

Equal 9 step grey scaling between $L^*_{0aN}=22.3$ and $L^*_{0aW}=95.9$, $Y_{0ref}=3.6$, normalisation white W

$L^*_{0aN}=22.3$, $L^*_{0aU}=59.1$, $L^*_{0aW}=96.0$, $Y_{0aN}=3.6$, $Y_{0aU}=27.2$, $Y_{0aW}=90.0$, $C_{0aY}=Y_{0aW}:Y_{0aN}=25.0$
 $L^*_{taN}=31.6$, $L^*_{taU}=61.3$, $L^*_{taW}=96.0$, $Y_{taN}=6.9$, $Y_{taU}=29.6$, $Y_{taW}=90.0$, $C_{taY}=Y_{taW}:Y_{taN}=13.0$
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 $Y \geq 0.882$, $Y_n=100$
 $g^*_5 = 99$, $g^*_9 = 99$ $g^*_5 = 77$, $g^*_9 = 71$ $g^*_5 = 98$, $g^*_9 = 97$

L^*_{CIELAB} n0.i	intended output				real output				linearized output			
	L^*_{0a}	L^*_{0r}	Y_{0a}	Y_{0r}	L^*_{ta}	ΔL^*_{ta}	L^*_{tr}	Y_{ta}	$(L^*_{tr})^{1/1.12}$	L^*_{la}	ΔL^*_{la}	
9	96.0	1.0	90.0	1.0	96.0	8.8	1.0	90.0	1.0	96.0	8.0	
8	86.8	0.875	69.6	0.763	87.2	8.7	0.863	70.3	0.876	88.0	8.0	
7	77.6	0.75	52.5	0.566	78.4	8.6	0.727	53.9	0.751	80.0	8.1	
6	68.4	0.625	38.5	0.403	69.8	8.5	0.593	40.4	0.626	71.9	8.1	
5	59.1	0.5	27.2	0.273	61.3	8.2	0.461	29.6	0.5	63.8	8.1	
4	49.9	0.375	18.4	0.171	53.1	7.8	0.333	21.1	0.374	55.7	8.1	
3	40.7	0.25	11.7	0.094	45.2	7.3	0.211	14.7	0.248	47.6	7.9	
2	31.5	0.125	6.9	0.038	38.0	6.3	0.098	10.1	0.125	39.7	8.1	
1	22.3	0.0	3.6	0.0	31.6		0.0	6.9	0.0	31.6		

$\Delta L^*_{0a}=9.2$ (i=1,2,...,8) normalisation: $Y_{taiW}=Y_{0aW} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aW}+Y_{0ref}}$

eep00-3n

Equal 9 step grey scaling between $L^*_{0aN}=22.3$ and $L^*_{0aW}=95.9$, $Y_{0ref}=0.9$, normalisation white W

$L^*_{0aN}=22.3$, $L^*_{0aU}=59.1$, $L^*_{0aW}=96.0$, $Y_{0aN}=3.6$, $Y_{0aU}=27.2$, $Y_{0aW}=90.0$, $C_{0aY}=Y_{0aW}:Y_{0aN}=25.0$
 $L^*_{taN}=25.1$, $L^*_{taU}=59.7$, $L^*_{taW}=96.0$, $Y_{taN}=4.4$, $Y_{taU}=27.8$, $Y_{taW}=90.0$, $C_{taY}=Y_{taW}:Y_{taN}=20.2$
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 $Y \geq 0.882$, $Y_n=100$
 $g^*_5 = 99$, $g^*_9 = 99$ $g^*_5 = 92$, $g^*_9 = 90$ $g^*_5 = 99$, $g^*_9 = 99$

L^*_{CIELAB} n0.i	intended output				real output				linearized output			
	L^*_{0a}	L^*_{0r}	Y_{0a}	Y_{0r}	L^*_{ta}	ΔL^*_{ta}	L^*_{tr}	Y_{ta}	$(L^*_{tr})^{1/1.03}$	L^*_{la}	ΔL^*_{la}	
9	96.0	1.0	90.0	1.0	96.0		1.0	90.0	1.0	96.0		
8	86.8	0.875	69.6	0.763	86.9	9.1	0.871	69.8	0.875	87.2	8.8	
7	77.6	0.75	52.5	0.566	77.8	9.0	0.743	52.9	0.751	78.3	8.8	
6	68.4	0.625	38.5	0.403	68.7	9.0	0.615	39.0	0.625	69.4	8.9	
5	59.1	0.5	27.2	0.273	59.7	9.0	0.488	27.8	0.5	60.6	8.9	
4	49.9	0.375	18.4	0.171	50.8	8.9	0.362	19.1	0.374	51.7	8.9	
3	40.7	0.25	11.7	0.094	41.9	8.8	0.237	12.5	0.249	42.8	8.9	
2	31.5	0.125	6.9	0.038	33.3	8.6	0.116	7.7	0.125	34.0	8.8	
1	22.3	0.0	3.6	0.0	25.1	8.2	0.0	4.4	0.0	25.1		

$\Delta L^*_{0a}=9.2$ (i=1,2,...,8) normalisation: $Y_{taiW}=Y_{0aW} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aW}+Y_{0ref}}$

eep01-3n

Equal 9 step grey scaling between $L^*_{0aN}=22.3$ and $L^*_{0aW}=95.9$, $Y_{0ref}=0.4$, normalisation white W

$L^*_{0aN}=22.3$, $L^*_{0aU}=59.1$, $L^*_{0aW}=96.0$, $Y_{0aN}=3.6$, $Y_{0aU}=27.2$, $Y_{0aW}=90.0$, $C_{0aY}=Y_{0aW}:Y_{0aN}=25.0$
 $L^*_{taN}=23.6$, $L^*_{taU}=59.4$, $L^*_{taW}=96.0$, $Y_{taN}=4.0$, $Y_{taU}=27.5$, $Y_{taW}=90.0$, $C_{taY}=Y_{taW}:Y_{taN}=22.6$
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 $Y \geq 0.882$, $Y_n=100$
 $g^*_5 = 99$, $g^*_9 = 99$ $g^*_5 = 96$, $g^*_9 = 95$ $g^*_5 = 99$, $g^*_9 = 99$

L^*_{CIELAB} n0.i	intended output				real output				linearized output			
	L^*_{0a}	L^*_{0r}	Y_{0a}	Y_{0r}	L^*_{ta}	ΔL^*_{ta}	L^*_{tr}	Y_{ta}	$(L^*_{tr})^{1/1.01}$	L^*_{la}	ΔL^*_{la}	
9	96.0	1.0	90.0	1.0	96.0		1.0	90.0	1.0	96.0		
8	86.8	0.875	69.6	0.763	86.8	9.2	0.873	69.7	0.875	87.0	9.0	
7	77.6	0.75	52.5	0.566	77.7	9.1	0.747	52.6	0.75	77.9	9.0	
6	68.4	0.625	38.5	0.403	68.5	9.1	0.62	38.7	0.625	68.9	9.1	
5	59.1	0.5	27.2	0.273	59.4	9.1	0.494	27.5	0.5	59.8	9.1	
4	49.9	0.375	18.4	0.171	50.3	9.0	0.369	18.7	0.375	50.7	9.0	
3	40.7	0.25	11.7	0.094	41.3	8.9	0.244	12.0	0.249	41.7	9.0	
2	31.5	0.125	6.9	0.038	32.3	8.7	0.121	7.2	0.125	32.6	9.0	
1	22.3	0.0	3.6	0.0	23.6		0.0	4.0	0.0	23.6		

$\Delta L^*_{0a}=9.2$ (i=1,2,...,8) normalisation: $Y_{taiW}=Y_{0aW} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aW}+Y_{0ref}}$

eep00-7n

Equal 9 step grey scaling between $L^*_{0aN}=22.3$ and $L^*_{0aW}=95.9$, $Y_{0ref}=1.8$, normalisation white W

$L^*_{0aN}=22.3$, $L^*_{0aU}=59.1$, $L^*_{0aW}=96.0$, $Y_{0aN}=3.6$, $Y_{0aU}=27.2$, $Y_{0aW}=90.0$, $C_{0aY}=Y_{0aW}:Y_{0aN}=25.0$
 $L^*_{taN}=27.6$, $L^*_{taU}=60.3$, $L^*_{taW}=96.0$, $Y_{taN}=5.3$, $Y_{taU}=28.4$, $Y_{taW}=90.0$, $C_{taY}=Y_{taW}:Y_{taN}=17.0$
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 $Y \geq 0.882$, $Y_n=100$
 $g^*_5 = 99$, $g^*_9 = 99$ $g^*_5 = 86$, $g^*_9 = 82$ $g^*_5 = 98$, $g^*_9 = 98$

L^*_{CIELAB} n0.i	intended output				real output				linearized output			
	L^*_{0a}	L^*_{0r}	Y_{0a}	Y_{0r}	L^*_{ta}	ΔL^*_{ta}	L^*_{tr}	Y_{ta}	$(L^*_{tr})^{1/1.06}$	L^*_{la}	ΔL^*_{la}	
9	96.0	1.0	90.0	1.0	96.0		1.0	90.0	1.0	96.0		
8	86.8	0.875	69.6	0.763	87.0	9.0	0.868	70.0	0.876	87.5	8.5	
7	77.6	0.75	52.5	0.566	78.0	9.0	0.737	53.2	0.751	78.9	8.5	
6	68.4	0.625	38.5	0.403	69.1	8.9	0.607	39.5	0.625	70.4	8.6	
5	59.1	0.5	27.2	0.273	60.3	8.8	0.478	28.4	0.5	61.8	8.6	
4	49.9	0.375	18.4	0.171	51.6	8.7	0.351	19.8	0.374	53.1	8.6	
3	40.7	0.25	11.7	0.094	43.1	8.5	0.227	13.2	0.249	44.6	8.6	
2	31.5	0.125	6.9	0.038	35.0	8.1	0.109	8.5	0.124	36.1	8.5	
1	22.3	0.0	3.6	0.0	27.6	7.4	0.0	5.3	0.0	27.6		

$\Delta L^*_{0a}=9.2$ (i=1,2,...,8) normalisation: $Y_{taiW}=Y_{0aW} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aW}+Y_{0ref}}$

eep01-7n

Test chart eep0; Equal 9 step grey scaling for four display reflections $Y_{ref}=3.6, 0.4, 0.9, 1.8$, and black $L^*_{N,CIELAB}=22.3$, $Y_N=3.6$ and white $L^*_{W,CIELAB}=95.99$, $Y_W=90$, normalisation: white W

see similar files of the whole serie: <http://farbe.li.tu-berlin.de/eeps.htm>
 technical information: <http://farbe.li.tu-berlin.de> or <http://color.li.tu-berlin.de>

TUB registration: 20230701-eep0/eep0l0np.pdf / .ps
 application for evaluation and measurement of display or print output

TUB material: code=rh4ta