

Colour stimuli of just noticeable colour thresholds (p=50%) in 3 directions

number Colour series	Colour stimuli colour values		Colour stimuli differences at threshold						notes experimental series
	Y	x y	-WN ΔY	-GR Δx	Δy	-BY Δx	Δy		
0 WPN	196.9	0.3986 0.4175	1.19	-0.0011	0.0009	-0.0016	-0.0014	WN, GR, BY	
1 WPN	74.13	0.3919 0.4139	0.41	-0.0012	0.0011	-0.0016	-0.0013	grey surround	
2 WPN	34.31	0.3926 0.414	0.18	-0.0013	0.0011	-0.0017	-0.0015	CIE data no. 0	
3 WPN	17.69	0.3973 0.4153	0.09	-0.0016	0.0013	-0.002	-0.0017	with white border	
4 WPN	9.15	0.4052 0.4185	0.07	-0.0017	0.0015	-0.0029	-0.0024		
5 WPN	4.65	0.4159 0.4226	0.05	-0.0023	0.002	-0.0042	-0.0036		
6 WPN	3.14	0.386 0.4113	0.04	-0.0027	0.0022	-0.0039	-0.0034		
7 WPN	1.26	0.3829 0.4091	0.02	-0.0045	0.0036	-0.0062	-0.0053		
8 WPN	0.62	0.3856 0.4108	0.02	-0.0076	0.0064	-0.0102	-0.0088		
9 WPN	0.29	0.3905 0.4148	0.01	-0.0132	0.0108	-0.0157	-0.0137		
10 WPN	0.16	0.402 0.4177	0.01	-0.021	0.0164	-0.0251	-0.0235	near P4000	
11 WDN	27.11	0.3282 0.3627	0.09	-0.001	0.0006	-0.0006	-0.0006	WN, GR, BY	
12 WDN	16.69	0.3236 0.3584	0.06	-0.0011	0.0006	-0.0008	-0.0006	grey surround	
13 WDN	10.38	0.3205 0.3552	0.06	-0.0013	0.0007	-0.0009	-0.0009	CIE data no. 1	
14 WDN	6.96	0.3198 0.3543	0.03	-0.0015	0.0008	-0.0012	-0.0011	with white border	
15 WDN	4.77	0.3206 0.3553	0.03	-0.0017	0.0011	-0.0012	-0.0012		
16 WDN	3.3	0.3221 0.357	0.03	-0.002	0.0013	-0.0018	-0.0015		
17 WDN	2.27	0.3255 0.3593	0.03	-0.0027	0.0016	-0.0022	-0.0019		
18 WDN	1.76	0.33 0.3612	0.01	-0.0029	0.0019	-0.0025	-0.0021		
19 WDN	1.26	0.3347 0.3649	0.01	-0.0038	0.0024	-0.0029	-0.0026		
20 WDN	0.91	0.3399 0.3691	0.02	-0.0042	0.0028	-0.0042	-0.0032		
21 WDN	0.63	0.3465 0.3738	0.01	-0.0057	0.0039	-0.0056	-0.0048	near D65	
22 GDR	14.96	0.1198 0.3961	0.06	-0.0061	0.003	-0.0012	-0.0022	WN, GR, BY	
23 GDR	15.01	0.1817 0.3839	0.04	-0.005	0.0026	-0.0015	-0.0019	grey surround	
24 GDR	15.71	0.2422 0.3728	0.06	-0.0037	0.0021	-0.0013	-0.0016	CIE data no. 2	
25 GDR	16.76	0.2786 0.3655	0.06	-0.0026	0.0014	-0.0014	-0.0015	with white border	
26 GDR	17.25	0.3041 0.3605	0.06	-0.002	0.0012	-0.0016	-0.0015		
27 GDR	16.52	0.321 0.3578	0.06	-0.0017	0.001	-0.0016	-0.0013		
28 GDR	15.76	0.3808 0.3087	0.04	-0.0021	0.0013	-0.0019	-0.0012		
29 GDR	15.95	0.4326 0.2637	0.05	-0.002	0.0011	-0.0023	-0.001		
30 GDR	16.96	0.4598 0.2388	0.07	-0.0022	0.0011	-0.0022	-0.001		
31 GDR	17.1	0.4763 0.2229	0.09	-0.0019	0.0009	-0.0024	-0.001		
32 GDR	17.17	0.485 0.2219	0.09	-0.002	0.0009	-0.0026	-0.001	near D65	
33 BDY	17.29	0.2497 0.2914	0.07	-0.0018	0.0008	-0.0011	-0.0009	WN, GR, BY	
34 BDY	16.89	0.2685 0.3063	0.03	-0.0016	0.0007	-0.0015	-0.0012	grey surround	
35 BDY	17.26	0.2877 0.3257	0.06	-0.0017	0.0009	-0.0013	-0.0011	CIE data no. 3	
36 BDY	17.41	0.3011 0.3389	0.05	-0.0017	0.0008	-0.0013	-0.0011	with white border	
37 BDY	17.48	0.3142 0.3498	0.05	-0.0017	0.0009	-0.0015	-0.0012		
38 BDY	16.44	0.3232 0.3593	0.06	-0.0016	0.001	-0.0014	-0.0013		
39 BDY	16.62	0.3611 0.3882	0.04	-0.0018	0.0012	-0.0024	-0.0019		
40 BDY	19.91	0.4048 0.4283	0.04	-0.002	0.0017	-0.002	-0.0018		
41 BDY	17.72	0.4338 0.4529	0.05	-0.002	0.0019	-0.0026	-0.0024		
42 BDY	18.05	0.4626 0.4772	0.05	-0.0021	0.0025	-0.003	-0.0027		
43 BDY	18.46	0.4841 0.4968	0.05	-0.002	0.0025	-0.0037	-0.0032	near D65	

Samples: bright white (W, no. 0), dark black (S, no. 10), White (W, no. 11), Black (N, no. 21)
Green (G=T (turquoise), no. 22), Red (R=M (magenta), no. 32), Blue (B, no. 33), Yellow (Y, no. 43)
Source: BAM Research Report no. 115 (1985), Tables 5.40:1 to 11

Colour stimuli of just noticeable colour thresholds (p=50%) in WN direction

number Colour series	CIELAB differences lightness, chroma, ΔL* Δa* Δb*	LABJND differences lightness, chroma, ΔL* Δa* Δb*	colour differences other formulae CMC C94 C00	notes experimental series
0 WPN	0.29 0.0 0.0	0.29 1.03 0.0	0.0 1.03 0.14	WN, GR, BY
1 WPN	0.19 0.0 0.0	0.19 0.91 0.0	0.0 0.91 0.1	grey surround
2 WPN	0.14 0.0 0.0	0.14 0.83 0.0	0.0 0.83 0.09	Y _C =16.6
3 WPN	0.12 0.0 0.0	0.12 0.82 0.0	0.0 0.82 0.09	with white border
4 WPN	0.15 -0.01 -0.01	0.15 1.13 -0.03	-0.02 1.13 0.14	Y _C =16.6
5 WPN	0.15 -0.02 -0.03	0.15 1.15 -0.04	-0.05 1.15 0.19	X _W =95.18
6 WPN	0.19 0.0 0.0	0.02 0.19 0.0	0.04 0.14 0.28	Y _W =100.0
7 WPN	0.21 0.02 0.01	0.21 1.22 0.03	0.02 1.22 0.41	Z _W =44.15
8 WPN	0.18 0.0 0.0	0.18 0.96 0.01	0.02 0.96 0.35	y _W =0.3977
9 WPN	0.18 0.0 0.0	0.18 1.06 0.0	0.01 1.06 0.35	y _W =0.4178
10 WPN	0.18 0.0 0.0	0.18 1.11 -0.01	0.01 1.11 0.35	near P4000
11 WDN	0.08 0.0 0.0	0.08 0.77 0.0	0.0 0.77 0.05	WN, GR, BY
12 WDN	0.08 0.0 0.0	0.08 0.92 0.0	0.0 0.92 0.07	grey surround
13 WDN	0.1 0.0 0.0	0.1 1.16 0.01	0.01 1.16 0.09	Y _C =16.6
14 WDN	0.09 0.0 0.0	0.09 1.04 0.0	0.01 1.04 0.09	with white border
15 WDN	0.11 0.0 0.0	0.11 1.33 0.0	-0.01 1.33 0.14	Y _C =16.6
16 WDN	0.11 0.0 0.0	0.11 1.28 0.0	0.02 1.28 0.16	X _W =90.38
17 WDN	0.14 -0.02 0.01	0.15 1.53 -0.05	0.04 1.53 0.25	Y _W =100.0
18 WDN	0.11 -0.03 0.0	0.11 1.1 -0.06	-0.03 1.1 0.22	Z _W =87.54
19 WDN	0.14 0.0 -0.01	0.14 1.23 -0.02	-0.06 1.23 0.27	x _W =0.3251
20 WDN	0.17 -0.01 0.0	0.17 1.34 -0.02	-0.05 1.34 0.34	y _W =0.3598
21 WDN	0.18 0.0 0.0	0.18 1.44 -0.03	-0.01 1.45 0.35	near D65
22 GDR	0.09 0.46 0.03	0.47 1.0 0.37	0.22 1.09 0.16	WN, GR, BY
23 GDR	0.05 0.11 0.01	0.13 0.59 0.16	0.07 0.61 0.06	grey surround
24 GDR	0.09 0.11 0.01	0.14 0.96 0.21	0.07 0.99 0.09	Y _C =16.6
25 GDR	0.08 0.03 0.01	0.09 0.91 0.09	0.08 0.92 0.07	with white border
26 GDR	0.07 0.02 0.0	0.07 0.76 0.06	0.07 0.77 0.06	Y _C =16.6
27 GDR	0.08 0.0 0.0	0.08 0.92 -0.01	0.0 0.92 0.07	X _W =90.38
28 GDR	0.05 -0.03 0.01	0.06 0.56 -0.12	0.05 0.58 0.04	Y _W =100.0
29 GDR	0.07 -0.12 0.03	0.15 0.82 -0.35	0.17 0.91 0.07	Z _W =87.54
30 GDR	0.1 -0.17 0.04	0.2 1.03 -0.47	0.28 1.17 0.09	x _W =0.3251
31 GDR	0.11 -0.22 0.06	0.22 1.15 -0.51	0.26 1.29 0.1	y _W =0.3598
32 GDR	0.11 -0.25 0.06	0.28 1.15 -0.6	0.43 1.37 0.11	near D65
33 BDY	0.08 0.0 0.0	0.03 0.09 0.89	0.01 0.29 0.94	WN, GR, BY
34 BDY	0.05 0.0 0.0	0.02 0.05 0.52	0.01 0.54 0.04	grey surround
35 BDY	0.07 0.0 0.0	0.01 0.07 0.76	0.01 0.13 0.77	Y _C =16.6
36 BDY	0.07 0.0 0.0	0.02 0.07 0.76	0.0 0.13 0.77	with white border
37 BDY	0.07 0.0 0.0	0.07 0.75 -0.01	0.0 0.75 0.05	Y _C =16.6
38 BDY	0.07 0.0 0.0	0.07 0.81 -0.01	0.01 0.81 0.06	X _W =90.38
39 BDY	0.05 0.0 -0.02	0.05 0.55 -0.01	-0.09 0.56 0.04	Y _W =100.0
40 BDY	0.05 -0.02 -0.07	0.05 0.56 -0.01	-0.17 0.59 0.06	Z _W =87.54
41 BDY	0.07 -0.01 -0.17	0.19 0.75 -0.05	-0.28 0.8 0.09	x _W =0.3251
42 BDY	0.07 -0.01 -0.31	0.32 0.73 -0.04	-0.29 0.79 0.13	y _W =0.3598
43 BDY	0.07 -0.01 -0.8	0.8 0.72 -0.03	-0.31 0.79 0.27	near D65
mean		0.16	0.99 0.14 0.12 0.09	
standard deviation		0.12	0.25 0.1 0.05 0.02	

Samples: bright white (Q, no. 0), dark black (S, no. 10), White (W, no. 11), Black (N, no. 21) Samples: bright white

Source: BAM Research Report no. 115 (1985), Tables 5.40:1 to 11

input: w/rq/b/cmyk -> w/rq/b/cmyk-

TUB-test chart VE66; Colour thresholds data
RI experiments: Series WPN, WDN, GDR, BDY in directions WN, GR, BY; LABJND A & D65