

see similar files of the whole serie: <http://farbe.li.tu-berlin.de/feo5.htm>
<http://farbe.li.tu-berlin.de> or <http://color.li.tu-berlin.de>

TUB registration: 20240201-feo7/feo710na.txt /ps
 application for evaluation and measurement of display or print output
 TUB material: code=rhata4

**Colourimetric scaling of achromatic colours between peak white and black.
 Relations between tristimulus value Y, luminance L, and lightness L* of ISO-standards**

Colour (light or paper)	tristimulus values	IECsRGB _W lightness	relative luminance		CIELAB _W lightness	TUBLOG _U lightness
			L _{rU} = L/L _U	L _{rW} = L/L _W		
Contrast W:N (25:1=100:4)	Y (5 ^{0.5} =2,24)	L* _{IECsRGB_W} =s _W L _{rW} ^{1/2.4}	L_{rU} =L/L _U	L_{rW} =L/L _W	L* _{CIELAB_W} =c _W L _{rW} ^{1/3} -16	L* _{TUBLOG_U} =t _U log(L _{rU})+50
White P1 (light)	224 =20*11,2	139=50+89 =s(2,24) ^{1/2.4}	11,2	2,24	135=50+85 =c(2,24) ^{1/3} -16	125=50+77 =t log(11,20)+50
White W (fluorescent paper)	100 =20*5	100=50+50 =s(1,00) ^{1/2.4}	5	1,00	100=50+50 =c(1,00) ^{1/3} -16	100=50+52 =t log(5,00)+50
light Grey H (paper)	44,8 =20*2,24	71=50+21 =s(0,45) ^{1/2.4}	2,24	0,45	72=50+22 =c(0,45) ^{1/3} -16	75=50+27 =t log(2,24)+50
Grey U (paper)	20	51=50+1 =s(0,20) ^{1/2.4}	1	0,20	51=50+1 =c(0,20) ^{1/3} -16	50=50+2 =t log(1,00)+50
dark Grey D (paper)	8,9 =20/2,24	36=50-13 =s(0,09) ^{1/2.4}	0,45	0,09	35=50-14 =c(0,09) ^{1/3} -16	24=50-23 =t log(0,45)+50
Black N (paper)	4 =20/5	26=50-23 =s(0,04) ^{1/2.4}	0,20	0,04	23=50-26 =c(0,04) ^{1/3} -16	0=50-48 =t log(0,20)+50
Black p1 (glossy paper)	1,9 =20/11,2	18=50-31 =s(0,02) ^{1/2.4}	0,09	0,022	14=50-35 =c(0,02) ^{1/3} -16	-24=50-72 =t log(0,09)+50

It is valid: CIELAB_W: c_W=c=116, IECsRGB_W: s_W=s=100, TUBLOG_U: t_U=t=50/log(5)=72

feo70-3n

**Colourimetric scaling of achromatic colours between peak white and black.
 Relations between tristimulus value Y, luminance L, and lightness L* of ISO-standards**

Colour (light or paper)	tristimulus values	HDR display luminance	relative luminance		CIELAB _U lightness	TUBLOG _U lightness
			L _{rU} = L/L _U	L _{rW} = L/L _W		
Contrast W:N (25:1=100:4)	Y (5 ^{0.5} =2,24)	L [cd/m ²]	L_{rU} =L/L _U	L_{rW} =L/L _W	L* _{CIELAB_U} =d _U L _{rU} ^{1/3} -16	L* _{TUBLOG_U} =t _U log(L _{rU})+50
White P1 (light)	224 =20*11,2	448 =40*11,2	11,2	2,24	135=50+85 =c(11,20) ^{1/3} -16	125=50+77 =t log(11,20)+50
White W (fluorescent paper)	100 =20*5	200 =40*5	5	1,00	100=50+50 =c(5,00) ^{1/3} -16	100=50+52 =t log(5,00)+50
light Grey H (paper)	44,8 =20*2,24	89,6 =40*2,24	2,24	0,45	72=50+22 =c(2,24) ^{1/3} -16	75=50+27 =t log(2,24)+50
Grey U (paper)	20	40 40*1	1	0,20	51=50+1 =c(1,00) ^{1/3} -16	50=50+2 =t log(1,00)+50
dark Grey D (paper)	8,9 =20/2,24	17,8 40/2,24	0,45	0,09	35=50-14 =c(0,45) ^{1/3} -16	24=50-23 =t log(0,45)+50
Black N (paper)	4 =20/5	8 40/5	0,20	0,04	23=50-26 =c(0,20) ^{1/3} -16	0=50-48 =t log(0,20)+50
Black p1 (glossy paper)	1,9 =20/11,2	3,6 40/11,2	0,09	0,022	14=50-35 =c(0,09) ^{1/3} -16	-24=50-72 =t log(0,09)+50

It is valid: CIELAB_U: d_U=d=66, TUBLOG_U: t_U=t=50/log(5)=72

feo71-3n

**Colourimetric scaling of achromatic colours between peak white and black.
 Relations between tristimulus value Y, luminance L, and lightness L* of ISO-standards**

Colour (light or paper)	tristimulus values	HDR display luminance	relative luminance		CIELAB _W lightness	TUBLOG _U lightness
			L _{rU} = L/L _U	L _{rW} = L/L _W		
Contrast W:N (25:1=100:4)	Y (5 ^{0.5} =2,24)	L [cd/m ²]	L_{rU} =L/L _U	L_{rW} =L/L _W	L* _{CIELAB_W} =c _W L _{rW} ^{1/3} -16	L* _{TUBLOG_U} =t _U log(L _{rU})+50
White P1 (light)	224 =20*11,2	448 =40*11,2	11,2	2,24	135=50+85 =c(2,24) ^{1/3} -16	125=50+77 =t log(11,20)+50
White W (fluorescent paper)	100 =20*5	200 =40*5	5	1,00	100=50+50 =c(1,00) ^{1/3} -16	100=50+52 =t log(5,00)+50
light Grey H (paper)	44,8 =20*2,24	89,6 =40*2,24	2,24	0,45	72=50+22 =c(0,45) ^{1/3} -16	75=50+27 =t log(2,24)+50
Grey U (paper)	20	40 40*1	1	0,20	51=50+1 =c(0,20) ^{1/3} -16	50=50+2 =t log(1,00)+50
dark Grey D (paper)	8,9 =20/2,24	17,8 40/2,24	0,45	0,09	35=50-14 =c(0,09) ^{1/3} -16	24=50-23 =t log(0,45)+50
Black N (paper)	4 =20/5	8 40/5	0,20	0,04	23=50-26 =c(0,04) ^{1/3} -16	0=50-48 =t log(0,20)+50
Black p1 (glossy paper)	1,9 =20/11,2	3,6 40/11,2	0,09	0,022	14=50-35 =c(0,02) ^{1/3} -16	-24=50-72 =t log(0,09)+50

It is valid: CIELAB_W: c_W=c=116, TUBLOG_U: t_U=t=50/log(5)=72

feo70-7n

**Colourimetric scaling of achromatic colours between peak white and black.
 Relations between tristimulus value Y, luminance L, and lightness L* of ISO-standards**

Colour (light or paper)	tristimulus values	HDR display luminance	relative luminance		IECsRGB _W lightness	TUBLOG _U lightness
			L _{rU} = L/L _U	L _{rW} = L/L _W		
Contrast W:N (25:1=100:4)	Y (5 ^{0.5} =2,24)	L [cd/m ²]	L_{rU} =L/L _U	L_{rW} =L/L _W	L* _{IECsRGB_W} =s _W L _{rW} ^{1/2.4}	L* _{TUBLOG_U} =t _U log(L _{rU})+50
White P1 (light)	224 =20*11,2	448 =40*11,2	11,2	2,24	139=50+89 =s(2,24) ^{1/2.4}	125=50+77 =t log(11,20)+50
White W (fluorescent paper)	100 =20*5	200 =40*5	5	1,00	100=50+50 =s(1,00) ^{1/2.4}	100=50+52 =t log(5,00)+50
light Grey H (paper)	44,8 =20*2,24	89,6 =40*2,24	2,24	0,45	71=50+21 =s(0,45) ^{1/2.4}	75=50+27 =t log(2,24)+50
Grey U (paper)	20	40 40*1	1	0,20	51=50+1 =s(0,20) ^{1/2.4}	50=50+2 =t log(1,00)+50
dark Grey D (paper)	8,9 =20/2,24	17,8 40/2,24	0,45	0,09	36=50-13 =s(0,09) ^{1/2.4}	24=50-23 =t log(0,45)+50
Black N (paper)	4 =20/5	8 40/5	0,20	0,04	26=50-23 =s(0,04) ^{1/2.4}	0=50-48 =t log(0,20)+50
Black p1 (glossy paper)	1,9 =20/11,2	3,6 40/11,2	0,09	0,022	18=50-31 =s(0,02) ^{1/2.4}	-24=50-72 =t log(0,09)+50

It is valid: IECsRGB_W: s_W=s=100, TUBLOG_U: t_U=t=50/log(5)=72

feo71-7n

TUB-test chart feo7; Colourimetric scaling of achromatic colours between white and black.
 Contrast W:N=100:4, P1:p1=448:3,6 with L_{rW}, L_{rU}. See ISO 22028-5, ISO/CIE 11664-4, CIE 230