

# Equal 9 step grey scaling between $L^*_{0aN}=8.1$ and $L^*_{0aW}=95.9$ , $Y_{0ref}=0.9$ , normalisation grey U

$L^*_{0aN}=8.1$ ,  $L^*_{0aU}=52.1$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=0.9$ ,  $Y_{0aU}=20.2$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=99.9$

$L^*_{taN}=14.0$ ,  $L^*_{taU}=52.1$ ,  $L^*_{taW}=94.7$ ,  $Y_{taN}=1.7$ ,  $Y_{taU}=20.2$ ,  $Y_{taW}=87.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=50.5$

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

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

$g^*_5=81$ ,  $g^*_9=74$

$g^*_5=96$ ,  $g^*_9=94$

$L^*_{CIE LAB}$	n0. i	intended output				real output					linearized output	
		$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.09}$	$L^*_{la}$	$\Delta L^*_{la}$
100	9	96.0	1.0	90.0	1.0	94.7		1.0	87.0	1.0	94.7	
							10.7					9.9
	8	85.0	0.875	66.0	0.731	84.0		0.867	64.1	0.877	84.8	
							10.7					10.0
75	7	74.0	0.75	46.7	0.515	73.3		0.734	45.6	0.753	74.8	
							10.6					10.1
	6	63.0	0.625	31.6	0.345	62.6		0.602	31.1	0.628	64.7	
							10.6					10.2
50	5	52.1	0.5	20.2	0.217	52.1		0.472	20.2	0.502	54.5	
							10.4					10.3
	4	41.1	0.375	11.9	0.124	41.6		0.343	12.3	0.374	44.2	
							10.1					10.3
25	3	30.1	0.25	6.3	0.06	31.5		0.217	6.9	0.246	33.8	
							9.5					10.2
	2	19.1	0.125	2.8	0.021	22.0		0.099	3.5	0.12	23.7	
							8.0					9.7
0	1	8.1	0.0	0.9	0.0	14.0		0.0	1.7	0.0	14.0	

$\Delta L^*_{0a}=11.0$  (i=1,2,...,8)

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