Contrast step C_{Yi}(i=1 to 8), CIE tristimulues value Y_N, grey steps according to ISO 9241-306[1)]

Contrast step C_{Yi} and Y-ratio (i=1 .. 8)	**CIE tristimulus value Y_N and CIE lightness L^*_N of black**	**total viewing display illuminance E_{P+R} [lux][3)]**	**measured projector (P) display illuminance E_P [lux][3)]**	**room light (R) display illuminance E_R [lux][3)]**	**grey steps without output linearisation delta L^*=1 amount a_n[2)]**	**grey steps with output linearisation delta L^*=1 amount a_l[2)]**
C_{Y8} 288:1	0,31 / 1	80000+64000	143500	500	47 (max)	94 (max)
C_{Y7} 144:1	0,62 / 6	40000+32000	61500	500	44	88
C_{Y6} 72:1	1,25 / 11	20000+16000	35500	500	42	84
C_{Y5} 36:1	**2,5 / 18**	**10000+8000**	**17500**	**500**	**38**	**77**
C_{Y4} 18:1	5,0 / 27	5000+4000	8500	500	34	68
C_{Y3} 9:1	10 / 38	2500+2000	4000	500	28	57
C_{Y2} 4,5:1	20 / 52	1250+1000	1750	500	21	43
C_{Y1} 2,25:1	40 / 70	625+500	625	500	12	25

1) The example is intended for data projectors (P). The standard contrast step (bold) C_{Y5} = 36:1 is hard to reach.

2) For the amount of discriminable colour steps use the equations: $c_n = a_n^3$ or $c_l = a_l^3$, for example c_n = 4096 for a_n = 16.

3) For the contrast C_Y =2:1 the viewing luminances of both the black in the projection and the white standard offset paper are equal (!). Visual fatique caused by the adaptation luminance ratio 36:1 of the black at the screen and the black at the paper shall be reduced. If for example a grey screen with the CIE tristimulus value Y_Z = 22,2 (=0,25*88.9) is used the contrast step C_{Yi} remains constant. Then the luminance ratio of all colours at the screen and the paper has reduced to 9:1. This reduces visual fatique.