

# Equal 9 step grey scaling between $L^*_{0aN}=17.9$ and $L^*_{0aW}=95.9$ , $Y_{0ref}=90.0$ , normalisation white W

$L^*_{0aN}=17.9$ ,  $L^*_{0aU}=56.9$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=2.5$ ,  $Y_{0aU}=24.9$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=36.0$

$L^*_{taN}=73.7$ ,  $L^*_{taU}=80.4$ ,  $L^*_{taW}=96.0$ ,  $Y_{taN}=46.2$ ,  $Y_{taU}=57.4$ ,  $Y_{taW}=90.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=1.9$

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

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

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

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

$g^*_5 = 89$ ,  $g^*_9 = 73$

$L^*_{CIELAB}$	n0. i	intended output				real output					linearized output	
		$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.68}$	$L^*_{la}$	$\Delta L^*_{la}$
100	○ 9	96.0	1.0	90.0	1.0	96.0		1.0	90.0	1.0	96.0	
	● 8	86.2	0.875	68.5	0.754	91.3	4.6	0.791	79.2	0.87	93.1	2.9
75	● 7	76.5	0.75	50.7	0.55	87.2	4.2	0.603	70.3	0.741	90.2	2.9
	● 6	66.7	0.625	36.3	0.386	83.5	3.6	0.44	63.1	0.613	87.4	2.8
	● 5	56.9	0.5	24.9	0.256	80.4	3.1	0.301	57.4	0.49	84.6	2.7
50	● 4	47.2	0.375	16.2	0.156	77.9	2.5	0.189	53.1	0.371	82.0	2.6
	● 3	37.4	0.25	9.8	0.083	76.0	1.9	0.103	49.9	0.258	79.5	2.5
	● 2	27.7	0.125	5.3	0.032	74.6	1.4	0.041	47.7	0.149	77.0	2.4
25	● 1	17.9	0.0	2.5	0.0	73.7	0.9	0.0	46.2	0.0	73.7	3.3
0												

$\Delta L^*_{0a}=9.7$

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

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