

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

| number<br>Colour series   | CIELAB differences<br>lightness, chroma, $\Sigma$ |              |              |              | LABJND differences<br>lightness, chroma, $\Sigma$ |              |              |              | colour differences |             |             | notes<br>experimental series |
|---------------------------|---|--------------|--------------|--------------|---|--------------|--------------|--------------|--------------------|-------------|-------------|------------------------------|
|                           | $\Delta L^*$                                      | $\Delta a^*$ | $\Delta b^*$ | $\Delta E^*$ | $\Delta L^*$                                      | $\Delta a^*$ | $\Delta b^*$ | $\Delta E^*$ | CMC                | C94         | C00         |                              |
| 0 GDV                     | 0.01  | -2.62        | 0.24         | 2.63         | 0.12  | -1.66        | 0.2          | 1.67         | 0.86               | 0.65        | 0.58        | _TM                          |
| 1 GDV                     | 0.01  | -2.04        | 0.12         | 2.04         | 0.11  | -1.83        | 0.18         | 1.84         | 0.77               | 0.65        | 0.6         | grey surround                |
| 2 GDV                     | 0.01  | -1.07        | 0.05         | 1.07         | 0.12  | -1.36        | 0.12         | 1.37         | 0.51               | 0.46        | 0.44        | $Y_G=16.6$                   |
| 3 GDV                     | 0.01  | -0.99        | 0.04         | 0.99         | 0.13  | -1.58        | 0.13         | 1.6          | 0.64               | 0.56        | 0.63        | with white                   |
| 4 GDV                     | 0.01  | -0.91        | 0.04         | 0.91         | 0.11  | -1.74        | 0.16         | 1.75         | 0.87               | 0.69        | 0.9         | border                       |
| 5 GDV                     | 0.01  | -0.76        | 0.04         | 0.76         | 0.13  | -1.65        | 0.17         | 1.67         | 1.11               | 0.75        | 1.13        | $X_W=90.38$                  |
| 6 GDV                     | 0.01  | -0.93        | 0.02         | 0.93         | 0.14  | -2.01        | 0.09         | 2.02         | 1.08               | 0.68        | 0.89        | $Y_W=100.0$                  |
| 7 GDV                     | 0.01  | -0.88        | 0.04         | 0.89         | 0.15  | -1.87        | 0.18         | 1.88         | 0.72               | 0.49        | 0.53        | $Z_W=87.54$                  |
| 8 GDV                     | 0.01  | -0.92        | 0.02         | 0.92         | 0.15  | -1.88        | 0.11         | 1.89         | 0.64               | 0.44        | 0.43        | $x_W=0.3251$                 |
| 9 GDV                     | 0.01  | -0.87        | 0.01         | 0.87         | 0.15  | -1.76        | 0.09         | 1.77         | 0.55               | 0.38        | 0.37        | $y_W=0.3598$                 |
| 10 GDV                    | 0.01  | -0.89        | 0.02         | 0.89         | 0.15  | -1.76        | 0.14         | 1.77         | 0.52               | 0.36        | 0.34        |                              |
| 11 RDC                    | 0.01  | -0.84        | 0.28         | 0.89         | 0.13  | -1.41        | 0.21         | 1.44         | 0.62               | 0.33        | 0.38        | _TM                          |
| 12 RDC                    | 0.01  | -0.94        | 0.17         | 0.96         | 0.13  | -1.7         | 0.26         | 1.73         | 0.63               | 0.36        | 0.39        | grey surround                |
| 13 RDC                    | 0.01  | -0.76        | 0.08         | 0.77         | 0.12  | -1.45        | 0.23         | 1.48         | 0.42               | 0.29        | 0.29        | $Y_G=16.6$                   |
| 14 RDC                    | 0.01  | -0.79        | 0.05         | 0.79         | 0.11  | -1.6         | 0.15         | 1.61         | 0.61               | 0.4         | 0.43        | with white                   |
| 15 RDC                    | 0.01  | -0.79        | 0.04         | 0.79         | 0.11  | -1.66        | 0.14         | 1.67         | 0.77               | 0.53        | 0.68        | border                       |
| 16 RDC                    | 0.01  | -0.7         | 0.03         | 0.7          | 0.11  | -1.51        | 0.12         | 1.52         | 1.01               | 0.69        | 1.02        | $X_W=90.38$                  |
| 17 RDC                    | 0.01  | -0.96        | 0.03         | 0.96         | 0.12  | -1.69        | 0.12         | 1.7          | 0.74               | 0.63        | 0.77        | $Y_W=100.0$                  |
| 18 RDC                    | 0.01  | -1.21        | 0.04         | 1.21         | 0.13  | -1.59        | 0.17         | 1.6          | 0.6                | 0.52        | 0.52        | $Z_W=87.54$                  |
| 19 RDC                    | 0.01  | -1.36        | 0.02         | 1.36         | 0.11  | -1.51        | 0.09         | 1.51         | 0.57               | 0.48        | 0.48        | $x_W=0.3251$                 |
| 20 RDC                    | 0.01  | -1.54        | 0.03         | 1.54         | 0.12  | -1.45        | 0.12         | 1.46         | 0.58               | 0.46        | 0.46        | $y_W=0.3598$                 |
| 21 RDC                    | 0.01  | -2.06        | 0.03         | 2.06         | 0.12  | -1.68        | 0.15         | 1.69         | 0.72               | 0.54        | 0.54        |                              |
| 22 TDM                    | 0.01  | -3.6         | 0.04         | 3.6          | 0.14  | -2.27        | 0.19         | 2.28         | 1.16               | 0.81        | 0.8         | _TM                          |
| 23 TDM                    | 0.01  | -2.46        | 0.04         | 2.46         | 0.14  | -2.38        | 0.19         | 2.39         | 0.96               | 0.78        | 0.77        | grey surround                |
| 24 TDM                    | 0.01  | -1.69        | 0.05         | 1.69         | 0.13  | -2.33        | 0.22         | 2.35         | 0.89               | 0.78        | 0.79        | $Y_G=16.6$                   |
| 25 TDM                    | 0.01  | -1.19        | 0.02         | 1.19         | 0.11  | -2.01        | 0.09         | 2.01         | 0.84               | 0.73        | 0.86        | with white                   |
| 26 TDM                    | 0.01  | -0.94        | 0.04         | 0.95         | 0.12  | -1.83        | 0.18         | 1.85         | 0.97               | 0.76        | 1.0         | border                       |
| 27 TDM                    | 0.01  | -0.78        | 0.02         | 0.78         | 0.11  | -1.68        | 0.11         | 1.69         | 1.13               | 0.77        | 1.12        | $X_W=90.38$                  |
| 28 TDM                    | 0.01  | -0.99        | 0.04         | 0.99         | 0.13  | -1.97        | 0.19         | 1.99         | 0.51               | 0.42        | 0.43        | $Y_W=100.0$                  |
| 29 TDM                    | 0.01  | -0.96        | 0.04         | 0.96         | 0.15  | -1.69        | 0.2          | 1.71         | 0.35               | 0.26        | 0.26        | $Z_W=87.54$                  |
| 30 TDM                    | 0.01  | -1.1         | 0.03         | 1.1          | 0.12  | -1.74        | 0.16         | 1.76         | 0.37               | 0.24        | 0.24        | $x_W=0.3251$                 |
| 31 TDM                    | 0.01  | -1.04        | 0.04         | 1.04         | 0.11  | -1.55        | 0.19         | 1.57         | 0.33               | 0.2         | 0.2         | $y_W=0.3598$                 |
| 32 TDM                    | 0.02  | -1.1         | 0.03         | 1.1          | 0.25  | -1.59        | 0.19         | 1.63         | 0.34               | 0.2         | 0.2         |                              |
| 33 BDY                    | 0.01  | -0.94        | 0.01         | 0.94         | 0.12  | -1.87        | 0.06         | 1.87         | 0.8                | 0.68        | 0.75        | _TM                          |
| 34 BDY                    | 0.01  | -0.8         | 0.01         | 0.8          | 0.11  | -1.66        | 0.08         | 1.66         | 0.8                | 0.62        | 0.81        | grey surround                |
| 35 BDY                    | 0.01  | -0.8         | 0.02         | 0.8          | 0.12  | -1.66        | 0.12         | 1.67         | 0.95               | 0.67        | 0.94        | $Y_G=16.6$                   |
| 36 BDY                    | 0.01  | -0.77        | 0.01         | 0.77         | 0.12  | -1.61        | 0.06         | 1.61         | 1.0                | 0.68        | 0.98        | with white                   |
| 37 BDY                    | 0.01  | -0.76        | 0.02         | 0.76         | 0.12  | -1.63        | 0.11         | 1.64         | 1.0                | 0.72        | 1.07        | border                       |
| 38 BDY                    | 0.0   | -0.7         | 0.03         | 0.7          | 0.0   | -1.52        | 0.12         | 1.53         | 1.07               | 0.7         | 1.02        | $X_W=90.38$                  |
| 39 BDY                    | 0.01  | -0.78        | 0.03         | 0.78         | 0.12  | -1.7         | 0.08         | 1.7          | 1.24               | 0.67        | 1.02        | $Y_W=100.0$                  |
| 40 BDY                    | 0.01  | -0.88        | 0.06         | 0.88         | 0.11  | -1.82        | 0.11         | 1.83         | 0.93               | 0.62        | 0.77        | $Z_W=87.54$                  |
| 41 BDY                    | 0.01  | -0.86        | 0.11         | 0.86         | 0.12  | -1.82        | 0.13         | 1.83         | 0.78               | 0.55        | 0.65        | $x_W=0.3251$                 |
| 42 BDY                    | 0.01  | -0.95        | 0.21         | 0.98         | 0.12  | -2.01        | 0.16         | 2.02         | 0.74               | 0.54        | 0.66        | $y_W=0.3598$                 |
| 43 BDY                    | 0.01  | -0.92        | 0.4          | 1.01         | 0.1   | -1.93        | 0.14         | 1.94         | 0.64               | 0.46        | 0.58        |                              |
| <b>mean</b>               |   |              |              | <b>1.14</b>  |   |              |              |              | <b>1.75</b>        | <b>0.76</b> | <b>0.55</b> | <b>0.65</b>                  |
| <b>standard deviation</b> |   |              |              | <b>0.57</b>  |   |              |              |              | <b>0.22</b>        | <b>0.23</b> | <b>0.16</b> | <b>0.26</b>                  |

Samples: Green (G, no. 00), Violet V (no. 10), Red (R, no. 11), Cyan (C, no. 21)

Turquois (T, no. 22), Magenta (M, no. 32), Blue (B, no. 33), Yellow (Y, no. 43)

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