| 6                      | 66.7            | 0.625      | 36.3     | 0.386    | 66.1        | 9.2               | 0.602      | 35.5     | 0.626                 | 67.8       | 8.9               |  |
| 5                      | 56.9            | 0.5        | 24.9     | 0.256    | 57.0        | 9.0               | 0.472      | 24.9     | 0.5                   | 58.9       | 8.9               |  |
| 4                      | 47.2            | 0.375      | 16.2     | 0.156    | 48.0        | 8.7               | 0.344      | 16.8     | 0.374                 | 50.0       | 8.9               |  |
| 3                      | 37.4            | 0.25       | 9.8      | 0.083    | 39.2        | 8.2               | 0.22       | 10.8     | 0.248                 | 41.2       | 8.7               |  |
| 2                      | 27.7            | 0.125      | 5.3      | 0.032    | 31.0        | 7.3               | 0.104      | 6.6      | 0.124                 | 32.4       | 8.7               |  |
| 1                      | 17.9            | 0.0        | 2.5      | 0.0      | 23.7        | 0.0               | 0.0        | 4.0      | 0.0                   | 23.7       | 0.0               |  |

$\Delta L^*_{0a}=9.7$  (i=1,2,...,8) normalisation:  $Y_{taiU}=Y_{0aU} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aU}+Y_{0ref}}$

eep91-7n

Test chart eep9; Equal 9 step grey scaling for four display reflections  $Y_{ref} = 3,6, 0,4, 0,9, 1,8$ , and black  $L^*_{N,CIELAB}=17.92$ ,  $Y_N=2.5$  and white  $L^*_{W,CIELAB}=95.99$ ,  $Y_W=90$ , normalisation: grey U

see similar files of the whole serie: <http://farbe.li.tu-berlin.de/eeps.htm>  
 technical information: <http://farbe.li.tu-berlin.de> or <http://color.li.tu-berlin.de>

TUB registration: 20230701-eep9/eep910na.txt /.ps  
 application for evaluation and measurement of display or print output  
 TUB material: code=rh4ta