

**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 $\Delta\lambda$	-GR $\Delta\lambda$	-BY $\Delta\lambda$	$\Delta y$		
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. 03
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	border
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 GDR	14.96	0.1198	0.3961	0.06	-0.0061	0.003	-0.0012	-0.0022	WN, GR, BY
8 GDR	15.71	0.2422	0.3728	0.06	-0.0037	0.0021	-0.0013	-0.0016	grey surround
9 GDR	16.52	0.321	0.3578	0.06	-0.0017	0.001	-0.0016	-0.0013	CIE data no. 09
10 GDR	16.96	0.4598	0.2388	0.07	-0.0022	0.0011	-0.0022	-0.001	with white border
11 GDR	17.17	0.485	0.2119	0.09	-0.002	0.0009	-0.0026	-0.001	border
12 BDY	17.29	0.2497	0.2914	0.07	-0.0018	0.0008	-0.0011	-0.0009	WN, GR, BY
13 BDY	17.26	0.2877	0.3257	0.06	-0.0017	0.0009	-0.0013	-0.0011	grey surround
14 BDY	16.44	0.3232	0.3593	0.06	-0.0016	0.001	-0.0014	-0.0013	CIE data no. 14
15 BDY	17.72	0.4338	0.4529	0.05	-0.002	0.0019	-0.0026	-0.0024	with white border
16 BDY	18.46	0.4841	0.4968	0.05	-0.002	0.0025	-0.0037	-0.0032	border

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. 22), 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	CIE LAB differences lightness, chroma, $\Sigma$				LABJND differences lightness, chroma, $\Sigma$				colour differences other formulae		notes experimental series	
	$\Delta L^*$	$\Delta a^*$	$\Delta b^*$	$\Delta E^*$	$\Delta L^*$	$\Delta a^*$	$\Delta b^*$	$\Delta E^*$	CMC	C00		
0 WPN	0.29	0.0	0.0	0.29	1.23	0.0	0.0	1.23	0.14	0.29	0.13	WN, GR, BY
1 WPN	0.19	0.0	0.0	0.19	1.1	0.0	0.0	1.1	0.1	0.19	0.12	grey surround
2 WPN	0.14	0.0	0.0	0.14	0.99	0.0	0.0	0.99	0.09	0.14	0.11	CIE data no. 03
3 WPN	0.12	0.0	0.0	0.12	0.99	0.0	0.0	0.99	0.09	0.12	0.12	with white border
4 WPN	0.15	-0.01	-0.01	0.15	1.36	-0.02	-0.02	1.36	0.14	0.15	0.12	border
5 WPN	0.15	-0.02	-0.03	0.15	1.38	-0.04	-0.04	1.38	0.19	0.15	0.11	
6 WPN	0.19	0.0	0.02	0.19	1.69	0.0	0.04	1.69	0.28	0.19	0.13	
7 GDR	0.09	0.46	0.03	0.47	0.8	0.2	0.12	0.84	0.16	0.13	0.13	WN, GR, BY
8 GDR	0.09	0.11	0.01	0.14	0.77	0.11	0.04	0.78	0.09	0.1	0.1	grey surround
9 GDR	0.08	0.0	0.0	0.08	0.74	0.0	0.0	0.74	0.07	0.08	0.08	CIE data no. 09
10 GDR	0.1	-0.17	0.04	0.2	0.83	-0.26	0.16	0.88	0.09	0.1	0.1	with white border
11 GDR	0.11	-0.25	0.06	0.28	0.92	-0.33	0.25	1.01	0.11	0.12	0.12	border
12 BDY	0.08	0.0	0.03	0.09	0.71	0.0	0.17	0.73	0.07	0.08	0.08	WN, GR, BY
13 BDY	0.07	0.0	0.01	0.07	0.61	0.0	0.07	0.61	0.06	0.07	0.07	grey surround
14 BDY	0.07	0.0	0.0	0.07	0.65	0.0	0.0	0.65	0.06	0.07	0.07	CIE data no. 14
15 BDY	0.07	-0.01	-0.17	0.19	0.6	-0.02	-0.16	0.62	0.09	0.09	0.09	with white border
16 BDY	0.07	-0.01	-0.8	0.8	0.57	-0.02	-0.18	0.6	0.27	0.2	0.2	border

mean standard deviation  
 0.21  
 0.17

0.95  
 0.12  
 0.13  
 0.11

0.3  
 0.06  
 0.05  
 0.02

Source: BAM Research Report no. 115 (1985), Tables 5.40;1 to 11; LABJND0.7; 1.3; 1.2

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

number Colour series	CIE LAB differences lightness, chroma, $\Sigma$				LABJND differences lightness, chroma, $\Sigma$				colour differences other formulae		notes experimental series	
	$\Delta L^*$	$\Delta a^*$	$\Delta b^*$	$\Delta E^*$	$\Delta L^*$	$\Delta a^*$	$\Delta b^*$	$\Delta E^*$	CMC	C00		
0 WPN	0.01	-1.13	0.1	1.13	0.05	-0.73	0.06	0.73	1.59	1.08	1.62	WN, GR, BY
1 WPN	0.0	-0.9	0.1	0.9	0.05	-0.78	0.07	0.79	1.18	0.85	1.25	grey surround
2 WPN	0.0	-0.75	0.08	0.75	0.05	-0.81	0.08	0.81	1.0	0.72	1.07	CIE data no. 03
3 WPN	0.01	-0.71	0.06	0.71	0.09	-0.89	0.06	0.9	1.01	0.69	1.03	with white border
4 WPN	0.0	-0.62	0.07	0.62	0.0	-0.85	0.08	0.86	0.84	0.59	0.87	border
5 WPN	0.0	-0.64	0.07	0.64	0.0	-0.9	0.08	0.9	0.89	0.6	0.88	
6 WPN	0.0	-0.66	0.06	0.67	0.0	-0.89	0.08	0.89	0.89	0.64	0.94	
7 GDR	0.01	-3.6	0.04	3.6	0.11	-1.27	0.11	1.28	1.16	0.81	0.8	WN, GR, BY
8 GDR	0.01	-1.69	0.05	1.69	0.11	-1.31	0.13	1.32	0.89	0.78	0.79	grey surround
9 GDR	0.01	-0.78	0.02	0.78	0.09	-0.94	0.06	0.95	1.13	0.77	1.12	CIE data no. 09
10 GDR	0.01	-1.1	0.03	1.1	0.1	-0.97	0.09	0.98	0.37	0.24	0.24	with white border
11 GDR	0.02	-1.1	0.03	1.1	0.2	-0.89	0.11	0.92	0.34	0.2	0.2	border
12 BDY	0.01	-0.94	0.01	0.94	0.1	-1.04	0.03	1.05	0.8	0.68	0.75	WN, GR, BY
13 BDY	0.01	-0.8	0.02	0.8	0.1	-0.93	0.07	0.94	0.95	0.67	0.94	grey surround
14 BDY	0.0	-0.7	0.03	0.7	0.0	-0.85	0.07	0.85	1.07	0.7	1.02	CIE data no. 14
15 BDY	0.01	-0.86	0.11	0.86	0.1	-1.01	0.08	1.02	0.78	0.55	0.65	with white border
16 BDY	0.01	-0.92	0.4	1.01	0.08	-1.08	0.08	1.09	0.64	0.46	0.58	border

mean standard deviation  
 1.06  
 0.68

0.96  
 0.91  
 0.65  
 0.87

0.15  
 0.28  
 0.2  
 0.33

Source: BAM Research Report no. 115 (1985), Tables 5.40;1 to 11; LABJND0.7; 1.3; 1.2

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

number Colour series	CIE LAB differences lightness, chroma, $\Sigma$				LABJND differences lightness, chroma, $\Sigma$				colour differences other formulae		notes experimental series	
	$\Delta L^*$	$\Delta a^*$	$\Delta b^*$	$\Delta E^*$	$\Delta L^*$	$\Delta a^*$	$\Delta b^*$	$\Delta E^*$	CMC	C00		
0 WPN	0.0	-0.14	-1.75	1.75	0.04	-0.09	-0.97	0.98	2.49	1.71	1.71	WN, GR, BY
1 WPN	0.0	-0.1	-1.16	1.16	0.05	-0.09	-0.9	0.91	1.4	1.02	1.10	grey surround
2 WPN	0.0	-0.08	-1.01	1.02	0.05	-0.09	-0.98	0.98	1.32	0.93	0.91	CIE data no. 03
3 WPN	0.0	-0.08	-0.94	0.95	0.0	-0.11	-1.04	1.04	1.4	0.93	0.92	with white border
4 WPN	0.0	-0.09	-1.08	1.08	0.0	-0.12	-1.25	1.25	1.43	1.01	1.02	border
5 WPN	0.0	-0.1	-1.31	1.32	0.0	-0.14	-1.42	1.42	1.55	1.12	1.15	
6 WPN	0.0	-0.08	-0.97	0.98	0.0	-0.11	-1.2	1.21	1.29	0.9	0.89	
7 GDR	0.0	-0.25	-0.51	0.57	0.0	-0.09	-1.25	1.25	0.22	0.22	0.22	WN, GR, BY
8 GDR	0.0	-0.11	-0.46	0.47	0.0	-0.09	-1.06	1.07	0.3	0.31	0.31	grey surround
9 GDR	0.0	-0.09	-0.48	0.49	0.0	-0.11	-1.07	1.08	0.71	0.48	0.48	CIE data no. 09
10 GDR	0.01	-0.07	-0.63	0.63	0.1	-0.08	-1.5	1.51	0.54	0.28	0.23	with white border
11 GDR	0.01	-0.08	-0.74	0.75	0.09	-0.07	-1.81	1.81	0.58	0.29	0.23	border
12 BDY	0.0	-0.09	-0.36	0.37	0.0	-0.1	-0.89	0.89	0.2	0.17	0.17	WN, GR, BY
13 BDY	0.0	-0.1	-0.42	0.44	0.0	-0.12	-1.0	1.01	0.34	0.28	0.29	grey surround
14 BDY	0.0	-0.09	-0.45	0.46	0.0	-0.11	-1.0	1.0	0.69	0.45	0.46	CIE data no. 14
15 BDY	0.0	-0.08	-1.24	1.24	0.0	-0.09	-0.92	0.92	0.54	0.45	0.45	with white border
16 BDY	0.01	-0.11	-4.84	4.85	0.08	-0.13	-0.99	1.0	1.59	1.1	1.14	border

mean standard deviation  
 1.09  
 1.01

1.14  
 0.98  
 0.69  
 0.68

0.24  
 0.61  
 0.42  
 0.43

Source: BAM Research Report no. 115 (1985), Tables 5.40;1 to 11; LABJND0.7; 1.3; 1.2

see similar files: http://130.149.60.45/~farmbnetk/XE03/XE03.HTM  
 technical information: http://www.ps.bam.de or http://130.149.60.45/~farmbnetk

TUB registration: 20130201-XE03/XE03L0N1.TXT /PS  
 application for measurement of print or display output

TUB material: code=thata