

# Equal 9 step grey scaling between $L^*_{0aN}=17.9$ and $L^*_{0aW}=95.9$ , $Y_{0ref}=3.6$ , normalisation grey U

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

$L^*_{taN}=27.6$ ,  $L^*_{taU}=57.0$ ,  $L^*_{taW}=92.5$ ,  $Y_{taN}=5.3$ ,  $Y_{taU}=24.9$ ,  $Y_{taW}=81.8$ ,  $C_{taY}=Y_{taW}:Y_{taN}=15.3$

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

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

$g^*_5=72$ ,  $g^*_9=65$

$g^*_5=97$ ,  $g^*_9=96$

$L^*_{CIE LAB}$	n0. i	intended output				real output					linearized output	
		$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.15}$	$L^*_{la}$	$\Delta L^*_{la}$
100	9	96.0	1.0	90.0	1.0	92.5		1.0	81.8	1.0	92.5	
	8	86.2	0.875	68.5	0.754	83.4	9.0	0.86	62.9	0.877	84.5	8.0
	7	76.5	0.75	50.7	0.55	74.4	9.0	0.722	47.4	0.753	76.4	8.0
75	6	66.7	0.625	36.3	0.386	65.6	8.8	0.585	34.8	0.627	68.3	8.1
	5	56.9	0.5	24.9	0.256	57.0	8.6	0.452	24.9	0.5	60.1	8.2
	4	47.2	0.375	16.2	0.156	48.6	8.3	0.323	17.3	0.373	51.9	8.2
50	3	37.4	0.25	9.8	0.083	40.7	7.9	0.201	11.7	0.247	43.7	8.2
	2	27.7	0.125	5.3	0.032	33.6	7.1	0.091	7.8	0.124	35.7	8.0
25	1	17.9	0.0	2.5	0.0	27.6	5.9	0.0	5.3	0.0	27.6	8.0
0												

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

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

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