

# Equal 9 step grey scaling between $L^*_{0aN}=31$ & $L^*_{0aW}=81.8$ , $Y_{0ref}=4$ , normalisation white W

$L^*_{0aN}=31.0$ ,  $L^*_{0aU}=56.4$ ,  $L^*_{0aW}=81.8$ ,  $Y_{0aN}=6.7$ ,  $Y_{0aU}=24.3$ ,  $Y_{0aW}=60.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=9.0$

$L^*_{taN}=37.8$ ,  $L^*_{taU}=58.6$ ,  $L^*_{taW}=81.8$ ,  $Y_{taN}=10.0$ ,  $Y_{taU}=26.6$ ,  $Y_{taW}=60.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=6.0$

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

$g^* = 100 [\Delta L^*_{min}] / [\Delta L^*_{max}]$ ,  $L^*_{CIELAB,W} = 116 [Y/Y_n]^{1/3} - 16$  with  $Y \geq 0,882$ ,  $Y_n=100$

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

$g^*_5=83$ ,  $g^*_9=80$

$g^*_5=90$ ,  $g^*_9=85$

$L^*_{CIELAB,W}$  intended output real output linearized output

n0. i	$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.13}$	$L^*_{la}$	$\Delta L^*_{la}$
9	81.8	1.0	60.0	1.0	81.8		1.0	60.0	1.0	81.8	
8	75.5	0.875	49.1	0.795	75.9	5.9	0.865	49.7	0.88	76.6	5.3
7	69.1	0.75	39.5	0.616	70.0	5.9	0.732	40.8	0.759	71.2	5.3
6	62.8	0.625	31.3	0.462	64.3	5.8	0.6	33.1	0.638	65.9	5.3
5	56.4	0.5	24.3	0.332	58.6	5.7	0.471	26.6	0.515	60.5	5.4
4	50.1	0.375	18.5	0.222	53.0	5.5	0.345	21.1	0.391	55.1	5.4
3	43.7	0.25	13.7	0.131	47.7	5.3	0.224	16.5	0.267	49.6	5.5
2	37.4	0.125	9.7	0.058	42.6	5.1	0.108	12.9	0.14	44.0	5.6
1	31.0	0.0	6.7	0.0	37.8	4.7	0.0	10.0	0.0	37.8	6.2

$\Delta L^*_{0a}=6.3$

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

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