

Equal 9 step grey scaling between $L^*_{0aN}=23$ & $L^*_{0aW}=100.0$, $Y_{0ref}=100$, normalisation white W

$L^*_{0aN}=23.7$, $L^*_{0aU}=61.8$, $L^*_{0aW}=100.0$, $Y_{0aN}=4.0$, $Y_{0aU}=30.2$, $Y_{0aW}=100.0$, $C_{0aY}=Y_{0aW}:Y_{0aN}=25.0$

$L^*_{taN}=77.3$, $L^*_{taU}=84.5$, $L^*_{taW}=100.0$, $Y_{taN}=52.0$, $Y_{taU}=65.1$, $Y_{taW}=100.0$, $C_{taY}=Y_{taW}:Y_{taN}=1.9$

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

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

$$g^*_5 = 99, g^*_9 = 99 \quad g^*_5 = 30, g^*_9 = 23 \quad g^*_5 = 59, g^*_9 = 45$$

$L^*_{CIELAB,W}$	intended output					real output					linearized output	
	$n0.i$	L^*0a	L^*0r	$Y0a$	$Y0r$	L^*ta	ΔL^*ta	L^*tr	Yta	$(L^*tr)^{1/2.06}$	L^*la	ΔL^*la
100	9	100.0	1.0	100.0	1.0	100.0	4.6	1.0	100.0	1.0	100.0	2.3
	8	90.4	0.875	77.3	0.763	95.4	4.1	0.799	88.6	0.897	97.6	2.4
	7	80.9	0.75	58.3	0.566	91.3	3.6	0.617	79.2	0.791	95.2	2.4
	6	71.4	0.625	42.7	0.403	87.7	3.1	0.457	71.4	0.684	92.8	2.5
	5	61.8	0.5	30.2	0.273	84.5	2.6	0.319	65.1	0.575	90.3	2.5
	4	52.3	0.375	20.4	0.171	81.9	2.0	0.205	60.2	0.464	87.8	2.6
	3	42.7	0.25	13.0	0.094	79.9	1.5	0.115	56.5	0.35	85.2	2.8
	2	33.2	0.125	7.6	0.038	78.3	1.1	0.047	53.8	0.227	82.4	5.2
	1	23.7	0.0	4.0	0.0	77.3	0.0	0.0	52.0	0.0	77.3	

$\Delta L^*0a=9.5$

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

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