

# Equal 9 step grey scaling between $L^*_{0aN}=22.3$ and $L^*_{0aW}=95.9$ , $Y_{0ref}=3.6$ , normalisation grey U

$L^*_{0aN}=22.3, L^*_{0aU}=59.1, L^*_{0aW}=96.0, Y_{0aN}=3.6, Y_{0aU}=27.2, Y_{0aW}=90.0, C_{0aY}=Y_{0aW}:Y_{0aN}=25.0$

$L^*_{taN}=30.3, L^*_{taU}=59.1, L^*_{taW}=92.9, Y_{taN}=6.3, Y_{taU}=27.2, Y_{taW}=82.6, C_{taY}=Y_{taW}:Y_{taN}=13.0$

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

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

$g^*_5=99, g^*_9=99$

$g^*_5=77, g^*_9=71$

$g^*_5=98, g^*_9=97$

$L^*_{CIELAB}$ n0. i	intended output				real output				linearized output	
	$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.12}$	$L^*_{la}$
100 ↑	9 96.0	1.0	90.0	1.0	92.9	8.6	1.0	82.6	1.0	92.9
86.8	0.875	69.6	0.763	84.3	8.5	0.863	64.6	0.876	85.1	7.8
77.6	0.75	52.5	0.566	75.8	8.4	0.727	49.5	0.751	77.3	7.8
68.4	0.625	38.5	0.403	67.4	8.2	0.593	37.1	0.626	69.5	7.9
59.1	0.5	27.2	0.273	59.1	8.0	0.461	27.2	0.5	61.6	7.9
49.9	0.375	18.4	0.171	51.1	7.6	0.333	19.4	0.374	53.7	7.8
40.7	0.25	11.7	0.094	43.5	7.0	0.211	13.5	0.248	45.8	7.7
31.5	0.125	6.9	0.038	36.5	6.1	0.098	9.2	0.125	38.1	7.8
22.3	0.0	3.6	0.0	30.3		0.0	6.3	0.0	30.3	7.8
identical	rgb*0r				rgb*'tr		(rgb*'tr) <sup>1/1.12</sup>			

$\Delta L^*_{0a}=9.2$

(i=1,2,...,8)

normalisation:  $Y_{taU}=Y_{0aU} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aN}+Y_{0ref}}$