

Equal 9 step grey scaling between $L^*_{0aN}=21$ & $L^*_{0aW}=107.2$, $Y_{0ref}=120$, normalisation white W

$L^*_{0aN}=21.3, L^*_{0aU}=64.3, L^*_{0aW}=107.3, Y_{0aN}=3.3, Y_{0aU}=33.2, Y_{0aW}=120.0, C_{0aY}=Y_{0aW}:Y_{0aN}=36.0$

$L^*_{taN}=82.7, L^*_{taU}=90.1, L^*_{taW}=107.3, Y_{taN}=61.7, Y_{taU}=76.6, Y_{taW}=120.0, C_{taY}=Y_{taW}:Y_{taN}=1.9$

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

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

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

$$g^*_5 = 25, g^*_9 = 19$$

$$g^*_5 = 56, g^*_9 = 41$$

$L^*_{CIELAB,W}$ intended output	real output					linearized output					
	n0. i	L^*_{0a}	L^*_{0r}	Y_{0a}	Y_{0r}	L^*_{ta}	ΔL^*_{ta}	L^*_{tr}	Y_{ta}	$(L^*_{tr})^{1/2.23}$	L^*_{la}

120											
90	9	107.3	1.0	120.0	1.0	107.3	5.1	1.0	120.0	1.0	107.3
8	8	96.5	0.875	91.3	0.754	102.1	4.6	0.791	105.6	0.9	104.8
7	7	85.8	0.75	67.5	0.55	97.5	4.0	0.603	93.8	0.798	102.3
6	6	75.0	0.625	48.3	0.386	93.5	3.4	0.44	84.2	0.692	99.7
5	5	64.3	0.5	33.2	0.256	90.1	2.7	0.301	76.6	0.584	97.1
4	4	53.5	0.375	21.5	0.156	87.4	2.1	0.189	70.8	0.474	94.4
3	3	42.8	0.25	13.0	0.083	85.2	1.5	0.103	66.5	0.361	91.6
2	2	32.1	0.125	7.1	0.032	83.7	1.0	0.041	63.5	0.238	88.6
1	1	21.3	0.0	3.3	0.0	82.7		0.0	61.7	0.0	82.7

$$\Delta L^*_{0a}=10.7$$

$$(i=1,2,\dots,8)$$

normalisation: $Y_{taW}=Y_{0aW} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aW}+Y_{0ref}}$