

<http://farbe.li.tu-berlin.de/eeq9/eeq9I0np.pdf> /.ps; only vector graphic VG; start output  
 see similar files: <http://farbe.li.tu-berlin.de/eeq9/eeq9.htm>

**Equal 9 step grey scaling between  $L^*_{0aN}=17.9$  and  $L^*_{0aW}=95.9$ ,  $Y_{0ref}=2.5$ , normalisation grey U**

$L^*_{0aN}=17.9$ ,  $L^*_{0aU}=56.9$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=2.5$ ,  $Y_{0aU}=24.9$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=36.0$   
 $L^*_{taN}=25.4$ ,  $L^*_{taU}=57.0$ ,  $L^*_{taW}=93.5$ ,  $Y_{taN}=4.5$ ,  $Y_{taU}=24.9$ ,  $Y_{taW}=84.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=18.5$

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

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

$L^*_{CIELAB}$	n0.i	intended output				real output				linearized output			
		$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.11}$	$L^*_{la}$	$\Delta L^*_{la}$	
100	9	96.0	1.0	90.0	1.0	93.5	9.2	1.0	84.0	1.0	93.5	8.4	
	8	86.2	0.875	68.5	0.754	84.2	9.2	0.864	64.5	0.877	85.1	8.5	
75	7	76.5	0.75	50.7	0.55	75.0	9.1	0.729	48.3	0.752	76.6	8.5	
	6	66.7	0.625	36.3	0.386	65.9	9.0	0.595	35.2	0.627	68.1	8.6	
	5	56.9	0.5	24.9	0.256	57.0	8.7	0.464	24.9	0.5	59.5	8.6	
50	4	47.2	0.375	16.2	0.156	48.2	8.4	0.335	17.0	0.374	50.8	8.6	
	3	37.4	0.25	9.8	0.083	39.8	7.7	0.212	11.1	0.247	42.2	8.4	
25	2	27.7	0.125	5.3	0.032	32.1	6.7	0.098	7.1	0.124	33.8	8.4	
	1	17.9	0.0	2.5	0.0	25.4		0.0	4.5	0.0	25.4		

$\Delta L^*_{0a}=9.7$  (i=1,2,...,8) normalisation:  $Y_{taiU}=Y_{0aU} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aU}+Y_{0ref}}$

eeq90-3n

**Equal 9 step grey scaling between  $L^*_{0aN}=17.9$  and  $L^*_{0aW}=95.9$ ,  $Y_{0ref}=20.0$ , normalisation grey U**

$L^*_{0aN}=17.9$ ,  $L^*_{0aU}=56.9$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=2.5$ ,  $Y_{0aU}=24.9$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=36.0$   
 $L^*_{taN}=42.0$ ,  $L^*_{taU}=57.0$ ,  $L^*_{taW}=82.4$ ,  $Y_{taN}=12.5$ ,  $Y_{taU}=24.9$ ,  $Y_{taW}=61.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=4.9$

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

$L^*_{CIELAB}$	n0.i	intended output				real output				linearized output			
		$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.41}$	$L^*_{la}$	$\Delta L^*_{la}$	
100	9	96.0	1.0	90.0	1.0	82.4	6.9	1.0	61.0	1.0	82.4	5.0	
	8	86.2	0.875	68.5	0.754	75.5	6.6	0.829	49.0	0.876	77.4	5.1	
75	7	76.5	0.75	50.7	0.55	68.9	6.2	0.666	39.2	0.75	72.3	5.1	
	6	66.7	0.625	36.3	0.386	62.7	6.2	0.512	31.2	0.623	67.2	5.1	
	5	56.9	0.5	24.9	0.256	57.0	5.7	0.371	24.9	0.496	62.0	5.1	
50	4	47.2	0.375	16.2	0.156	51.9	5.1	0.246	20.0	0.371	57.0	5.1	
	3	37.4	0.25	9.8	0.083	47.6	4.3	0.14	16.5	0.25	52.1	4.9	
25	2	27.7	0.125	5.3	0.032	44.3	3.3	0.058	14.0	0.134	47.4	4.7	
	1	17.9	0.0	2.5	0.0	42.0	2.3	0.0	12.5	0.0	42.0	5.4	

$\Delta L^*_{0a}=9.7$  (i=1,2,...,8) normalisation:  $Y_{taiU}=Y_{0aU} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aU}+Y_{0ref}}$

eeq91-3n

**Equal 9 step grey scaling between  $L^*_{0aN}=17.9$  and  $L^*_{0aW}=95.9$ ,  $Y_{0ref}=10.0$ , normalisation grey U**

$L^*_{0aN}=17.9$ ,  $L^*_{0aU}=56.9$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=2.5$ ,  $Y_{0aU}=24.9$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=36.0$   
 $L^*_{taN}=35.8$ ,  $L^*_{taU}=57.0$ ,  $L^*_{taW}=87.6$ ,  $Y_{taN}=8.9$ ,  $Y_{taU}=24.9$ ,  $Y_{taW}=71.3$ ,  $C_{taY}=Y_{taW}:Y_{taN}=8.0$

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

$L^*_{CIELAB}$	n0.i	intended output				real output				linearized output			
		$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.29}$	$L^*_{la}$	$\Delta L^*_{la}$	
100	9	96.0	1.0	90.0	1.0	87.6	8.0	1.0	71.3	1.0	87.6	6.4	
	8	86.2	0.875	68.5	0.754	79.6	7.8	0.845	56.0	0.877	81.3	6.5	
75	7	76.5	0.75	50.7	0.55	71.7	7.6	0.693	43.3	0.752	74.8	6.5	
	6	66.7	0.625	36.3	0.386	64.2	7.2	0.547	33.0	0.626	68.3	6.6	
	5	56.9	0.5	24.9	0.256	57.0	6.7	0.408	24.9	0.499	61.7	6.6	
50	4	47.2	0.375	16.2	0.156	50.3	6.7	0.279	18.7	0.372	55.1	6.6	
	3	37.4	0.25	9.8	0.083	44.4	5.9	0.165	14.1	0.247	48.6	6.4	
25	2	27.7	0.125	5.3	0.032	39.5	4.9	0.071	10.9	0.128	42.4	6.2	
	1	17.9	0.0	2.5	0.0	35.8	3.6	0.0	8.9	0.0	35.8	6.6	

$\Delta L^*_{0a}=9.7$  (i=1,2,...,8) normalisation:  $Y_{taiU}=Y_{0aU} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aU}+Y_{0ref}}$

eeq90-7n

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

$L^*_{0aN}=17.9$ ,  $L^*_{0aU}=56.9$ ,  $L^*_{0aW}=96.0$ ,  $Y_{0aN}=2.5$ ,  $Y_{0aU}=24.9$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=36.0$   
 $L^*_{taN}=51.9$ ,  $L^*_{taU}=57.0$ ,  $L^*_{taW}=68.7$ ,  $Y_{taN}=20.0$ ,  $Y_{taU}=24.9$ ,  $Y_{taW}=39.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=1.9$

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

$L^*_{CIELAB}$	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	68.7	3.5	1.0	39.0	1.0	68.7	2.2	
	8	86.2	0.875	68.5	0.754	65.2	3.2	0.791	34.3	0.87	66.5	2.2	
75	7	76.5	0.75	50.7	0.55	62.0	2.8	0.603	30.5	0.741	64.4	2.1	
	6	66.7	0.625	36.3	0.386	59.3	2.8	0.44	27.3	0.613	62.2	2.1	
	5	56.9	0.5	24.9	0.256	57.0	2.3	0.301	24.9	0.49	60.1	2.0	
50	4	47.2	0.375	16.2	0.156	55.1	1.9	0.189	23.0	0.371	58.1	1.9	
	3	37.4	0.25	9.8	0.083	53.6	1.4	0.103	21.6	0.258	56.2	1.8	
25	2	27.7	0.125	5.3	0.032	52.6	1.0	0.041	20.6	0.149	54.4	1.8	
	1	17.9	0.0	2.5	0.0	51.9	0.7	0.0	20.0	0.0	51.9	2.5	

$\Delta L^*_{0a}=9.7$  (i=1,2,...,8) normalisation:  $Y_{taiU}=Y_{0aU} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aU}+Y_{0ref}}$

eeq91-7n

Test chart eqq9; Equal 9 step grey scaling for four display reflections  $Y_{ref}=2.5, 10, 20, 90$ , and black  $L^*_{N,CIELAB}=17.92$ ,  $Y_N=2.5$  and white  $L^*_{W,CIELAB}=95.99$ ,  $Y_W=90$ , normalisation: grey U

see similar files of the whole serie: <http://farbe.li.tu-berlin.de/eeq9.htm>  
 technical information: <http://farbe.li.tu-berlin.de> or <http://color.li.tu-berlin.de>

TUB registration: 20230701-eeq9/eeq9I0np.pdf /.ps  
 application for evaluation and measurement of display or print output  
 TUB material: code=rh4ta