

Equal 9 step grey scaling between $L^*_{0aN}=14.4$ and $L^*_{0aW}=95.9$, $Y_{0ref}=20.0$, normalisation grey U

$L^*_{0aN}=14.4, L^*_{0aU}=55.2, L^*_{0aW}=96.0, Y_{0aN}=1.8, Y_{0aU}=23.1, Y_{0aW}=90.0, C_{0aY}=Y_{0aW}:Y_{0aN}=50.0$

$L^*_{taN}=40.7, L^*_{taU}=55.2, L^*_{taW}=81.3, Y_{taN}=11.7, Y_{taU}=23.1, Y_{taW}=59.0, C_{taY}=Y_{taW}:Y_{taN}=5.0$

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

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

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

$g^*_5=37, g^*_9=29$

$g^*_5=97, g^*_9=87$

L^*_{CIELAB}	intended output			Y_{0r}	real output			linearized output		
	n0. i	L^*_{0a}	L^*_{0r}		Y_{0a}	L^*_{ta}	ΔL^*_{ta}	L^*_{tr}	Y_{ta}	$(L^*_{tr})^{1/1.47}$

120 ↑

90

60

30

0

9	96.0	1.0	90.0	1.0	81.3	7.1	1.0	59.0	1.0	81.3	5.0
8	85.8	0.875	67.6	0.746	74.2	6.8	0.824	47.0	0.877	76.3	5.1
7	75.6	0.75	49.2	0.538	67.4	6.4	0.657	37.1	0.752	71.2	5.2
6	65.4	0.625	34.5	0.371	61.0	5.8	0.5	29.2	0.624	66.0	5.2
5	55.2	0.5	23.1	0.242	55.2	5.1	0.357	23.1	0.497	60.9	5.1
4	45.0	0.375	14.5	0.144	50.1	4.2	0.232	18.5	0.37	55.7	4.9
3	34.8	0.25	8.4	0.075	45.9	3.1	0.129	15.2	0.248	50.8	4.7
2	24.6	0.125	4.3	0.028	42.8	2.1	0.051	13.0	0.133	46.1	5.4
1	14.4	0.0	1.8	0.0	40.7	0.0	0.0	11.7	0.0	40.7	

$\Delta L^*_{0a}=10.2$

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

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