

IS: 158-1981
(Reaffirmed 2011)

Indian Standard

SPECIFICATION FOR
READY MIXED PAINT, BRUSHING,
BITUMINOUS, BLACK, LEAD FREE, ACID,
ALKALI AND HEAT RESISTING

(Third Revision)

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(Including Amendment No. 1 & 2)

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

AMENDMENT NO. 2 DECEMBER 1988
TO
IS : 158 - 1981 SPECIFICATION FOR
READY MIXED PAINT, BRUSHING, BITUMINOUS,
BLACK, LEAD FREE, ACID, ALKALI AND
HEAT RESISTING

(*Third Revision*)

[*Page 5, Table 1, Sl No.(iii), col 3*] — Substitute 'Smooth and semi-glossy to glossy' for the existing entries.

(CDC 8)

AMENDMENT NO. 1 JULY 1982

TO

IS:158-1981 SPECIFICATION FOR READY MIXED PAINT,
BRUSHING, BITUMINOUS, BLACK, LEAD FREE,
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Corrigendum

*(Page 8, clause A-2.1, lines 7 and 8) - Substitute
'300°C' for '3 000°C' at both the places.*

(CDC 8)

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(*Third Revision*)

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(*Continued on page 2*)

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(PREVIEW)

IS : 158 - 1981

Indian Standard
SPECIFICATION FOR
READY MIXED PAINT, BRUSHING,
BITUMINOUS, BLACK, LEAD FREE, ACID,
ALKALI AND HEAT RESISTING

0. FOREWORD

0.1 This Indian Standard (Third Revision) was adopted by the Indian Standards Institution on 15 July 1981, after the draft finalized by the Paints and Allied Products Sectional Committee had been approved by the Chemical Division Council.

0.2 This standard was first published in 1950 and subsequently revised in 1965 and 1968 and covered two types of the material. Material of Type 1 was intended for use as acid, alkali, water and heat resistant paint, generally used for chimneys, boilers, apparatus, etc. Type 2 was intended for use as acid, alkali and water resistant for general purposes, particularly for protection of apparatus, equipment, machines, etc.

0.3 It was brought to the notice of the concerned technical committee that as the material having two types with quite different end uses are covered in this specification, it creates difficulty while issuing tenders and supplying the right material. It was, therefore, decided to have two different specifications, covering each type of the material separately.

1. SCOPE

1.1 This standard prescribes requirements, and methods of sampling and test for ready mixed paint, brushing, bituminous, black, lead free, acid, alkali and heat resisting.

1.1.1 The material is used for the protection of funnels, boilers, apparatus and appliances connected with ammunition.

*Specification for ready mixed paint, brushing, bituminous, black, lead free, acid, alkali, water and chlorine resisting.

IS : 158 - 1981

0.6 This standard contains clause **4.1** which calls for an agreement between the purchaser and the supplier.

0.7 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the results 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.

2. TERMINOLOGY

2.1 For the purpose of this standard, definitions given under **2** of IS : 101-1964†, IS : 1303-1963‡ and the following shall apply.

2.1.1 *Hard Dry* — A condition of the paint film such that a second coating of the material can be applied satisfactorily on it.

3. REQUIREMENTS

3.1 **Composition** — The material shall be an unpigmented bituminous base paint of such a composition as to satisfy the requirements of this standard.

3.2 **Water Content** — If the water is suspected to be present in the material, it shall not exceed 0.5 percent by mass when tested as prescribed in **14** of IS : 101-1964†.

3.3 **Mass in kg/10 Litres** — The minimum mass in kg/10 litres of the material shall be 8.5 when tested as prescribed in **25** of IS : 101-1964†. However, it shall be within ± 3 percent of the sample approved against this specification, if any.

*Rules for rounding off numerical values (*revised*).

†Methods of test for ready mixed paints and enamels (*second revision*),

‡Glossary of terms relating to paints (*revised*).

3.4 Resistance to Heat — The material shall pass the test when tested as prescribed in Appendix A.

3.5 The material shall also comply with the requirements given in Table 1.

TABLE 1 REQUIREMENT FOR READY MIXED PAINT, BRUSHING, BITUMINOUS, BLACK, LEAD FREE, ACID, ALKALI AND HEAT RESISTING

(Clauses 3.5 and 6.1)

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REFTO	Appendix CI No. in IS: 101-1964*
(1)	(2)	(3)	(4)	(5)
i)	Drying time — hard dry	Not more than 8 hours	—	7.2
ii)	Consistency	Smooth and uniform and suitable for application by brushing without appreciable drag on the brush	—	7.4
iii)	Finish	Smooth and egg shell to semi glossy	—	7.5
iv)	Wet opacity	Between —10 percent and the +20 percent of the approved sample or the value declared by the manufacturer and accepted by the competent testing laboratory	—	10
v)	Colour	Black but close match to approved sample	—	11
vi)	Flexibility and adhesion after 96 hours air-drying	No visible damage or detachment of the film	—	16
vii)	Stripping test	Scratches free from jagged edges	—	17
viii)	Protection against corrosion under conditions of condensation	No sign of corrosion	—	18
ix)	Volatile matter, percent by mass. <i>Max</i>	55		26
x)	Resistance to acid	To pass the test	B	—
xi)	Resistance to alkali	To pass the test	C	—
xii)	Flash point, °C, <i>Min</i>	30	—	24
xiii)	Keeping properties	Not less than one year	—	31

*Methods of test for ready mixed paints and enamels (*second revision*).

IS : 158 - 1981

3.6 Lead Free Material — When lead free material is required in addition to the requirements stipulated in 3.1 to 3.5, it shall also be tested for freedom from lead in accordance with 29 of IS : 101-1964*. When thus tested, the material shall not contain lead or lead compounds or a mixture of both calculated as metallic lead (Pb), exceeding 0.03 percent by mass.

4. PACKING AND MARKING

4.1 Packing – The material shall be packed as agreed to between the purchaser and the supplier.

4.2 Marking — The containers shall be marked with the following particulars :

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

4.2.1 The product may also be marked with Standard Mark.

4.2.2 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 the licence for the use of Standard Mark may be granted to manufactures or producers may be obtained from the Bureau of Indian Standards.

4.3 When the material is intended for Defence uses, packing and marking shall be in accordance with IS : 5661-1970†.

5. SAMPLING

5.1 Representative samples of the material shall be drawn as prescribed under 3 of IS : 101-1964*.

*Methods of test for ready mixed paints and enamels (*second revision*).

†Code of practice for packing and marking of packages of paints, enamels, varnishes and allied products.

5.2 Number of Tests

5.2.1 Individual samples shall be tested for mass in kg/10 litres. If they are found to be uniform and conforming to this specification, the individual samples may be blended to make a composite sample.

5.2.2 Tests for remaining characteristics of the material shall be conducted on the composite sample.

5.3 Criteria for Conformity

5.3.1 The lot shall be declared as conforming to the requirements of this specification if individual samples are uniform and conforming to the specification limits of mass in kg/10 litres, and if the characteristics tested on composite sample satisfy the corresponding requirements given in this specification.

6. TEST METHODS

6.1 Tests shall be conducted as prescribed in IS : 101-1964* and in Appendices A to C. Reference to relevant clauses of IS : 101-1964* is given in **3.2, 3.3, 3.6** and col 5 of Table 1 and that of appendices in **3.4** and col 4 of Table 1.

6.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977†) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

APPENDIX A

(*Clauses 3.4 and 6.1*)

DETERMINATION OF RESISTANCE TO HEAT

A-0. OUTLINE OF THE METHOD

A-0.1 An air-dried panel is heated to a maximum temperature under stipulated conditions. After this, it is cooled and dipped in water. The extent of deterioration of the film is compared with that of an approved sample tested at the same time.

*Methods of test for ready mixed paints and enamels (*second revision*).

† Specification for water for general laboratory use (*second revision*).

IS : 158 - 1981

A-1. APPARATUS

A-1.1 Electric Furnace — With a maximum attainable temperature of 900°C. It is equipped with a 3 500 W heating element which operates on a single phase alternating current of approximately 15 A of 50 c/s on a voltage of 240. The minimum dimensions of the heating chamber are $380 \times 150 \times 80$ mm.

A-2. PROCEDURE

A-2.1 Apply a coating of the material by brushing to a $150 \times 100 \times 0.8$ mm clean mild steel panel to give a dry film mass commensurate with the mass in kg/10 litres of the material as prescribed in 6.4 of IS : 101-1964*. Allow the panel to air-dry in a horizontal position for 24 hours under standard conditions (2.4 of IS : 101-1964*). Heat the panel in a vertical position in an electrical furnace, the temperature of which is gradually raised from room temperature up to a temperature of 3 000°C in 1½ hours time. Maintain the panel at the maximum temperature of 3 000°C for half an hour. Remove the panel from the furnace, cool to room temperature and immerse in water at room temperature for 24 hours. Take out the panel and examine it after air-drying for one hour.

A-2.2 The material shall be deemed to have passed the test if the paint film remains firmly adherent and shows no sign of cracking, blistering or flaking. Formation of hair-lines shall not be a cause for rejection. For bulk supplies, the deterioration, if any, shall not be greater than that shown by the approved sample.

APPENDIX B

[Table 1, Item (x)]

DETERMINATION OF RESISTANCE TO ACID

B-0. OUTLINE OF THE METHOD

B-0.1 An air-dried film of the material is immersed in dilute sulphuric acid. Any deterioration of the film is then examined.

B-1. REAGENT

B-1.1 Dilute Sulphuric Acid — 1 : 20 (v/v).

*Methods of test for ready mixed paints and enamels (*second revision*).

B-2. PROCEDURE

B-2.1 Apply a coating of the material by brushing to a 150×50 mm clean glass panel to give a dry film mass commensurate with the mass in kg/10 litres of the material as specified in 6.4 of IS : 101-1964*. Allow the panel to air-dry in a horizontal position for 24 hours under standard conditions (2.4 of IS : 101-1964*). Immerse the panel partially in dilute sulphuric acid for 24 hours. Take out the panel, wash carefully and examine the immersed portion of the film after drying for one hour.

B-2.2 The material shall be deemed to have passed the test if the paint film on the panel shows not more than slight change in characteristic for softening, blistering, cracking, and colour.

APPENDIX C

[Table 1, Item(xi)]

DETERMINATION OF RESISTANCE TO ALKALI**C-0. OUTLINE OF THE METHOD**

C-0.1 An air-dried film of the material is immersed in a solution of sodium carbonate and examined for any deterioration.

C-1. REAGENTS

C-1.1 Sodium Carbonate Solution — Five percent anhydrous sodium carbonate in water (*m/v*).

C-2. PROCEDURE

C2.1 Partially immerse a panel, prepared as prescribed in Appendix B, in the aqueous solution of sodium carbonate for 4 hours. Take out the panel, wash and examine the immersed portion of the film after drying for one hour.

C-2.2 The material shall be deemed to have passed the test if the paint film for the panel shows not more than slight change in characteristics for softening, blistering, cracking, and colour.

*Methods of test for ready mixed paints and enamels (*second revision*).

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones: 23230131, 23233375, 23239402 **Fax:** 91+011 23239399, 23239382

E - Mail: info@bis.org.in website : http://www.bis.org.in

Central Laboratory:

Plot No. 20/9, Site IV, Sahibabad Industrial Area, SAHIBABAD 201010

Telephone

277 0032

Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002 2323 7617

*Eastern : 1/14 CIT Scheme VII M, V.I.P. Road, Kankurgachi, KOLKATA 700054 2337 8662

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022 260 9285

Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113 2254 1984

†Western: Manakalaya, E9, MIDC, Behind Marol Telephone Exchange, Andheri (East), MUMBAI 400093 2832 9295

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