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)	450 =18*25	104=50+54 $=s(2,24)^{1/2,4}$	25	2,24	104=50+54 $=c(2,24)^{1/3}-16$	103=50+55 =t log(11,20)+50
White P1 (light)	224 =18*11,2	74=50+24 $=s(1,00)^{1/2,4}$	11,2	1,00	76=50+26 $=c(1,00)^{1/3}-16$	78=50+30 =t log(5,00)+50
White W (fluo-recent paper)	90 =18*5	53=50+3 $=s(0,45)^{1/2,4}$	5	0,45	54=50+4 $=c(0,45)^{1/3}-16$	53=50+5 =t log(2,24)+50
Grey U (paper)	18 =18*1	38=50−11 $=s(0,20)^{1/2,4}$	1	0,20	37=50−12 $=c(0,20)^{1/3}-16$	28=50−19 =t log(1,00)+50
Black N (paper)	3,6 =18/5	27=50−22 $=s(0,09)^{1/2,4}$	0,20	0,09	25=50−24 $=c(0,09)^{1/3}-16$	3=50−44 =t log(0,45)+50
Black p1 (glossy paper)	2,5 =18/7	19=50−30 $=s(0,04)^{1/2,4}$	0,14	0,04	15=50−34 $=c(0,04)^{1/3}-16$	−21=50−69 =t log(0,20)+50
Black p2 (glossy paper)	1,8 =18/10	14=50−35 $=s(0,02)^{1/2,4}$	0,10	0,022	8=50−41 $=c(0,02)^{1/3}-16$	−46=50−94 =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						

feo60−3n

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)	450 =18*25	1000 =40*25	25	2,24	104=50+54 $=c(11,20)^{1/3}-16$	103=50+55 =t log(11,20)+50
White P1 (light)	224 =18*11,2	448 =40*11,2	11,2	1,00	76=50+26 $=c(5,00)^{1/3}-16$	78=50+30 =t log(5,00)+50
White W (fluo-recent paper)	90 =18*5	200 =40*5	5	0,45	54=50+4 $=c(2,24)^{1/3}-16$	53=50+5 =t log(2,24)+50
Grey U (paper)	18 =18*1	40 40*1	1	0,20	37=50−12 $=c(1,00)^{1/3}-16$	28=50−19 =t log(1,00)+50
Black N (paper)	3,6 =18/5	8 40/5	0,20	0,09	25=50−24 $=c(0,45)^{1/3}-16$	3=50−44 =t log(0,45)+50
Black p1 (glossy paper)	2,5 =18/7	5,7 40/7	0,14	0,04	15=50−34 $=c(0,20)^{1/3}-16$	−21=50−69 =t log(0,20)+50
Black p2 (glossy paper)	1,8 =18/10	4 40/10	0,10	0,022	8=50−41 $=c(0,09)^{1/3}-16$	−46=50−94 =t log(0,09)+50
It is valid: CIELAB$_U$: d_U=d=66, TUBLOG$_U$: t_U=t=50/log(5)=72						

feo61−3n

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)	450 =18*25	1000 =40*25	25	2,24	104=50+54 $=c(2,24)^{1/3}-16$	103=50+55 =t log(11,20)+50
White P1 (light)	224 =18*11,2	448 =40*11,2	11,2	1,00	76=50+26 $=c(1,00)^{1/3}-16$	78=50+30 =t log(5,00)+50
White W (fluo-recent paper)	90 =18*5	200 =40*5	5	0,45	54=50+4 $=c(0,45)^{1/3}-16$	53=50+5 =t log(2,24)+50
Grey U (paper)	18 =18*1	40 40*1	1	0,20	37=50−12 $=c(0,20)^{1/3}-16$	28=50−19 =t log(1,00)+50
Black N (paper)	3,6 =18/5	8 40/5	0,20	0,09	25=50−24 $=c(0,09)^{1/3}-16$	3=50−44 =t log(0,45)+50
Black p1 (glossy paper)	2,5 =18/7	5,7 40/7	0,14	0,04	15=50−34 $=c(0,04)^{1/3}-16$	−21=50−69 =t log(0,20)+50
Black p2 (glossy paper)	1,8 =18/10	4 40/10	0,10	0,022	8=50−41 $=c(0,02)^{1/3}-16$	−46=50−94 =t log(0,09)+50
It is valid: CIELAB$_W$: c_W=c=116, TUBLOG$_U$: t_U=t=50/log(5)=72						

feo60−7n

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		IECsRGB$_W$ 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} $=L/L_W$	$L^*_{IECsRGB_W}$ $=s_W L_{rW}^{1/2,4}$	$L^*_{TUBLOG_U}$ $=t_U \log(L_{rU})+50$
White P2 (light)	450 =18*25	1000 =40*25	25	2,24	104=50+54 $=s(2,24)^{1/2,4}$	103=50+55 =t log(11,20)+50
White P1 (light)	224 =18*11,2	448 =40*11,2	11,2	1,00	74=50+24 $=s(1,00)^{1/2,4}$	78=50+30 =t log(5,00)+50
White W (fluo-recent paper)	90 =18*5	200 =40*5	5	0,45	53=50+3 $=s(0,45)^{1/2,4}$	53=50+5 =t log(2,24)+50
Grey U (paper)	18 =18*1	40 40*1	1	0,20	38=50−11 $=s(0,20)^{1/2,4}$	28=50−19 =t log(1,00)+50
Black N (paper)	3,6 =18/5	8 40/5	0,20	0,09	27=50−22 $=s(0,09)^{1/2,4}$	3=50−44 =t log(0,45)+50
Black p1 (glossy paper)	2,5 =18/7	5,7 40/7	0,14	0,04	19=50−30 $=s(0,04)^{1/2,4}$	−21=50−69 =t log(0,20)+50
Black p2 (glossy paper)	1,8 =18/10	4 40/10	0,10	0,022	14=50−35 $=s(0,02)^{1/2,4}$	−46=50−94 =t log(0,09)+50
It is valid: IECsRGB$_W$: s_W=s=100, TUBLOG$_U$: t_U=t=50/log(5)=72						

feo61−7n