

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
Contrast W:N (25:1=100:4)	Y ($5^{0,5}=2,24$)	$L^*_{IECsRGBW}$ $=s_W L_{rW}^{1/2,4}$	L_{rU} $=L/L_U$	L_{rW} $=L/L_W$	$L^*_{CIELABW}$ $=c_W L_{rW}^{1/3}-16$	$L^*_{TUBLOGU}$ $=t_U \log(L_{rU})+50$
White P1 (light)	224 $=20*11,2$	139=89+50 $=s(2,24)^{1/2,4}$	11,2	2,24	135=85+50 $=c(2,24)^{1/3}-16$	125=75+50 $=t \log(11,2)+50$
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+50 $=t \log(5,00)+50$
light Grey H (paper)	44,8 $=20*2,24$	71=21+50 $=s(0,45)^{1/2,4}$	2,24	0,45	72=22+50 $=c(0,45)^{1/3}-16$	75=25+50 $=t \log(2,24)+50$
Grey U (paper)	20	51=1+50 $=s(0,20)^{1/2,4}$	1	0,20	51=1+50 $=c(0,20)^{1/3}-16$	50=0+50 $=t \log(1,00)+50$
dark Grey D (paper)	8,9 $=20/2,24$	36=-13+50 $=s(0,09)^{1/2,4}$	0,45	0,09	35=-14+50 $=c(0,09)^{1/3}-16$	24=-25+50 $=t \log(0,45)+50$
Black N (paper)	4 $=20/5$	26=-23+50 $=s(0,04)^{1/2,4}$	0,20	0,04	23=-26+50 $=c(0,04)^{1/3}-16$	0=-50+50 $=t \log(0,20)+50$
Black p1 (glossy paper)	1,9 $=20/11,2$	18=-31+50 $=s(0,02)^{1/2,4}$	0,09	0,022	14=-35+50 $=c(0,02)^{1/3}-16$	-24=-74+50 $=t \log(0,09)+50$

Valid: CIELAB_W: $c_W=c=116$, IECsRGB_W: $s_W=s=100$, TUBLOG_U: $t_U=t=50/\log(5)=71,533$