

**IS 5 : 2007**

**Reaffirmed - 2012**

(Reaffirmed 2017)

(Reaffirmed 2022)

भारतीय मानक  
तैयार मिश्रित रोगन और इनैमल  
के लिए रंग  
( छठा पुनरीक्षण )

*Indian Standard*  
**COLOURS FOR**  
**READY MIXED PAINTS AND ENAMELS**  
( *Sixth Revision* )

ICS 25.220.50; 87.040

© BIS 2007

**BUREAU OF INDIAN STANDARDS**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

*May 2007*

*Price Rs. 1150.00*

## Paints, Varnishes and Related Products Sectional Committee, CHD 20

### FOREWORD

This Indian Standard (Sixth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Paints, Varnishes and Related Products Sectional Committee had been approved by the Chemical Division Council.

This standard was first published in 1949 and since then it has been revised five times in 1955, 1961 (and also reprinted in 1969), 1978 (also reprinted in 1984), 1994 and 2004. Considering the likelihood of variation in the instrumental values with the earlier version, the Committee decided that new version of IS 5 shall be sixth revision and to print fresh instrumental values in this version. The approximate 'Munsell' values in terms of hue, lightness value graduation (value) and chroma are given in Table 1. The colourimetric values in terms of trichromatic system are also given in Table 1.

An explanation of the 'Munsell' system of colour references and glossary of colour terms is given in Annex A. The definition 'L', 'a' and 'b' – three dimensions of Uniform CIE colour space have been given in Annex A. 'L' stands for lightness, 'a' denotes redness/greenness and 'b' indicates yellowness/blueness.

The composition of the Committee responsible for the formulation of this standard is given in Annex B.

In the preparation of this revised standard substantial assistance was provided in the measurement and checking of colour values by M/s Jay Instruments and Systems Pvt Ltd, Mumbai and active collaboration of the panel of referees comprising of experts from National Test House, Kolkata; M/s Berger Paints India Ltd, Kolkata; M/s Shalimar Paints Ltd, Kolkata; M/s Asian Paints Ltd, Mumbai and M/s Kansai Nerolac Paints Ltd, Mumbai in matching of colour shades, which are thankfully acknowledged.

IS 5 : 2007

# *Indian Standard* **COLOURS FOR** **READY MIXED PAINTS AND ENAMELS** *(Sixth Revision)*

## 1 SCOPE

This standard covers 104 colours for ready mixed paints and enamels grouped under Blue; Green; Yellow, Cream and Buff; Brown and Pink; Red and Orange; Grey; and Violet.

## 2 TERMINOLOGY

For the purpose of this standard, the definitions of colour terms given in Annex A of this standard shall apply.

## 3 NUMBERING SYSTEM

**3.1** Three digit numbers have been given to the colours, of which the first digit indicates the group of colours according to the seven broad colour divisions mentioned in 1, each group having a range of numbers allotted, namely:

|                        |       |         |
|------------------------|-------|---------|
| Blue                   | ..... | 100-199 |
| Green                  | ..... | 200-299 |
| Yellow, Cream and Buff | ..... | 300-399 |
| Brown and Pink         | ..... | 400-499 |
| Red and Orange         | ..... | 500-599 |
| Grey                   | ..... | 600-699 |
| Violet                 | ..... | 700-799 |

**3.1.1** Whenever new colours are required to be added in the above ranges, these will be assigned numbers which do not overlap the existing numbers.

## 4 'MUNSELL' REFERENCES AND COLOURIMETRIC VALUES

Approximate 'Munsell' references for each colour are given in Table 1 quoted by the respective reference number. The Indian Standard Colour (ISC) number shall always be used for identifying a colour, and 'Munsell' references are given for guidance and as an aid in comparing individual properties in terms

of hue, value and chroma. The colourimetric values (chromaticity co-ordinates and luminance factor) expressed in terms of the trichromatic system for colourimetry, which constitute a permanent record of the standard colours obtained from spectrophotometric measurements are also given in Table 1 for guidance. The 'Munsell' system of colours is briefly explained in Annex A.

## ANNEX A

### *(Foreword, Clauses 2 and 4)*

## GLOSSARY OF COLOUR TERMS AND THE 'MUNSELL' SYSTEM

### A-1 DEFINITIONS

**A-1.1 Achromatic Sensations** — Visual sensations devoid of the attribute of hue.

**A-1.2 Additive Mixture** — The mixture of light stimuli in such a manner that they enter the eye simultaneously or in rapid succession and are incident on the same area of the retina, or enter in the form of a mosaic which the eye cannot resolve.

#### A-1.3 Black

**A-1.3.1** A visual sensation arising from some portion of a luminous field of extremely low luminosity.

**A-1.3.2** As defined in A-1.3.1, but applied to a secondary source which is completely absorbing at all visible wavelengths.

NOTE — The terms 'white' and 'black' are not always used in the strict sense defined above. It is usual to apply them to greys and neutrals, the luminance factor of which is nearly unity or nearly zero respectively.

**A-1.4 Black Content** — The subjectively estimated amount of blackness seen in the visual sensation arising from a surface colour.

**A-1.5 Brightness** — That colour quality, a decrease in which is associated with the residual degradation which would result from the addition of a small quantity of neutral grey to the colouring material when the strength of the mixture has been readjusted to the original strength (comparison brighter).

#### A-1.6 Colour

**A-1.6.1** That characteristic of visual sensation which enables the observer to distinguish differences in the quality of the sensation of the kind which can be

caused by differences in the spectral composition of the light.

**A-1.6.2** That characteristic of the light stimulus, light source or object, which gives rise to the visual sensation in a red light, a white light, a red face, etc.

**A-1.6.3** As defined in A-1.6.1 or A-1.6.2, but restricted to the appearance of redness, greenness, etc, or as distinct from whiteness, greyness or blackness; that is, chromatic colour in contra-distinction to achromatic colour.

### **A-1.7 Complementary Colours**

**A-1.7.1 Additive** — Any two colours which, by additive mixture, can be made to match a specified achromatic colour.

**A-1.7.2 Subtractive** — Any two absorbing media which, by subtractive mixture, can be made to match specified achromatic colour.

**A-1.8 Colour Content** — The subjectively estimated amount of colourfulness seen in the visual sensation arising from a surface colour. Similar to chroma.

**A-1.9 Cleaner** — A difference apparently due to the presence of less black than in the original sample.

**A-1.10 Cool Colours** — Green or blue, or colours which exhibit a predominance of these.

**A-1.11 Chromatic Sensations** — Visual sensations possessing the attribute of hue.

**A-1.12 Dichroism** — A phenomenon in which a secondary source shows a marked change in hue with change in the observing conditions. Instances are: (a) change in colour temperature of the illuminant, (b) change in concentration of an absorbing material, (c) change in thickness of an absorbing layer, (d) change in direction of illumination or viewing, and (e) change in condition of polarization.

**A-1.13 Dullness** — That colour quality, an increase in which is associated with the residual degradation which would result from the addition of a small quantity of neutral grey to the colouring material when the strength of the mixture has been readjusted to the original strength (comparison duller).

**A-1.14 Deeper** — A difference apparently due to the presence of less white than in the original sample.

**A-1.15 Dirtier/Duller** — A difference apparently due to the presence of more black than in the original sample.

**A-1.16 Full Colour** — Surface colours which are produced with the maximum colourfulness obtainable.

## A-1.17 Grey

**A-1.17.1** Any achromatic sensation of luminosity intermediate between black and white.

**A-1.17.2** As defined in A-1.17.1, but applied to a secondary source which is partially absorbing at some or all visible wavelengths but from which the reflected or transmitted light has the same colour as that of the incident light.

**A-1.18 Hue** — Attribute of visual sensation which has given rise to colour names, such as, blue, green, yellow, red and purple.

**A-1.19 Light** — Radiant power (energy flux) capable of stimulating the eye to produce visual sensation.

**A-1.20 Minus Colours** — Colours in which only the spectral components associated with the colour named are not present to any substantial extent, for example, minus red.

**A-1.21 'Munsell' Chroma** — The estimated pure chromatic colour content of a surface colour on a scale of equal sensation intervals extending from grey (Chroma = 0), as specified objectively by the sample of the 'Munsell' Atlas ( *see* Note ).

NOTE — The 'Munsell' System presents the closest attempt at representing the colour solid of surface colours by samples, spaced at equal sensation intervals and, therefore, the closest *correlation* with the subjective variable, which are chroma, lightness (called value) and hue.

**A-1.22 'Munsell' Value** — The estimated lightness of any surface colour on a scale of 10 equal sensation intervals extending from ideal black (value = 0) to ideal white (value = 10), as specified objectively for values from 1 to 9 in the 'Munsell' Atlas (*see* Note under A-1.21).

**A-1.23 'Munsell' Hue** — The hue of a surface colour on a scale of 100 equal sensation intervals round a colour circle of constant chroma, a specified objectively by the samples of the 'Munsell' Atlas (*see* Note under A-1.21).

**A-1.24 Masstone** — The colour by reflected light of a bulk of undiluted pigment.

**A-1.25 Neutral Grey** — Applied to a secondary source which is equally absorbing at all visible wavelengths.

**A-1.26 Primary Light Source** — A body or object emitting light by virtue of transformation of energy into radiant energy within itself.

**A-1.27 Shade** — A colour of the same hue and saturation but lower luminosity.

## **A-1.28 Shadow Series**

**A-1.28.1 Subjective** — A series of colours of varying luminosity but constant hue and saturation.

**A-1.28.2 Objective** — A series of colours of varying luminance but constant chromaticity.

**A-1.29 Strength** — That colour quality, an increase in which is associated with an increase in the concentration of the colouring material present, all other conditions (viewing, etc) remaining the same (comparisons stronger, weaker).

**A-1.30 Stronger** — A difference apparently due to the presence of more colour than in the original sample.

**A-1.31 Subtractive Mixture** — The mixture of absorbing media or the superposition of filters so that the composition of the light stimulus passing through the combination is determined by the simultaneous or successive absorption of parts of the spectrum by each medium present.

**A-1.32 Secondary Light Source** — A body or object transmitting or reflecting light falling on it from any other source, whether primary or secondary.

**A-1.33 Tint** — The weak colour resulting from the addition to white of a small amount of colouring matter.

**A-1.34 Tings** — A trace of added colour.

**A-1.35 Tone** — A slight variant of a colour.

**A-1.36 Undertone** — The colour of a pigment when it is used in very thin layers or greatly extended with white, the hue of which may often differ from that of the masstone.

**A-1.37 Warm Colour** — Red, orange or yellow, or colours which exhibit a predominance of these.

**A-1.38 Weaker** — A difference apparently due to the presence of less colour than in the original sample.

## **A-1.39 White**

**A-1.39.1** An achromatic sensation of relatively high luminosity.

**A-1.39.2** As defined in A-1.39.1, but applied to a secondary source which is non-absorbing at all visible wavelengths.

**A-1.40 White Content** — The subjectively estimated amount of whiteness seen in the visual sensation arising from a surface colour.

**A-1.41 Whiter** — A difference apparently due to the presence of more white than in the original sample.

## A-2 THE 'MUNSELL' SYSTEM

**A-2.1** In the 'Munsell' system, the colours are specified in terms of hue, value and chroma.

**A-2.1.1 Hue** — It distinguishes red from blue, green from yellow, etc and is denoted by letter (for example, R for red, BG for blue-green) with prefix numbers, namely, 2.5, 7.5, or 10. If, for example, the R (red) number is greater than 5, the colour inclines, to the yellow-red (YR), and if the R number is less than 5, the colour inclines to red-purple (RP), and so on round the hue circle.

**A-2.1.2 Value** — It is related to lightness or darkness of a colour and is quoted as ranging from 0 to 10; the low figures represent the darker colours and finally black (0), the high figures represent the light colours and finally white (10). A rough estimate of the reflectance as a percentage is given by the formula  $V/(V-1)$ , where  $V$  is the 'value'. Thus, colours of similar values have similar reflectance.

**A-2.1.3 Chroma** — Attribute of a visual sensation which permits a judgement to be made in the amount of pure chromatic colour present, irrespective of the amount of a chromatic colour.

It is strength of colour and is based on a scale from neutral grey (—/0) towards full strength at any given 'value' level. Steps are denoted numerically at even intervals.

**A-2.1.4 Chromaticity Coordinates** — Ratio of each of the three tristimulus values to their sum. It indicates the colour quality of the sample and recommended symbols are  $x$ ,  $y$  and  $z$  in the CIE 1931 standard Colourimetric System and  $x_{10}$ ,  $y_{10}$  and  $z_{10}$  in the CIE 1964 Supplementary Colourimetric System.

$$x = \frac{X}{X + Y + Z}$$

$$y = \frac{Y}{X + Y + Z}$$

$$z = \frac{Z}{X + Y + Z}$$

$$x_{10} = \frac{X_{10}}{X_{10} + Y_{10} + Z_{10}}$$

$$y_{10} = \frac{Y_{10}}{X_{10} + Y_{10} + Z_{10}}$$

$$z_{10} = \frac{Z_{10}}{X_{10} + Y_{10} + Z_{10}}$$

X, Y and Z are the tristimulus values in the CIE 1931 Standard Colourimetric System and X10, Y10 and Z10 in the CIE 1964 Supplementary Colourimetric System.

$$x + y + z = 1 \text{ and } x_{10} + y_{10} + z_{10} = 1$$

Illuminant D65—Average north sky daylight with colour temperature 6 500 K.

‘L’, ‘a’, ‘b’, — Three dimensions of uniform CIE colour space, ‘L’ stands for lightness, ‘a’ denotes redness/greenness and ‘b’ indicates yellowness/blueness.

10 degree observer — Standard CIE observer recommended wherever colour matching conditions exceeds 4 Deg. Field of view.

**A-2.1.5 Tristimulus Value** — Amounts of the three reference or matching stimuli required to give a match with the colour stimulus considered, in a given trichromatic system.

The symbols recommended for the tristimulus values are X, Y and Z in the CIE 1931 Standard Colourimetric System and X10, Y10 and Z10 in the CIE 1964 Standard Colourimetric System.

**A-2.1.6 Luminance Value** — The emission by matter of electromagnetic radiation which for certain wavelengths or restricted regions of the spectrum is in excess of that due to the thermal radiation from the material at the same temperature is defined as Luminance.

The ratio of the luminance of a body while illuminated and observed under certain conditions to that of perfect defuser under the same conditions.

**A-2.1.7 Method of Determination of Chromaticity Coordinates** — The value of reflectance is measured for the sample over a circular area of 8 mm in dia over a wavelength range of 360 to 740 nm at 10 nm interval. The “Minolta CM 3220 D” colour matching system is used for determining the reflectance values.

**A-2.2** A complete ‘Munsell’ reference for a colour, for example, 7.5 R, 9/2 means:

- a) Hue of 7.5 R denoting a red inclined towards yellow-red,
- b) Value 9 denoting a very light colour, and
- c) Chroma 2 indicating that the strength of the colour is low.

A broad description of the colour would, therefore, be ‘pale-pink’.

**A-2.3** It should be noted, however, that neutral greys, having no hue or chroma, are denoted by the value figure prefixed by ‘N’, for example, ‘N6’ or ‘N8’

**A-2.4** In the design of the colour range ‘Munsell’ references provide the means of defining the various categories of colour required.

IS 5 : 2007

**Table 1 Approximate 'Munsell' References and  
Colourimetric Values**

*(Foreword and Clause 4)*

| Sl<br>No. | Indian<br>Stan-<br>dard<br>Colour<br>(ISC)<br>No. | Name of Colour<br>Shade | Chromaticity<br>Coordinates |        | Approximate<br>Munsell Value |                  | Luminance Value |        |        |
|-----------|---------------------------------------------------|-------------------------|-----------------------------|--------|------------------------------|------------------|-----------------|--------|--------|
|           |                                                   |                         | X                           | Y      | Hue                          | Value/<br>Chroma | L               | a      | b      |
| (1)       | (2)                                               | (3)                     | (4)                         | (5)    | (6)                          | (7)              | (8)             | (9)    | (10)   |
| 1.        | 101                                               | Sky Blue                | 0.2949                      | 0.3567 | 8.3G                         | 6.09/2.86        | 62.69           | -15.16 | 4.19   |
| 2.        | 102                                               | Turquoise Blue          | 0.2655                      | 0.3494 | 4.5BG                        | 5.26/4.22        | 54.79           | -21.69 | -1.08  |
| 3.        | 103                                               | Peacock Blue            | 0.2544                      | 0.3231 | 0.8B                         | 3.96/3.28        | 41.47           | -14.86 | -6.76  |
| 4.        | 104                                               | Azure Blue              | 0.2388                      | 0.2674 | 3.8PB                        | 3.47/4.48        | 36.7            | -4.5   | -18.02 |
| 5.        | 105                                               | Oxford Blue             | 0.2644                      | 0.2804 | 5.7PB                        | 2.82/2.56        | 29.5            | -0.37  | -11.61 |
| 6.        | 106                                               | Navy Blue               | 0.2933                      | 0.3083 | 6.2PB                        | 2.61/0.95        | 26.91           | 0.22   | -4.73  |
| 7.        | 108                                               | Aircraft Blue           | 0.2349                      | 0.2564 | 5.0PB                        | 3.28/4.82        | 34.77           | -2.47  | -19.91 |
| 8.        | 166                                               | French Blue             | 0.2279                      | 0.2569 | 3.8PB                        | 4/6.13           | 42.45           | -5.52  | -23.37 |
| 9.        | 169                                               | Traffic Blue            | 0.25                        | 0.31   | 4.7B                         | 3.96/3.4         | 41.65           | -13.04 | -9.71  |
| 10.       | 174                                               | Oriental Blue           | 0.2513                      | 0.3357 | 8.1BG                        | 5.48/4.9         | 57.3            | -23.92 | -5.88  |
| 11.       | 176                                               | Phirozi                 | 0.2112                      | 0.2748 | 8.5B                         | 4.92/7.38        | 52.54           | -19.95 | -24.04 |
| 12.       | 177                                               | Satin Blue              | 0.2789                      | 0.3274 | 2.8B                         | 7.4/3.17         | 76.04           | -13.9  | -6.15  |
| 13.       | 216                                               | Eau-de-Nil              | 0.3499                      | 0.4035 | 5.7GY                        | 6.89/4.22        | 69.71           | -10.83 | 25.29  |
| 14.       | 217                                               | Sea Green               | 0.3615                      | 0.4445 | 6.2GY                        | 6.12/6.15        | 61.93           | -16.75 | 34.83  |
| 15.       | 218                                               | Grass Green             | 0.3393                      | 0.4442 | 8.2GY                        | 4.65/5.52        | 47.41           | -19.01 | 25.28  |
| 16.       | 219                                               | Sage Green              | 0.3604                      | 0.4083 | 3.5GY                        | 4.58/3.37        | 46.64           | -6.36  | 20.72  |
| 17.       | 220                                               | Olive Green             | 0.3349                      | 0.3828 | 6.0GY                        | 3.44/2.17        | 35.05           | -5.83  | 10.35  |
| 18.       | 221                                               | Brilliant Green         | 0.3164                      | 0.4421 | 0.3G                         | 4.16/5.42        | 42.71           | -22.66 | 20.41  |
| 19.       | 222                                               | Light Bronze            | 0.3698                      | 0.4072 | 1.3GY                        | 4.18/3.09        | 42.43           | -3.58  | 20.23  |
| 20.       | 223                                               | Middle Bronze           | 0.3332                      | 0.3709 | 5.3GY                        | 3.29/1.66        | 33.54           | -3.81  | 8.03   |
| 21.       | 224                                               | Deep Bronze Green       | 0.3205                      | 0.3606 | 7.7GY                        | 3.11/1.36        | 31.87           | -4.4   | 5.15   |
| 22.       | 225                                               | Light Brunswick         | 0.3211                      | 0.414  | 9.8GY                        | 3.88/4.01        | 39.66           | -15.55 | 15.19  |
| 23.       | 226                                               | Middle Brunswick        | 0.304                       | 0.3911 | 1.8G                         | 3.21/3.13        | 32.99           | -13.54 | 8.53   |
| 24.       | 227                                               | Deep Brunswick          | 0.3042                      | 0.3585 | 3.8G                         | 2.9/1.74         | 29.81           | -7.16  | 3.38   |
| 25.       | 267                                               | Traffic Green           | 0.2985                      | 0.3951 | 2.5G                         | 3.73/3.79        | 38.37           | -17.07 | 9.61   |
| 26.       | 275                                               | Opaline Green           | 0.3183                      | 0.3886 | 0.5G                         | 6.43/4           | 65.6            | -16.73 | 15.59  |
| 27.       | 276                                               | Lincoln Green           | 0.3159                      | 0.3863 | 0.3G                         | 3.53/2.81        | 36.18           | -10.82 | 9.39   |
| 28.       | 277                                               | Cypress Green           | 0.3319                      | 0.4048 | 7.7GY                        | 3.64/3.22        | 37.13           | -10.81 | 14.08  |
| 29.       | 278                                               | Light Olive Green       | 0.3533                      | 0.407  | 4.9GY                        | 5.07/3.6         | 51.77           | -8.47  | 21.19  |
| 30.       | 279                                               | Steel Furniture         | 0.3314                      | 0.3546 | 9.9Y                         | 3.16/0.85        | 32.31           | -1.01  | 5.17   |
|           |                                                   | Green                   |                             |        |                              |                  |                 |        |        |

Table 1 – Continued

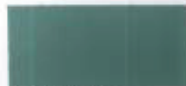
| SI<br>No. | Indian<br>Stand-<br>ard<br>Colour<br>(ISC)<br>No. | Name of Colour<br>Shade | Chromaticity<br>Coordinates |        | Approximate<br>Munsell Value |                  | Luminance Value |        |       |
|-----------|---------------------------------------------------|-------------------------|-----------------------------|--------|------------------------------|------------------|-----------------|--------|-------|
|           |                                                   |                         | X                           | Y      | Hue                          | Value/<br>Chroma | L               | a      | b     |
| (1)       | (2)                                               | (3)                     | (4)                         | (5)    | (6)                          | (7)              | (8)             | (9)    | (10)  |
| 31.       | 280                                               | Verdigris Green         | 0.2967                      | 0.4053 | 2.9G                         | 5.4/5.57         | 55.51           | -25.47 | 14.6  |
| 32.       | 281                                               | Apple Green             | 0.3266                      | 0.4113 | 9.4GY                        | 5.76/4.79        | 58.81           | -18.52 | 20.56 |
| 33.       | 282                                               | Forest Green            | 0.3116                      | 0.392  | 0.9G                         | 3.59/3.13        | 36.83           | -12.99 | 10.03 |
| 34.       | 283                                               | Aircraft Gery<br>Green  | 0.3339                      | 0.3741 | 5.8GY                        | 5.07/2.16        | 51.92           | -5.85  | 11.79 |
| 35.       | 284                                               | India Green             | 0.2941                      | 0.4114 | 2.4G                         | 3.76/4.55        | 38.79           | -21.22 | 11.93 |
| 36.       | 294                                               | Scamic                  | 0.3324                      | 0.3643 | 3.8GY                        | 3.55/1.33        | 36.37           | -2.87  | 7.33  |
| 37.       | 298                                               | Olive Drab              | 0.3393                      | 0.3638 | 0.2GY                        | 3.37/1.25        | 34.39           | -1.2   | 7.58  |
| 38.       | 299                                               | Bus Green               | 0.2734                      | 0.4053 | 5.4G                         | 3.6/4.86         | 37.38           | -24.68 | 8.83  |
| 39.       | 309                                               | Canary Yellow           | 0.462                       | 0.4645 | 4.8Y                         | 7.89/11.02       | 78.18           | 6.54   | 76.58 |
| 40.       | 352                                               | Pale Cream              | 0.3895                      | 0.4002 | 3.7Y                         | 7.99/5.12        | 80.08           | 3.63   | 35.07 |
| 41.       | 353                                               | Deep Cream              | 0.4144                      | 0.4107 | 2.4Y                         | 8.01/6.73        | 79.9            | 8.68   | 43.84 |
| 42.       | 354                                               | Primrose                | 0.4261                      | 0.4371 | 4.7Y                         | 7.41/7.57        | 74.16           | 3.63   | 52.35 |
| 43.       | 355                                               | Lemon                   | 0.4824                      | 0.4505 | 2.0Y                         | 7.49/11.54       | 74.16           | 16.08  | 74.99 |
| 44.       | 356                                               | Golden Yellow           | 0.4926                      | 0.4376 | 9.9YR                        | 7.06/11.42       | 70.04           | 21.83  | 69.78 |
| 45.       | 358                                               | Light Buff              | 0.4191                      | 0.3994 | 9.7YR                        | 7/6.15           | 70.26           | 12.8   | 37.02 |
| 46.       | 359                                               | Middle Buff             | 0.4379                      | 0.4079 | 9.4YR                        | 6.34/6.77        | 63.72           | 14.55  | 40.37 |
| 47.       | 360                                               | Deep Buff               | 0.423                       | 0.3871 | 7.2YR                        | 5.7/5.43         | 57.63           | 15.37  | 29.15 |
| 48.       | 361                                               | Light Stone             | 0.3894                      | 0.3836 | 10.0YR                       | 6.76/4.26        | 68.27           | 8.37   | 26.15 |
| 49.       | 362                                               | Middle Stone            | 0.4176                      | 0.3933 | 9.0YR                        | 5.35/4.84        | 54.19           | 11.64  | 28.41 |
| 50.       | 363                                               | Dark Stone              | 0.4119                      | 0.3865 | 8.4YR                        | 5.1/4.4          | 51.75           | 11.62  | 24.96 |
| 51.       | 364                                               | Portland Stone          | 0.3627                      | 0.3807 | 4.8Y                         | 7.61/3.16        | 76.77           | 0.68   | 22.96 |
| 52.       | 365                                               | Vellum                  | 0.3553                      | 0.3721 | 4.0Y                         | 8.01/2.73        | 80.77           | 0.96   | 19.94 |
| 53.       | 368                                               | Traffic Yellow          | 0.4928                      | 0.3998 | 4.8YR                        | 6.21/10.05       | 62.09           | 30.77  | 49.77 |
| 54.       | 384                                               | Light Straw             | 0.3702                      | 0.3811 | 3.1Y                         | 7.46/3.49        | 75.22           | 3.21   | 24.02 |
| 55.       | 385                                               | Light Biscuit           | 0.3866                      | 0.395  | 2.9Y                         | 8.15/4.9         | 81.71           | 4.47   | 33.4  |
| 56.       | 386                                               | Champagne               | 0.3847                      | 0.3839 | 0.8Y                         | 7.61/4.4         | 76.5            | 7.44   | 27.91 |
| 57.       | 387                                               | Sunshine                | 0.3735                      | 0.3822 | 2.9Y                         | 7.02/3.49        | 70.86           | 3.81   | 23.74 |
| 58.       | 388                                               | Beige                   | 0.3771                      | 0.3783 | 0.9Y                         | 7.2/3.73         | 72.61           | 6.43   | 23.76 |
| 59.       | 397                                               | Jasmine Yellow          | 0.4177                      | 0.4305 | 4.6Y                         | 8.27/7.53        | 82.44           | 3.27   | 52.63 |
| 60.       | 410                                               | Light Brown             | 0.4184                      | 0.384  | 7.2YR                        | 4.77/4.44        | 48.27           | 13.14  | 24.07 |
| 61.       | 411                                               | Middle Brown            | 0.4018                      | 0.3678 | 5.3YR                        | 3.84/3.14        | 38.98           | 11.46  | 15.58 |
| 62.       | 412                                               | Dark Brown              | 0.3646                      | 0.3426 | 0.7YR                        | 3.23/1.75        | 32.9            | 8.27   | 6.16  |
| 63.       | 413                                               | Nut Brown               | 0.3425                      | 0.3412 | 4.5YR                        | 2.97/0.83        | 30.26           | 3.82   | 3.79  |
| 64.       | 414                                               | Golden Brown            | 0.4413                      | 0.38   | 4.6YR                        | 4.54/5.41        | 45.88           | 18.68  | 25.64 |
| 65.       | 415                                               | India Brown             | 0.3954                      | 0.3565 | 2.7YR                        | 3.76/3.02        | 38.18           | 12.54  | 12.55 |
| 66.       | 439                                               | Orange Brown            | 0.4272                      | 0.3512 | 9.7R                         | 3.78/4.68        | 38.29           | 20.27  | 15.18 |
| 67.       | 442                                               | Light Salmon Pink       | 0.3939                      | 0.3799 | 8.1YR                        | 7.71/5.09        | 77.48           | 12.23  | 28.72 |

**Table 1 – Concluded**

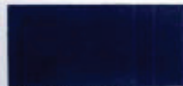
| SI No. | Indian Standard Colour (ISC) No. | Name of Colour Shade | Chromaticity Coordinates |        | Approximate Munsell Value |               | Luminance Value |       |        |
|--------|----------------------------------|----------------------|--------------------------|--------|---------------------------|---------------|-----------------|-------|--------|
|        |                                  |                      | X                        | Y      | Hue                       | Value/ Chroma | L               | a     | b      |
| (1)    | (2)                              | (3)                  | (4)                      | (5)    | (6)                       | (7)           | (8)             | (9)   | (10)   |
| 68.    | 443                              | Salmon Pink          | 0.3925                   | 0.36   | 2.5YR                     | 6.31/4.7      | 64              | 16.45 | 19.01  |
| 69.    | 444                              | Terra Cotta          | 0.4396                   | 0.3416 | 7.0R                      | 4.16/6.32     | 42.2            | 26.88 | 15.85  |
| 70.    | 445                              | Venetian Red         | 0.4294                   | 0.3404 | 7.1R                      | 3.63/5.15     | 36.78           | 22.72 | 12.96  |
| 71.    | 446                              | Red Oxide            | 0.4151                   | 0.3409 | 7.6R                      | 3.38/4.1      | 34.23           | 18.84 | 10.93  |
| 72.    | 448                              | Deep Indian Red      | 0.3748                   | 0.3328 | 4.9R                      | 3.17/2.59     | 32.31           | 12.29 | 5.38   |
| 73.    | 449                              | Light Purple Brown   | 0.3619                   | 0.3285 | 3.2R                      | 3.07/2.14     | 31.36           | 10.48 | 3.45   |
| 74.    | 451                              | Chocolate            | 0.3365                   | 0.3385 | 3.5YR                     | 2.82/0.67     | 28.77           | 3.07  | 2.8    |
| 75.    | 473                              | Gulf Red             | 0.3925                   | 0.3317 | 4.8R                      | 3.25/3.45     | 33.07           | 16.2  | 6.9    |
| 76.    | 489                              | Leaf Brown           | 0.4091                   | 0.3639 | 3.3YR                     | 4.02/3.65     | 40.79           | 14.29 | 16.19  |
| 77.    | 490                              | Beech Brown          | 0.3777                   | 0.3492 | 2.3YR                     | 3.31/2.15     | 33.65           | 9.61  | 8.56   |
| 78.    | 499                              | Service Brown        | 0.3516                   | 0.3497 | 7.7YR                     | 3.19/1.14     | 32.45           | 4.12  | 6.12   |
| 79.    | 536                              | Fire Red             | 0.5378                   | 0.3402 | 7.0R                      | 4.6/12.51     | 46.29           | 49.87 | 32.88  |
| 80.    | 537                              | Signal Red           | 0.512                    | 0.3306 | 5.4R                      | 4.23/11.16    | 42.76           | 45.02 | 24.04  |
| 81.    | 538                              | Post Office Red      | 0.4757                   | 0.3231 | 4.2R                      | 3.55/8.39     | 35.85           | 35.33 | 14.83  |
| 82.    | 540                              | Crimson              | 0.3975                   | 0.3223 | 2.9R                      | 2.95/3.96     | 29.87           | 18.1  | 5.36   |
| 83.    | 541                              | Maroon               | 0.3428                   | 0.3257 | 1.3R                      | 2.9/1.36      | 29.69           | 7     | 1.37   |
| 84.    | 557                              | Light Orange         | 0.5121                   | 0.3822 | 1.9YR                     | 5.69/10.83    | 56.99           | 38.43 | 45.76  |
| 85.    | 570                              | Traffic Red          | 0.4728                   | 0.3504 | 8.1R                      | 4.41/7.96     | 44.55           | 32.58 | 23.22  |
| 86.    | 574                              | Indian Saffron       | 0.4996                   | 0.3537 | 8.2R                      | 5.21/10.57    | 52.61           | 42.01 | 32.13  |
| 87.    | 591                              | Deep Orange          | 0.5076                   | 0.3597 | 8.9R                      | 5.04/10.38    | 50.84           | 40.85 | 34.52  |
| 88.    | 592                              | International Orange | 0.5221                   | 0.3485 | 7.8R                      | 4.89/11.54    | 49.26           | 46.35 | 33.53  |
| 89.    | 628                              | Silver Grey          | 0.3369                   | 0.364  | 1.5GY                     | 5.96/1.59     | 60.95           | -2.66 | 11.29  |
| 90.    | 629                              | Quaker Grey          | 0.347                    | 0.366  | 6.2Y                      | 5.52/1.73     | 56.38           | -0.02 | 12.39  |
| 91.    | 630                              | French Grey          | 0.3341                   | 0.3576 | 0.4GY                     | 5.91/1.27     | 60.5            | -1.61 | 9.29   |
| 92.    | 631                              | Light Grey           | 0.3129                   | 0.3451 | 2.0G                      | 5.71/0.96     | 58.72           | -4.77 | 3.38   |
| 93.    | 632                              | Dark Admiralty Grey  | 0.2973                   | 0.3232 | 8.1B                      | 4.42/1.01     | 45.73           | -2.65 | -3.25  |
| 94.    | 633                              | AF Blue Grey         | 0.301                    | 0.3252 | 7.3B                      | 3.32/0.57     | 34.22           | -1.74 | -2.01  |
| 95.    | 634                              | Slate                | 0.3277                   | 0.3557 | 4.1GY                     | 4.34/1.11     | 44.54           | -2.48 | 6.3    |
| 96.    | 635                              | Lead                 | 0.3106                   | 0.3453 | 2.8G                      | 3.62/0.96     | 37.28           | -3.98 | 2.23   |
| 97.    | 671                              | Middle Graphite      | 0.3037                   | 0.3249 | 10.0B                     | 3.66/0.52     | 37.75           | -1.11 | -1.97  |
| 98.    | 692                              | Smoke Grey           | 0.2773                   | 0.3129 | 8.5B                      | 5.51/2.78     | 57.23           | -7.02 | -8.67  |
| 99.    | 693                              | Aircraft Grey        | 0.3111                   | 0.3394 | 4.7G                      | 5.43/0.67     | 55.91           | -3.45 | 1.69   |
| 100.   | 694                              | Dove Grey            | 0.3133                   | 0.3376 | 2.3G                      | 5.53/0.48     | 56.92           | -2.23 | 1.54   |
| 101.   | 695                              | Dark Blue Grey       | 0.3073                   | 0.3275 | 9.2B                      | 2.82/0.25     | 28.96           | -0.68 | -1     |
| 102.   | 697                              | Light Admiralty Grey | 0.3051                   | 0.3419 | 9.4G                      | 7.34/1.35     | 75.02           | -7.84 | 2      |
| 103.   | 698                              | Steel Grey           | 0.3079                   | 0.3309 | 8.2BG                     | 3.03/0.31     | 31.16           | -1.26 | -0.47  |
| 104.   | 796                              | Dark Violet          | 0.2977                   | 0.2662 | 6.1P                      | 3.5/4.27      | 36.33           | 12.76 | -13.67 |

# BLUE

100—



No. 101 Sky Blue



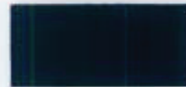
No. 105 Aircraft Blue



No. 102 Turquoise Blue



No. 166 French Blue



No. 103 Peacock Blue



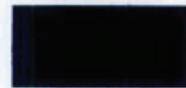
No. 169 Traffic Blue



No. 104 Azure Blue



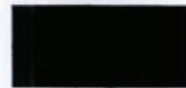
No. 174 Oriental Blue



No. 105 Oxford Blue



\* No. 176 Phirozi



No. 106 Navy Blue



No. 177 Satin Blue



## YELLOW, CREAM AND BUFF 300—



No. 309 Canary Yellow



No. 359 Middle Buff



No. 368 Traffic Yellow



No. 352 Pale Cream



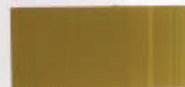
No. 360 Deep Buff



No. 384 Light Straw



No. 353 Deep Cream



No. 361 Light Stone



No. 385 Light Biscuit



No. 354 Primrose



No. 362 Middle Stone



No. 386 Champagne



No. 355 Lemon



No. 363 Dark Stone



No. 387 Sunshine



No. 356 Golden Yellow



No. 364 Portland Stone



No. 388 Beige



No. 358 Light Buff



No. 365 Vellum



No. 397 Jasmine Yellow

## BROWN AND PINK

### 400 —



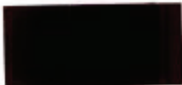
No. 410 Light Brown



No. 442 Light Salmon Pink



No. 451 Chocolate



No. 411 Middle Brown



No. 443 Salmon Pink



No. 473 Gulf Red



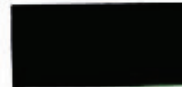
No. 412 Dark Brown



No. 444 Terra Cotta



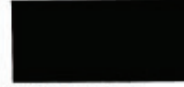
No. 489 Leaf Brown



No. 413 Nut Brown



No. 445 Venetian Red



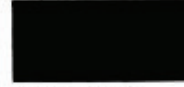
No. 490 Beech Brown



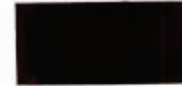
No. 414 Golden Brown



No. 446 Red Oxide



No. 499 Service Brown



No. 415 India Brown



No. 448 Deep Indian Red



No. 439 Orange Brown



No. 449 Light Purple Brown

## RED AND ORANGE 500 —



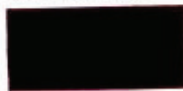
No. 536 Fire Red



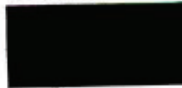
No. 537 Signal Red



No. 538 Post Office Red



No. 540 Crimson



No. 541 Maroon



No. 557 Light Orange



No. 570 Traffic Red



No. 574 India Saffron



No. 591 Deep Orange



No. 592 International Orange

## GREY 600—



No. 628 Silver Grey



No. 629 Quaker Grey



No. 630 French Grey



No. 631 Light Grey



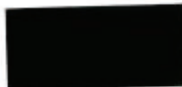
No. 632 Dark Admiralty Grey



No. 633 AF Blue-Grey



No. 634 Slate



No. 635 Lead



No. 671 Middle Graphite



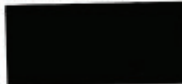
No. 692 Smoke Grey



No. 693 Aircraft Grey



No. 694 Dove Grey



No. 695 Dark Blue-Grey



No. 697 Light Admiralty Grey

## VIOLET 700—



No. 796 Dark Violet



No. 698 Steel Grey

## ANNEX B

### (Foreword)

#### COMMITTEE COMPOSITION

##### Paints, Varnishes and Related Products Sectional Committee, CHD 20

| <i>Organizations</i>                                                               | <i>Representative(s)</i>                          |
|------------------------------------------------------------------------------------|---------------------------------------------------|
| In personal capacity, (14 Orion, Omer Park<br>Bhulabhai Desai Road, Mumbai 400026) | SHRI RAVI MARPHATIA ( <i>Chairman</i> )           |
| Akzo Nobel Coatings India Pvt Ltd, Bangalore                                       | SHRI DEEPAK VERMA                                 |
| Asian Paints Ltd, Mumbai                                                           | DR R. D. KHANOLKAR                                |
| Berger Paints India Ltd, Howrah                                                    | DR B. P. MALIK ( <i>Alternate</i> )               |
| Bharat Heavy Electricals Ltd, Tiruchirapalli                                       | SHRI B. BERA                                      |
| Central Building Research Institute, Roorkee                                       | SHRI N. K. RAY ( <i>Alternate</i> )               |
| Central Public Works Department, New Delhi                                         | SHRI M. SOMU                                      |
| Clariant Chemicals (India) Ltd, New Delhi                                          | SHRI L. GRAGORI ( <i>Alternate</i> )              |
| Consumer Unity & Turst Society (CUTS),<br>Jaipur                                   | DR L. K. AGARWAL                                  |
| Directorate of Naval Architecture, New Delhi                                       | DR K. K. ASTHANA ( <i>Alternate</i> )             |
| Engineers India Limited, New Delhi                                                 | SHRI VIJAY MOTWANI                                |
| Indian Institute of Chemical Technology,<br>Hyderabad                              | SHRI R. K. KANOJIA ( <i>Alternate</i> )           |
| Indian Institute of Technology Bombay,<br>Mumbai                                   | SHRI ASIT RAY                                     |
| Indian Paints Association, Kolkata                                                 | SHRI R. K. SHARMA                                 |
| Kansai Nerolac Paints Ltd, Mumbai                                                  | SHRI VIJAY SINGH ( <i>Alternate</i> )             |
| Kerala Minerals and Metals Ltd, Kolkata                                            | REPRESENTATIVE                                    |
| Maruti Udyog Ltd, Gurgaon                                                          | DR G. SAHA                                        |
| Ministry of Defence (DGQA), Kanpur                                                 | SMT NIVEDITA BHATTACHARYA<br>( <i>Alternate</i> ) |
| Ministry of Industry, New Delhi                                                    | DR K. V. S. N. RAJU                               |
| National Test House (ER), Kolkata                                                  | DR A. S. KHANNA                                   |
| Naval Materials Research Laboratory,<br>Ambernath                                  | DR M. B. GUHA                                     |
| Office of the Development Commissioner (SSI),<br>New Delhi                         | SHRI V. M. NATU ( <i>Alternate</i> )              |
|                                                                                    | SHRI S. V. PORWAL                                 |
|                                                                                    | SHRI A. V. GADGIL ( <i>Alternate</i> )            |
|                                                                                    | SHRI E. J. ANTO                                   |
|                                                                                    | SHRI T. K. BANERJEE                               |
|                                                                                    | DR A. K. MUKHOPADHYAY                             |
|                                                                                    | SHRI V. N. SOHANI ( <i>Alternate</i> )            |
|                                                                                    | SHRI P. K. JAIN                                   |
|                                                                                    | SHRI N. C. TIWARI ( <i>Alternate</i> )            |
|                                                                                    | DR SUNIL KUMAR SAHA                               |
|                                                                                    | SMT R. DEY SARKAR ( <i>Alternate</i> )            |
|                                                                                    | SHRI DHIRENDRA KUMAR                              |
|                                                                                    | SHRI V. R. MORE ( <i>Alternate</i> )              |
|                                                                                    | SHRI A. K. JAIN                                   |

| <i>Organizations</i>                                                                                                      | <i>Representative(s)</i>                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Oil and Natural Gas Corporation Ltd, Mumbai                                                                               | REPRESENTATIVE                                                                                                 |
| Paint and Coating Technologists Association, Kanpur                                                                       | DR DEVENDRA AGARWAL                                                                                            |
| In personal capacity ( <i>103 Mukta Apartment</i><br><i>Oin Datta Mandir Marg, Malad (West)</i><br><i>Mumbai 400064</i> ) | SHRI V. N. DUBEY ( <i>Alternate</i> )                                                                          |
| Punjab Paint Colour and Varnish Works, Kanpur                                                                             | SHRI S. S. ANAKAIKAR                                                                                           |
| Reliance Industries Ltd, Mumbai                                                                                           | SHRI G. N. TIWARI                                                                                              |
| Research Designs & Standards Organization, Lucknow                                                                        | REPRESENTATIVE                                                                                                 |
| Resins & Plastics Limited, Mumbai                                                                                         | SHRI H. K. MITRA                                                                                               |
| SGS India Pvt Ltd, Gurgaon                                                                                                | SHRI S. C. VERMA ( <i>Alternate</i> )                                                                          |
| Shalimar Paints Ltd, Kolkata                                                                                              | SHRI M. C. CHOKSI                                                                                              |
| Shriram Institute for Industrial Research, Delhi                                                                          | SHRI SUDARSHAN SHARMA                                                                                          |
| Tata Motors Limited, Jamshedpur                                                                                           | SHRI DIPJYOTI BANERJEE ( <i>Alternate</i> )                                                                    |
| The Shipping Corporation of India Ltd, Mumbai                                                                             | DR S. K. MISRA                                                                                                 |
| U. K. Paints Industries, New Delhi                                                                                        | SHRI A. K. DE ( <i>Alternate</i> )                                                                             |
| BIS Directorate General                                                                                                   | DR P. K. KAICKER                                                                                               |
|                                                                                                                           | SHRI A. K. MAJUMDAR ( <i>Alternate</i> )                                                                       |
|                                                                                                                           | REPRESENTATIVE                                                                                                 |
|                                                                                                                           | SHRI R. SOOD                                                                                                   |
|                                                                                                                           | SHRI P. V. SANDEEP ( <i>Alternate</i> )                                                                        |
|                                                                                                                           | SHRI V. K. NAYYAR                                                                                              |
|                                                                                                                           | SHRI E. DEVENDAR, Scientist-F &<br>Head (Chemical)<br>[Representing Director General<br>( <i>Ex-officio</i> )] |

*Member Secretary*  
SHRI PARTHA S. MANDAL  
Scientist-B (Chemical), BIS

### Panel for Visual Examination of Shade Cards for Printing of IS 5 CHD 20: P1

|                                   |                                         |
|-----------------------------------|-----------------------------------------|
| National Test House (ER), Kolkata | DR SUNIL KUMAR SAHA ( <i>Convener</i> ) |
| Asian Paints Ltd, Mumbai          | SMT R. DEY SARKAR ( <i>Alternate</i> )  |
| Berger Paints India Ltd, Howrah   | SHRI AVINASH SARDESAI                   |
| Kansai Nerolac Paints Ltd, Mumbai | SHRI PRABIR CHATTERJEE                  |
| Shalimar Paints Ltd, Kolkata      | SHRI ASHOK PANHALE                      |
|                                   | SHRI SWAPAN MITRA                       |