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)	tristimu-lus values	IECsRGB$_W$ lightness	relative luminance		CIELAB$_W$ lightness	TUBLOG$_U$ lightness
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 P2 (light)	500 =20*25	195=50+145 =s(5,00)$^{1/2,4}$	25	5,00	182=50+132 =c(5,00)$^{1/3}$−16	150=50+102 =t log(25,00)+50
White W (fluo-recent 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						

feo80−3n

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)	tristimu-lus values	HDR display luminance	relative luminance		CIELAB$_U$ lightness	TUBLOG$_U$ lightness
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 P2 (light)	500 =20*25	1000 =40*25	25	5,00	182=50+132 =c(25,00)$^{1/3}$−16	150=50+102 =t log(25,00)+50
White W (fluo-recent 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						

feo81−3n

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)	tristimu-lus values	HDR display luminance	relative luminance		CIELAB$_W$ lightness	TUBLOG$_U$ lightness
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 P2 (light)	500 =20*25	1000 =40*25	25	5,00	182=50+132 =c(5,00)$^{1/3}$−16	150=50+102 =t log(25,00)+50
White W (fluo-recent 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						

feo80−7n

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)	tristimu-lus values	HDR display luminance	relative luminance		ITUsRGB$_W$ lightness	TUBLOG$_U$ lightness
Contrast W:N (25:1=100:4)	Y ($5^{0,5}$=2,24	L [cd/m^2]	$L_{rU}=L/L_U$	$L_{rW}=L/L_W$	$L^*_{ITUsRGB_W}=i_W L_{rW}^{0,45}-10$	$L^*_{TUBLOG_U}=t_U \log(L_{rU})+50$
White P2 (light)	500 =20*25	1000 =40*25	25	5,00	216=50+166 =i(5,00)^{0,45}10	150=50+102 =t log(25,00)+50
White W (fluo-recent paper)	100 =20*5	200 =40*5	5	1,00	100=50+50 =i(1,00)^{0,45}10	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	66=50+16 =i(0,45)^{0,45}10	75=50+27 =t log(2,24)+50
Grey U (paper)	20	40 40*1	1	0,20	43=50−6 =i(0,20)^{0,45}10	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	27=50−22 =i(0,09)^{0,45}10	24=50−23 =t log(0,45)+50
Black N (paper)	4 =20/5	8 40/5	0,20	0,04	15=50−34 =i(0,04)^{0,45}10	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	8=50−41 =i(0,02)^{0,45}10	−24=50−72 =t log(0,09)+50
It is valid: ITUsRGB$_W$: i_W=i=110, TUBLOG$_U$: t_U=t=50/log(5)=72						

feo81−7n