(Reaffirmed 2012)

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

BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

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Price Rs. 1150.00

Indian Standard

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(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

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-1.28 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.

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.

$$x + y + z = 1 \text{ and } x10 + y10 + z10 = 1$$

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.

Table 1 – *Continued*

Sl 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)
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 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

BLUE
100—


No. 101 Sky Blue


No. 165 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

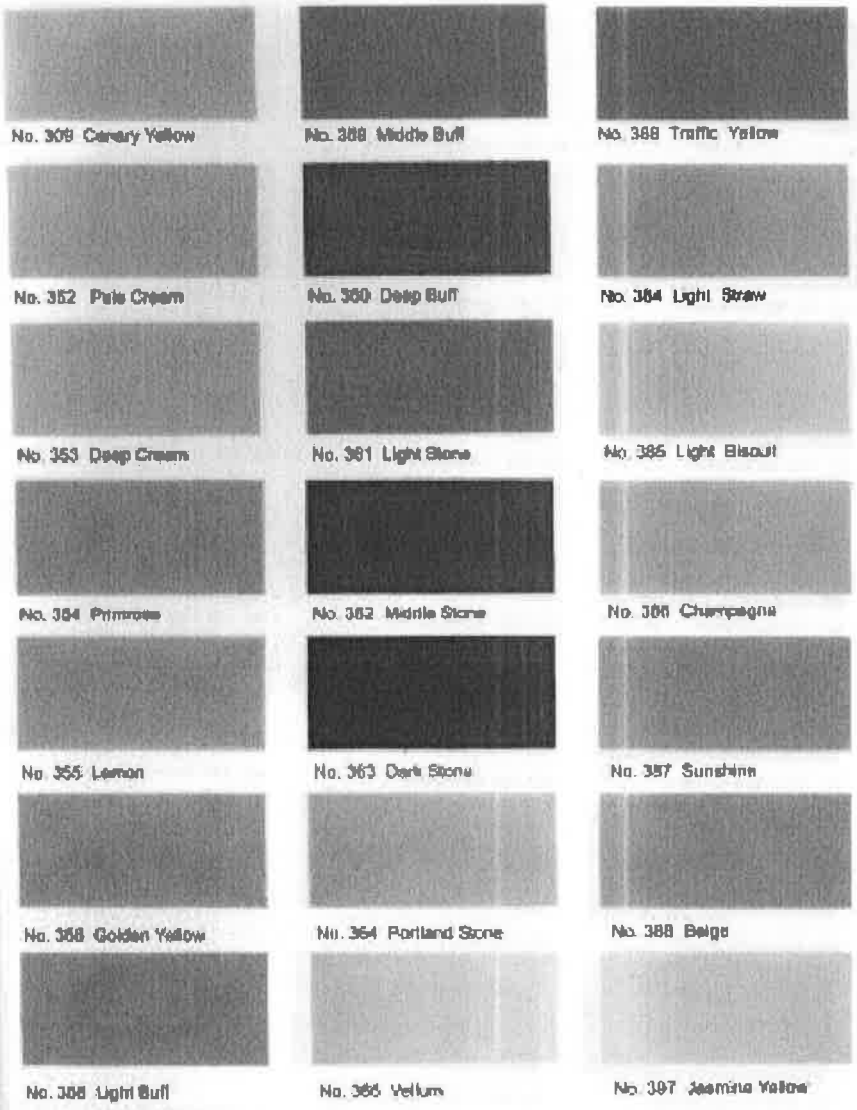

No. 105 Oxford Blue


No. 176 Phirozi


No. 106 Navy Blue


No. 177 Satin Blue

YELLOW, CREAM AND BUFF
300—



RED AND ORANGE
500 —

No. 536 Fire Red

No. 557 Light Orange

No. 537 Signal Red

No. 570 Traffic Red

No. 538 Post Office Red

No. 574 India Saffron

No. 540 Crimson

No. 591 Deep Orange

No. 541 Maroon

No. 592 International Orange

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Paints, Varnishes and Related Products Sectional Committee, CHD 20

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