

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	-BY Δy	-WN ΔY	-GR Δx	
0 WPN	196.9	0.3986	0.4175	1.19	-0.0011	0.0009	-0.0016	-0.0014	_WN, GR, BY grey surround CIE data no. 03 with white border
1 WPN	74.13	0.3919	0.4139	0.41	-0.0012	0.0011	-0.0016	-0.0013	
2 WPN	34.31	0.3926	0.414	0.18	-0.0013	0.0011	-0.0017	-0.0015	
3 WPN	17.69	0.3973	0.4153	0.09	-0.0016	0.0013	-0.002	-0.0017	
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 grey surround CIE data no. 12 with white border
12 WDN	16.69	0.3236	0.3584	0.06	-0.0011	0.0006	-0.0008	-0.0006	
13 WDN	10.38	0.3205	0.3552	0.06	-0.0013	0.0007	-0.0009	-0.0009	
14 WDN	6.96	0.3198	0.3543	0.03	-0.0015	0.0008	-0.0012	-0.0011	
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 grey surround CIE data no. 27 with white border
23 GDR	15.01	0.1817	0.3839	0.04	-0.005	0.0026	-0.0015	-0.0019	
24 GDR	15.71	0.2422	0.3728	0.06	-0.0037	0.0021	-0.0013	-0.0016	
25 GDR	16.76	0.2786	0.3655	0.06	-0.0026	0.0014	-0.0014	-0.0015	
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	0.2119	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 grey surround CIE data no. 38 with white border
34 BDY	16.89	0.2685	0.3063	0.03	-0.0016	0.0007	-0.0015	-0.0012	
35 BDY	17.26	0.2877	0.3257	0.06	-0.0017	0.0009	-0.0013	-0.0011	
36 BDY	17.41	0.3011	0.3389	0.05	-0.0017	0.0008	-0.0013	-0.0011	
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	16.2	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

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

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

number Colour series	CIELAB differences lightness, chroma, Σ				LABJND differences lightness, chroma, Σ				colour differences other formulae			notes experimental series
	ΔL^*	Δa^*	Δb^*	ΔE^*	ΔL^*	Δa^*	Δb^*	ΔE^*	CMC	C94	C00	
0 WPN	0.29	0.0	0.0	0.29	1.03	0.0	0.0	1.03	0.14	0.29	0.13	_WN, GR, BY grey surround $Y_G=16.6$ with white border $X_W=95.18$ $Y_W=100.0$ $Z_W=44.15$ $x_W=0.3977$ $y_W=0.4178$ near P4000
1 WPN	0.19	0.0	0.0	0.19	0.91	0.0	0.0	0.91	0.1	0.19	0.12	
2 WPN	0.14	0.0	0.0	0.14	0.83	0.0	0.0	0.83	0.09	0.14	0.11	
3 WPN	0.12	0.0	0.0	0.12	0.82	0.0	0.0	0.82	0.09	0.12	0.12	
4 WPN	0.15	-0.01	-0.01	0.15	1.13	-0.03	-0.02	1.13	0.14	0.15	0.12	
5 WPN	0.15	-0.02	-0.03	0.15	1.15	-0.04	-0.05	1.15	0.19	0.15	0.11	
6 WPN	0.19	0.0	0.02	0.19	1.41	0.0	0.04	1.41	0.28	0.19	0.13	
7 WPN	0.21	0.02	0.01	0.21	1.22	0.03	0.03	1.22	0.41	0.21	0.13	
8 WPN	0.18	0.0	0.0	0.18	0.96	0.01	0.02	0.96	0.35	0.18	0.1	
9 WPN	0.18	0.0	0.0	0.18	1.06	0.0	0.01	1.06	0.35	0.18	0.1	
10 WPN	0.18	0.0	0.0	0.18	1.11	-0.01	-0.01	1.11	0.35	0.18	0.1	
11 WDN	0.08	0.0	0.0	0.08	0.77	0.0	0.0	0.77	0.05	0.08	0.07	_WN, GR, BY grey surround $Y_G=16.6$ with white border $X_W=90.38$ $Y_W=100.0$ $Z_W=87.54$ $x_W=0.3251$ $y_W=0.3598$ near D65
12 WDN	0.08	0.0	0.0	0.08	0.92	0.0	0.0	0.92	0.07	0.08	0.08	
13 WDN	0.1	0.0	0.0	0.1	1.16	0.01	0.01	1.16	0.09	0.1	0.09	
14 WDN	0.09	0.0	0.0	0.09	1.04	0.0	0.01	1.04	0.09	0.09	0.07	
15 WDN	0.11	0.0	0.0	0.11	1.33	0.0	-0.01	1.33	0.14	0.11	0.08	
16 WDN	0.11	0.0	0.0	0.11	1.28	0.0	0.02	1.28	0.16	0.11	0.08	
17 WDN	0.14	-0.02	0.01	0.15	1.53	-0.05	0.04	1.53	0.25	0.15	0.1	
18 WDN	0.11	-0.03	0.0	0.11	1.1	-0.06	-0.03	1.1	0.22	0.11	0.08	
19 WDN	0.14	0.0	-0.01	0.14	1.23	-0.02	-0.06	1.23	0.27	0.14	0.09	
20 WDN	0.17	-0.01	0.0	0.17	1.34	-0.02	-0.05	1.34	0.34	0.17	0.1	
21 WDN	0.18	0.0	0.0	0.18	1.44	-0.03	-0.1	1.45	0.35	0.18	0.1	
22 GDR	0.09	0.46	0.03	0.47	1.0	0.37	0.22	1.09	0.16	0.13	0.13	_WN, GR, BY grey surround $Y_G=16.6$ with white border $X_W=90.38$ $Y_W=100.0$ $Z_W=87.54$ $x_W=0.3251$ $y_W=0.3598$ near D65
23 GDR	0.05	0.11	0.01	0.13	0.59	0.16	0.07	0.61	0.06	0.06	0.06	
24 GDR	0.09	0.11	0.01	0.14	0.96	0.21	0.07	0.99	0.09	0.1	0.1	
25 GDR	0.08	0.03	0.01	0.09	0.91	0.09	0.08	0.92	0.07	0.09	0.09	
26 GDR	0.07	0.02	0.0	0.07	0.76	0.06	0.04	0.77	0.06	0.07	0.07	
27 GDR	0.08	0.0	0.0	0.08	0.92	-0.01	0.0	0.92	0.07	0.08	0.08	
28 GDR	0.05	-0.03	0.01	0.06	0.56	-0.12	0.05	0.58	0.04	0.05	0.05	
29 GDR	0.07	-0.12	0.03	0.15	0.82	-0.35	0.17	0.91	0.07	0.08	0.08	
30 GDR	0.1	-0.17	0.04	0.2	1.03	-0.47	0.28	1.17	0.09	0.1	0.1	
31 GDR	0.11	-0.18	0.03	0.22	1.15	-0.51	0.26	1.29	0.1	0.11	0.11	
32 GDR	0.11	-0.25	0.06	0.28	1.15	-0.6	0.43	1.37	0.11	0.12	0.12	
33 BDY	0.08	0.0	0.03	0.09	0.89	0.01	0.29	0.94	0.07	0.08	0.08	_WN, GR, BY grey surround $Y_G=16.6$ with white border $X_W=90.38$ $Y_W=100.0$ $Z_W=87.54$ $x_W=0.3251$ $y_W=0.3598$ near D65
34 BDY	0.05	0.0	0.02	0.05	0.52	0.01	0.15	0.54	0.04	0.05	0.05	
35 BDY	0.07	0.0	0.01	0.07	0.76	0.01	0.13	0.77	0.06	0.07	0.07	
36 BDY	0.07	0.0	0.02	0.07	0.76	0.0	0.13	0.77	0.06	0.07	0.07	
37 BDY	0.07	0.0	0.0	0.07	0.75	-0.01	0.0	0.75	0.05	0.07	0.07	
38 BDY	0.07	0.0	0.0	0.07	0.81	-0.01	0.0	0.81	0.06	0.07	0.07	
39 BDY	0.05	0.0	-0.02	0.05	0.55	-0.01	-0.09	0.56	0.04	0.05	0.05	
40 BDY	0.05	-0.02	-0.07	0.09	0.56	-0.05	-0.17	0.59	0.06	0.06	0.06	
41 BDY	0.07	-0.01	-0.17	0.19	0.75	-0.05	-0.28	0.8	0.09	0.09	0.09	
42 BDY	0.07	-0.01	-0.31	0.32	0.73	-0.04	-0.29	0.79	0.13	0.11	0.11	
43 BDY	0.07	-0.01	-0.8	0.8	0.72	-0.03	-0.31	0.79	0.27	0.2	0.2	
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 (Q, no. 0), dark black (S, no. 10), White (W, no. 11), Black (N, no. 21)
Source: BAM Research Report no. 115 (1985), Tables 5.40;1 to 11

input: w/rgb/cmyk -> w/rgb/cmyk-
LABJND_A & D65