

# Equal 9 step grey scaling between $L^*_{0aN}=3.6$ and $L^*_{0aW}=95.9$ , $Y_{0ref}=1.8$ , normalisation grey $U$

$L^*_{0aN}=3.6$ ,  $L^*_{0aU}=49.8$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=0.4$ ,  $Y_{0aU}=18.2$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=225.0$

$L^*_{taN}=15.5$ ,  $L^*_{taU}=49.8$ ,  $L^*_{taW}=93.3$ ,  $Y_{taN}=2.0$ ,  $Y_{taU}=18.2$ ,  $Y_{taW}=83.6$ ,  $C_{taY}=Y_{taW}:Y_{taN}=41.7$

**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  $Y \geq 0.882$ ,  $Y_n=100$

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

$g^*_5 = 65$ ,  $g^*_9 = 55$

$g^*_5 = 92$ ,  $g^*_9 = 90$

$L^*_{CIE LAB}$	n0. i	intended output				real output					linearized output	
		$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.19}$	$L^*_{la}$	$\Delta L^*_{la}$
100	○ 9	96.0	1.0	90.0	1.0	93.3		1.0	83.6	1.0	93.3	
							11.0					9.4
	● 8	84.4	0.875	64.9	0.72	82.2		0.858	60.7	0.879	83.9	
							10.9					9.5
75	● 7	72.9	0.75	45.0	0.498	71.3		0.717	42.6	0.757	74.3	
							10.8					9.7
	● 6	61.3	0.625	29.6	0.326	60.4		0.578	28.6	0.631	64.6	
							10.6					10.0
50	● 5	49.8	0.5	18.2	0.199	49.8		0.441	18.2	0.503	54.6	
							10.3					10.1
	● 4	38.2	0.375	10.2	0.11	39.5		0.309	10.9	0.373	44.5	
							9.6					10.1
25	● 3	26.7	0.25	5.0	0.051	29.9		0.185	6.2	0.242	34.3	
							8.3					9.7
	● 2	15.2	0.125	1.9	0.017	21.6		0.078	3.4	0.118	24.7	
							6.1					9.2
0	● 1	3.6	0.0	0.4	0.0	15.5		0.0	2.0	0.0	15.5	

$\Delta L^*_{0a}=11.5$  (i=1,2,...,8)

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