

**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 ($5^{0,5}=2,24$) | $L^*_{IECsRGBW} = s_W L_{nW}^{1/2,4}$ | $L_{rU} = L/L_U$ | $L_{rW} = L/L_W$ | $L^*_{CIELABW} = c_W L_{nW}^{1/3} - 16$ | $L^*_{TUBLOGU} = t_U \log(L_{nU}) + 50$ |
| White P2 (light) | 450 =18*25 | 195=50+145 =s(5,00) ^{1/2,4} | 25 | 2,24 | 182=50+132 =c(5,00) ^{1/3} -16 | 150=50+102 =t log(25,00)+50 |
| White P1 (light) | 224 =18*11,2 | 139=50+89 =s(2,24) ^{1/2,4} | 11,2 | 1,00 | 135=50+85 =c(2,24) ^{1/3} -16 | 125=50+77 =t log(11,20)+50 |
| White W (fluorescent paper) | 90 =18*5 | 100=50+50 =s(1,00) ^{1/2,4} | 5 | 0,45 | 100=50+50 =c(1,00) ^{1/3} -16 | 100=50+52 =t log(5,00)+50 |
| Grey U (paper) | 18 =18*1 | 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 |
| Black N (paper) | 3,6 =18/5 | 26=50-23 =s(0,04) ^{1/2,4} | 0,20 | 0,09 | 23=50-26 =c(0,04) ^{1/3} -16 | 0=50-48 =t log(0,20)+50 |
| Black p1 (glossy paper) | 2,5 =18/7 | 21=50-28 =s(0,03) ^{1/2,4} | 0,14 | 0,04 | 17=50-32 =c(0,03) ^{1/3} -16 | -14=50-62 =t log(0,13)+50 |
| Black p2 (glossy paper) | 1,8 =18/10 | 18=50-31 =s(0,02) ^{1/2,4} | 0,10 | 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: $t_U=t=50/\log(5)=72$