

**BUREAU OF INDIAN STANDARDS**

*Draft Indian Standard*  
**SPECIFICATION FOR READY MIXED PAINT, EXTERIOR, PETROL RESISTING,  
STOVING**  
(*Second Revision of IS 142*)

**ICS No. 87.020**

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**0. FOREWORD**

(Formal clauses will be added later)

**0.1** This standard was first published in 1950. The standard was initially revised in 1980. In its first revision, it was amalgamated with IS : 143-1950 “Specification for ready mixed paint, spraying, petrol resisting, stoving, for exterior painting of containers, colour as required”. The restriction on composition and requirements for spreading capacity and spreading time and the requirement for fastness to light had been dropped and requirement for durability and requirement for suitability for thinning had been included. The requirement for ‘opacity’ had been changed as ‘wet opacity’. For testing resistance to petrol an immersion for one hour had been prescribed instead of 15 minutes when the material is intended for Defence uses. The requirement for scratch hardness had been changed as resistance to mechanical damage after immersion in petrol and lubricating oil. The title of the standard had also been simplified.

**0.2** In the second revision keeping in view the harmful effects of lead, a requirement for restricting lead content had been made applicable for all end uses.

**0.3** This standard contains clause 6.1, which calls for agreement between the purchaser and the supplier.

**0.4** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2 - 1960”. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

**1. SCOPE**

**1.1** This standard prescribes requirements and methods of sampling and test for the material commercially known as ready mixed paint, petrol resisting, stoving, for exterior painting of containers, colour as required.

**1.1.1** The material is used for the exterior protection of containers for petrol, mineral oils and lubricants. The material is such that on stoving it gives a film which can stand handling, without damage, whilst wetted with petrol, mineral oils and lubricants.

## **2 REFERENCES**

**2.1** The following Indian Standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
5: 2007	Colours for Ready Mixed Paints and Enamels (sixth revision)
101 (Part 1/ Sec 1) : 1986	Methods of Sampling and test for paints, varnishes and related products - Part 1 : Tests on liquid paints (general and physical) - Section 1 : Sampling
101 (Part 1/ Sec 3) : 1986	Methods of sampling and test for paints, varnishes and related products - Part 1 : Tests on liquid paints (general and physical) - Section 3 : Preparation of Panels
101(Part 1/Sec 5):1989	Methods of sampling and test for paints, varnishes and related products : Part 1 Tests on liquid paints (general and physical) Sec 5 Consistency (third revision)
101(Part 1/Sec 6):1987	Methods of sampling and test for paints, varnishes and related products : Part 1 Tests on liquid paints (general and physical) Sec 6 Flash point (third revision)
101(Part 1/Sec 7):1987	Methods of sampling and test for paints, varnishes and related products: Part 1 Tests on liquid paints (general and physical) Sec 7 Mass per 10 litres (third revision)
101(Part 2/Sec 1):1988	Methods of sampling and test for paints, varnish and related products: Part 2 Test on liquid paints (chemical examination) Sec 1 Water content (third revision)
101(Part 3/Sec 1):1986	Methods of sampling and test for paints, varnishes and related products: Part 3 Tests on paint film formation Sec 1 Drying time (third revision)
101 (Part 3/ Sec 4) : 1987	Methods of sampling and test for paints, varnishes and related products - Part 3 : Tests on paint film formation - Section 4 : Finish
101(Part 4/Sec 1):1988	Methods of sampling and test for paints, varnishes and related products Part 4 Optical tests on paint films Sec 1 Opacity (third revision)
101 (Part 4/Sec 2): 1989	Methods of sampling and test for paints, varnishes and related products Part 4 Optical tests on paint films Sec 2 Colour (third revision)

101(Part 5/Sec 2):1988	Methods of sampling and test for paints, varnishes and related products part 5 Mechanical test on paint films Sec 2 Flexibility and adhesion (third revision)
101(Part 6/Sec 1):1988	Methods of sampling and test for paints, varnishes and related products Part 6 Durability tests on paint films Sec 1 Resistance to humidity under conditions of condensation (third revision)
101(Part 6/Sec 2):1989	Methods of sampling and test for paints, varnishes and related products Part 6 Durability tests on paint films Sec 2 Keeping properties (third revision)
101 (Part 7/ Sec 2) : 1990	Methods of sampling and test for paints, varnishes and related products - Part 7 : Environmental tests on paint films - Section 2 : Resistance to Liquids
101(Part 8/Sec 1):1989	Methods of sampling and test for paints, varnishes and related products Part 8 Tests for pigments and other solids Sec 1 Residue on sieve (third revision)
101(Part 8/Sec 5):1993	Methods of sampling and test for paints, varnishes and related products Part 8 Tests for pigments and other solids Section 5 Lead Restriction Test (Third Revision)
1070:1992	Reagent grade water (Third Revision)
1303:1983	Glossary of terms relating to paints (second revision)
1407:1980	Specification for round paint tins (second revision)
1745 : 1978	Specification for petroleum hydrocarbon solvent
2552:1989	Specification for steel drums (galvanized or ungalvanized) (third revision)
6947 (Part 1): 1973	Methods of estimation of composite pigments in oil pastes and ready mixed paints Part 1: Estimation of lead, zinc oxide, titanium dioxide, calcium compounds and zinc sulphide

### **3. TERMINOLOGY**

**3.1** For the purpose of this standard definitions given in IS 1303 shall apply.

### **4. CLASSES**

**4.1** The material shall be supplied in brushing consistency but shall be suitable for application by spraying also after thinning with petroleum hydrocarbon solvent, 145/205 low aromatic grade conforming to IS 1745.

### **5. REQUIREMENTS**

**5.1 Composition-**The material shall be of such composition as to satisfy the requirements of this standard.

**5.2 Suitability for Thinning** -The material shall be suitable for application by spraying when thinned to 20 to 30 seconds determined in IS Cup No. 4 at  $27 \pm 1^\circ\text{C}$  with petroleum hydrocarbon solvent, 145/205 low aromatic grade, conforming to IS 1745.

**5.3 Resistance to Mechanical Damage after Immersion in Petrol and Lubricating Oils** –The material when tested as prescribed in Annex A shall pass the test.

**5.4 Durability** - The material when tested as prescribed in Annex B shall pass the test.

**5.5** The material shall also conform to the requirements prescribed in Table 1.

## **6. PACKING AND MARKING**

**6.1 Packing**-Unless otherwise agreed to between the purchaser and the supplier, the paint shall be packed in metal containers conforming to IS 1407 or IS 2552.

**6.2 Marking**-The containers shall be marked with the following information:

- a) Name and colour of the material;
- b) Manufacturer's name and his recognized trade-mark, if any;
- c) Volume in litre of the material;
- d) Batch No. or lot No. in code or otherwise; and
- e) Month and year of manufacture.

**6.2.1** The containers may also be marked with the Standard Mark.

**6.2.2** The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or processors, may be obtained from the Bureau of Indian Standards.

**6.3** Other details of packing and marking shall be in accordance with the instructions given by the purchaser.

## **7. SAMPLING**

**7.1** Representative samples of the material shall be drawn and prepared as prescribed in IS 101 (Part 1/Section 1).

**7.2 Criteria for Conformity** - A lot shall be declared as conforming to the requirements of this standard if the test results on the composite sample satisfy the requirements prescribed under 4.

**TABLE 1 REQUIREMENTS FOR READY MIXED PAINT, EXTERIOR, PETROL RESISTING, STOVING**

Sl.No.	Characteristic	Requirement	Method of Test
(1)	(2)	(3)	(4)
i)	Consistency	Smooth and uniform and suitable for application by brushing without appreciable drag on the brush	IS 101 (Part 1/Sec 5):1989
ii)	*Drying time: Hard dry	Dark colours stoved at 150°C, not more than 20 minutes; and for light colours stoved at 110°C, not more than 1 h	IS 101 (Part 3/Sec 1):1986
iii)	*Finish	Smooth and matt or semi-gloss or full-gloss as agreed to between the purchaser and the supplier	IS 101 (Part 3/Sec 4):1987
iv)	Wet opacity	Between -10 percent and +20 percent of the approved sample	IS 101 (Part 4/Sec 1):1988
v)	Colour	Close match to the IS Colour where specified or to the approved sample where IS colour is not specified	IS 101 (Part 4/Sec 2):1989
vi)	Residue on sieve, percent by mass, <i>Max</i>	0.3	IS 101 (Part 8/Sec 1):1989
vii)	Water content (if water is suspected to be present ), percent by mass, <i>Max</i>	0.5	IS 101 (Part 2/Sec 1):1988
viii)	Flexibility and adhesion	No visible damage or detachment of film	IS 101 (Part 5/Sec 2):1988
ix)	*Protection against corrosion	No signs of break-down or corrosion	IS 101 (Part 6/Sec 1):1988
x)	*Resistance to lubricating oil	No permanent injury	IS 101 (Part 7/Sec 2):1990
xi)	* Resistance to petrol	No permanent injury	IS 101 (Part 7/Sec 2): 1990†
xii)	Flash point	Not below 30°C, unless the lower temperature of 23°C is agreed to between the purchaser and the supplier	IS 101 (Part 1/Sec 6):1987
xiii)	Mass in kg/10 litres	Within 3 percent of the approved sample	IS 101 (Part 1/Sec 7):1987
xiv)	Lead content, %	Less than 4.18%	Clause 2.1 or 2.2 of IS 101(Part 8/Sec 5): 1993
xv)	Calcium compounds	Not more than 2.8 percent by mass on pigment when expressed as calcium oxide	Clause 8 of IS 6947 (Part 1): 1973
xvi)	Keeping properties	Not less than one year from the date of manufacture	IS 101 (Part 6/Sec 2):1989

\* These tests shall be carried out on stoved films after keeping the test panels for 24 h at room temperature.

† After 1 h immersion when the material is intended of Defence uses.

Note-1: For match against IS Colour, IS 5 shall be used

Note-2: Unless specified otherwise pure chemicals and distilled water (*see* IS 1070 ) shall be employed in tests.

‘Pure chemicals’ shall mean chemicals that do not contain impurities which affect the results of analysis

Note-3: The stoving temperature and time shall be 150°C and 20 minutes for dark colours, and 110°C and 1 hour for light colours.

**ANNEX A**  
( *Clause 5.3* )

**TEST FOR MECHANICAL DAMAGE AFTER IMMERSION  
IN PETROL AND LUBRICATING OIL**

**A-1. PROCEDURE**

**A-1.1** Prepare two sets of tin plate panels of 150 X 50 X 0.315 mm size and stove for 20 minutes at 150°C in case of dark coloured material and at 110°C for not more than 1 h in case of light coloured material as prescribed in IS 101 (Part 7/Section 2). Immerse one panel in lubricating oil at 50°C for 2 h and the other in petrol for 15 minutes as prescribed in IS 101 (Part 7/Section 2) respectively. Take out one set of panels after the specified periods given above and observe the films. Subject both set of panels to scratch hardness test under load of 1 000 g, 30 minutes after being taken out of bath and after excess of oils has been wiped off from the panel, dipped in lubricating oil as prescribed in Clause 3 of IS 101 (Part 5/Sec 2):1988. The requirement of the test shall be taken to have passed if no bare metal is visible under the scratch.

**ANNEX B**  
( *Clause 5.4* )

**TEST FOR DURABILITY**

**B-1. PREPARATION OF PANELS**

**B-1.1** Prepare a mild steel panel of approximately 150 X 150 X 1.25 mm size as described in 2 of IS 101 (Part 1/ Section 3), and paint with the material by brushing in a single coat, to give a dry film mass as specified in IS 101 (Part 3/ Section 4). Stove the panel prepared from dark coloured material at 150°C for 20 minutes and for light coloured material at 110°C for not more than 1 h. Apply another coat of the material and stove as given above. Expose the panel to the test cycle given in **B-2.1**.

**B-2. PROCEDURE**

**B-2.1** Expose the painted panels, in duplicate, outdoors for 3 months at an angle of 45° facing south. At the end of this period examine the test panels under X 10 magnification. The material shall be taken to have passed the durability test if there is no sign of checking, brittleness or other impairment of film integrity, not more than a trace of chalking and no appreciable fading/darkening or change of colour and loss of gloss. In this respect the sample shall not be inferior to the approved sample when tested in the similar manner and at the same time.

NOTE - Provisional acceptance may be given on one month exposure on separate set of painted panels as follows, but the durability of the material shall be taken only after 3 months exposure as prescribed above. The painted panel shall be exposed outdoors for 25 days at an angle of 45° facing south. At the end of this period the panel shall be subjected to a fine spray of water for 6 hours at a temperature not above 30°C. (A suitable spray is provided by a water supply at a pressure of approximately 13.7 kPa through a rose.) The treatment shall be carried out daily for six days. The test panels shall be exposed at an angle of 45° facing south between treatment.

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