

**Equal 9 step grey scaling between  $L^*_{0aN}=8.1$  and  $L^*_{0aW}=95.9$ ,  $Y_{0ref}=2.5$ , normalisation white W**

$L^*_{0aN}=8.1$ ,  $L^*_{0aU}=52.1$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=0.9$ ,  $Y_{0aU}=20.2$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=99.9$   
 $L^*_{taN}=21.2$ ,  $L^*_{taU}=54.1$ ,  $L^*_{taW}=96.0$ ,  $Y_{taN}=3.3$ ,  $Y_{taU}=22.1$ ,  $Y_{taW}=90.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=27.2$

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

L* <sub>CIELAB</sub> n0.i	intended output				real output				linearized output			
	L* <sub>0a</sub>	L* <sub>0r</sub>	Y <sub>0a</sub>	Y <sub>0r</sub>	L* <sub>ta</sub>	$\Delta L^*_{ta}$	L* <sub>tr</sub>	Y <sub>ta</sub>	$(L^*_{tr})^{1/1.19}$	L* <sub>la</sub>	$\Delta L^*_{la}$	
9	96.0	1.0	90.0	1.0	96.0		1.0	90.0	1.0	96.0	9.0	
8	85.0	0.875	66.0	0.731	85.3	10.6	0.857	66.7	0.879	87.0	9.2	
7	74.0	0.75	46.7	0.515	74.8	10.6	0.716	47.9	0.756	77.8	9.4	
6	63.0	0.625	31.6	0.345	64.3	10.4	0.576	33.2	0.63	68.4	9.5	
5	52.1	0.5	20.2	0.217	54.1	10.2	0.44	22.1	0.503	58.8	9.7	
4	41.1	0.375	11.9	0.124	44.3	9.8	0.308	14.0	0.373	49.1	9.7	
3	30.1	0.25	6.3	0.06	35.1	8.0	0.185	8.5	0.243	39.4	9.3	
2	19.1	0.125	2.8	0.021	27.1	5.9	0.078	5.1	0.119	30.1	8.9	
1	8.1	0.0	0.9	0.0	21.2		0.0	3.3	0.0	21.2		

$\Delta L^*_{0a}=11.0$  (i=1,2,...,8) normalisation:  $Y_{taiW}=Y_{0aW} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aW}+Y_{0ref}}$

eeq40-3n

**Equal 9 step grey scaling between  $L^*_{0aN}=8.1$  and  $L^*_{0aW}=95.9$ ,  $Y_{0ref}=10.0$ , normalisation white W**

$L^*_{0aN}=8.1$ ,  $L^*_{0aU}=52.1$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=0.9$ ,  $Y_{0aU}=20.2$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=99.9$   
 $L^*_{taN}=37.5$ ,  $L^*_{taU}=59.1$ ,  $L^*_{taW}=96.0$ ,  $Y_{taN}=9.8$ ,  $Y_{taU}=27.2$ ,  $Y_{taW}=90.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=9.2$

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

L* <sub>CIELAB</sub> n0.i	intended output				real output				linearized output			
	L* <sub>0a</sub>	L* <sub>0r</sub>	Y <sub>0a</sub>	Y <sub>0r</sub>	L* <sub>ta</sub>	$\Delta L^*_{ta}$	L* <sub>tr</sub>	Y <sub>ta</sub>	$(L^*_{tr})^{1/1.44}$	L* <sub>la</sub>	$\Delta L^*_{la}$	
9	96.0	1.0	90.0	1.0	96.0		1.0	90.0	1.0	96.0	7.0	
8	85.0	0.875	66.0	0.731	86.2	9.8	0.833	68.4	0.88	89.0	7.2	
7	74.0	0.75	46.7	0.515	76.7	9.5	0.67	51.1	0.757	81.8	7.4	
6	63.0	0.625	31.6	0.345	67.6	9.1	0.515	37.5	0.63	74.4	7.6	
5	52.1	0.5	20.2	0.217	59.1	8.5	0.37	27.2	0.5	66.8	7.6	
4	41.1	0.375	11.9	0.124	51.5	7.6	0.24	19.7	0.37	59.1	7.4	
3	30.1	0.25	6.3	0.06	45.1	6.4	0.131	14.6	0.242	51.7	7.4	
2	19.1	0.125	2.8	0.021	40.4	4.7	0.05	11.5	0.123	44.7	6.9	
1	8.1	0.0	0.9	0.0	37.5	2.9	0.0	9.8	0.0	37.5	7.2	

$\Delta L^*_{0a}=11.0$  (i=1,2,...,8) normalisation:  $Y_{taiW}=Y_{0aW} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aW}+Y_{0ref}}$

eeq40-7n

**Equal 9 step grey scaling between  $L^*_{0aN}=8.1$  and  $L^*_{0aW}=95.9$ ,  $Y_{0ref}=20.0$ , normalisation white W**

$L^*_{0aN}=8.1$ ,  $L^*_{0aU}=52.1$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=0.9$ ,  $Y_{0aU}=20.2$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=99.9$   
 $L^*_{taN}=48.4$ ,  $L^*_{taU}=64.1$ ,  $L^*_{taW}=96.0$ ,  $Y_{taN}=17.1$ ,  $Y_{taU}=32.9$ ,  $Y_{taW}=90.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=5.3$

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

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

L* <sub>CIELAB</sub> n0.i	intended output				real output				linearized output			
	L* <sub>0a</sub>	L* <sub>0r</sub>	Y <sub>0a</sub>	Y <sub>0r</sub>	L* <sub>ta</sub>	$\Delta L^*_{ta}$	L* <sub>tr</sub>	Y <sub>ta</sub>	$(L^*_{tr})^{1/1.59}$	L* <sub>la</sub>	$\Delta L^*_{la}$	
9	96.0	1.0	90.0	1.0	96.0		1.0	90.0	1.0	96.0		
8	85.0	0.875	66.0	0.731	87.2	8.8	0.815	70.4	0.879	90.2	5.7	
7	74.0	0.75	46.7	0.515	78.8	8.4	0.639	54.6	0.755	84.3	5.9	
6	63.0	0.625	31.6	0.345	71.0	7.8	0.476	42.2	0.627	78.2	6.1	
5	52.1	0.5	20.2	0.217	64.1	7.0	0.329	32.9	0.498	72.1	6.2	
4	41.1	0.375	11.9	0.124	58.1	5.9	0.205	26.1	0.369	66.0	6.1	
3	30.1	0.25	6.3	0.06	53.5	4.6	0.107	21.5	0.246	60.1	6.1	
2	19.1	0.125	2.8	0.021	50.2	3.2	0.039	18.6	0.131	54.6	5.5	
1	8.1	0.0	0.9	0.0	48.4	1.9	0.0	17.1	0.0	48.4	6.2	

$\Delta L^*_{0a}=11.0$  (i=1,2,...,8) normalisation:  $Y_{taiW}=Y_{0aW} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aW}+Y_{0ref}}$

eeq41-3n

**Equal 9 step grey scaling between  $L^*_{0aN}=8.1$  and  $L^*_{0aW}=95.9$ ,  $Y_{0ref}=90.0$ , normalisation white W**

$L^*_{0aN}=8.1$ ,  $L^*_{0aU}=52.1$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=0.9$ ,  $Y_{0aU}=20.2$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=99.9$   
 $L^*_{taN}=73.2$ ,  $L^*_{taU}=79.1$ ,  $L^*_{taW}=96.0$ ,  $Y_{taN}=45.4$ ,  $Y_{taU}=55.1$ ,  $Y_{taW}=90.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=2.0$

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

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

L* <sub>CIELAB</sub> n0.i	intended output				real output				linearized output			
	L* <sub>0a</sub>	L* <sub>0r</sub>	Y <sub>0a</sub>	Y <sub>0r</sub>	L* <sub>ta</sub>	$\Delta L^*_{ta}$	L* <sub>tr</sub>	Y <sub>ta</sub>	$(L^*_{tr})^{1/1.89}$	L* <sub>la</sub>	$\Delta L^*_{la}$	
9	96.0	1.0	90.0	1.0	96.0		1.0	90.0	1.0	96.0		
8	85.0	0.875	66.0	0.731	90.8	5.2	0.772	78.0	0.872	93.1	2.9	
7	74.0	0.75	46.7	0.515	86.2	4.6	0.57	68.4	0.743	90.1	2.9	
6	63.0	0.625	31.6	0.345	82.3	3.9	0.399	60.8	0.615	87.2	2.9	
5	52.1	0.5	20.2	0.217	79.1	3.2	0.259	55.1	0.49	84.4	2.8	
4	41.1	0.375	11.9	0.124	76.6	2.4	0.152	50.9	0.369	81.6	2.7	
3	30.1	0.25	6.3	0.06	74.9	1.7	0.076	48.1	0.255	79.0	2.6	
2	19.1	0.125	2.8	0.021	73.8	1.1	0.027	46.4	0.147	76.5	2.5	
1	8.1	0.0	0.9	0.0	73.2	0.6	0.0	45.4	0.0	73.2	3.4	

$\Delta L^*_{0a}=11.0$  (i=1,2,...,8) normalisation:  $Y_{taiW}=Y_{0aW} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aW}+Y_{0ref}}$

eeq41-7n

Test chart eq4; Equal 9 step grey scaling for four display reflections  $Y_{ref} = 2, 5, 10, 20, 90$ , and black  $L^*_{N,CIELAB}=8.13$ ,  $Y_N=0.9$  and white  $L^*_{W,CIELAB}=95.99$ ,  $Y_W=90$ , normalisation: white W

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