

# Equal 9 step grey scaling between $L^*_{0aN}=22.3$ and $L^*_{0aW}=95.9$ , $Y_{0ref}=1.8$ , normalisation grey U

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

$L^*_{taN}=26.9$ ,  $L^*_{taU}=59.1$ ,  $L^*_{taW}=94.3$ ,  $Y_{taN}=5.1$ ,  $Y_{taU}=27.2$ ,  $Y_{taW}=86.1$ ,  $C_{taY}=Y_{taW}:Y_{taN}=17.0$

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

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

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

$g^*_5=86$ ,  $g^*_9=82$

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

$L^*_{CIE LAB}$	n0. i	intended output				real output					linearized output	
		$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.06}$	$L^*_{la}$	$\Delta L^*_{la}$
100	○ 9	96.0	1.0	90.0	1.0	94.3		1.0	86.1	1.0	94.3	
	● 8	86.8	0.875	69.6	0.763	85.5	8.9	0.868	66.9	0.876	86.0	8.4
	● 7	77.6	0.75	52.5	0.566	76.6	8.8	0.737	50.9	0.751	77.6	8.4
75	● 6	68.4	0.625	38.5	0.403	67.8	8.8	0.607	37.8	0.625	69.1	8.4
	● 5	59.1	0.5	27.2	0.273	59.1	8.7	0.478	27.2	0.5	60.6	8.5
	● 4	49.9	0.375	18.4	0.171	50.6	8.6	0.351	18.9	0.374	52.1	8.5
50	● 3	40.7	0.25	11.7	0.094	42.2	8.3	0.227	12.6	0.249	43.7	8.4
	● 2	31.5	0.125	6.9	0.038	34.3	8.0	0.109	8.1	0.124	35.3	8.4
25	● 1	22.3	0.0	3.6	0.0	26.9	7.3	0.0	5.1	0.0	26.9	8.4

identical  $rgb^*_{0r}$

$rgb^*_{tr}$   $(rgb^*_{tr})^{1/1.06}$

$\Delta L^*_{0a}=9.2$  (i=1,2,...,8)

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