

IS 138 : 1992

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भारतीय मानक

तैयार मिश्रित रंग रोगन, सूचना अंकन वाले पैकेजों
और पेट्रोल धारकों के लिए – विशिष्ट

(तीसरा पुनरीक्षण)

Indian Standard

**READY MIXED PAINT, MARKING, FOR
PACKAGES AND PETROL CONTAINERS —
SPECIFICATION**

(Third Revision)

UDC 667.633 : 621.7987

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BUREAU OF INDIAN STANDARDS

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NEW DELHI 110002

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Price Group 3

Industrial Paints Sectional Committee, CHD 031

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Industrial Paints Sectional Committee had been approved by the Chemical Division Council.

This standard was first published in 1950. It was first revised in 1969 to align fully with JSS 1003 A Paint, PFU, marking, ammunition, air drying, semi-glossy, finish, brushing/spraying/stencilling and JSS 3039 Specification for paint, PFU, marking issued by Ministry of Defence, Government of India. In the second revision, in 1981, requirement for wet opacity and a qualitative test for detection of presence of water was included.

This revision has been prepared on the basis of specific suggestions from Ministry of Defence, Government of India to quantify, the requirements of wet opacity, mass in kg/10 litres, efflux time and fineness of grind.

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 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this standard.

AMENDMENT NO. 1 APRIL 2000
TO
IS 138 : 1992 READY MIXED PAINT, MARKING, FOR
PACKAGES AND PETROL CONTAINERS —
SPECIFICATION

(Third Revision)

[*Page 2, clause 4.5, Table 1, Sl No. (iii) (a), col 3*] — Substitute 'Smooth, semi-glossy or matt as required' for 'Smooth and matt'.

(CHD 31)

Reprography Unit, BIS, New Delhi, India

Indian Standard

READY MIXED PAINT, MARKING, FOR PACKAGES AND PETROL CONTAINERS — SPECIFICATION (Third Revision)

1 SCOPE

1.1 This standard prescribes requirements and methods of sampling and test for ready mixed paint, marking for packages and petrol containers, colour as required.

1.1.1 The material is used for distinctive lettering and marking of ammunition and ammunition packages and of containers and packages by brushing, spraying, or stencilling. The material is not intended for application by silk screen stencilling.

2 REFERENCES

The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1303 : 1983 shall apply.

4 REQUIREMENTS

4.1 Composition

The material shall be of such a composition as to satisfy the requirements of this standard.

4.2 The material shall be suitable for lettering and marking by brushing, spraying or stencilling after thinning to the required consistency.

4.2.1 The marking properties of the material shall be satisfactory and shall give sharply defined outline.

4.3 Water Content

If water is suspected to be present in the material, it shall not exceed 0.5 percent by mass when tested as prescribed in IS 101 (Part 2/Sec 1) : 1988.

NOTE — Test the presence of water qualitatively by heating about 20 ml of the stirred and thoroughly mixed material in a metal dish. Presence of water, if any, is indicated by a cracking noise.

4.4 Mass in kg/10 litres

The mass in kg/10 litres of the material when tested in accordance with IS 101 (Part 1/ Sec 7) : 1987, shall be minimum 11.

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

4.6 The material, when intended for defence purposes, shall also comply with the following requirements in addition to those prescribed in **4.1** to **4.5** except that for fastness to light.

4.6.1 Durability

The material shall pass the test as prescribed in Annex B.

4.6.2 Accelerated Storage Stability

The material shall pass the test as prescribed in Annex C.

4.6.3 Lead Restriction

The material shall be tested for lead restriction in accordance with **28** of IS 101 : 1964. When tested, the material shall not contain lead or lead compounds or mixtures of both, calculated as lead monoxide (PbO) exceeding 5 percent by mass on the separated dry mass of the pigment taken for analysis.

5 PACKING AND MARKING

5.1 Packing

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

5.2 Marking

Each container shall be marked with the following:

- a) Name of the material and shade,
- b) Indication of the source of manufacture,
- c) Volume of the material,

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- d) Batch No. or lot No. in code or otherwise; and
e) Month and year of manufacture.

5.3 The material when intended for defence purposes, packing and marking shall be in accordance with IS 5661 : 1970.

6 Sampling

Representative samples of the material shall be drawn as prescribed in IS 101 (Part 1/Sec 1) : 1986.

7 TEST METHODS

7.1 The tests shall be conducted as per the methods referred to in 4.3, 4.4 and 4.6.3 and col 4 of Table 1 and that of Annexes B and C.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (see IS 1070 : 1992) shall be employed in tests.

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

Table 1 Requirements for Ready Mixed Paint, Marking, for Packages and Petrol Containers

(Clause 4.5)

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test, Ref to IS (4)
i)	Drying time (See Note 1)		101 (Part 3/Sec 1) : 1986
	a) Hard dry	Not more than 2 h	
	b) Tack free*	Not more than 4 h	
	*For defence supply only.		
ii)	a) Consistency	Smooth and uniform	101 (Part 1/Sec 5) : 1989
	b) Efflux time by ford Cup No. 4 at 27 ± 2°C	80-120 sec	
iii)	a) Finish	Smooth and matt	101 (Part 3/Sec 4) : 1987
	b) Gloss value, 45° or 60°	Less than 10 units	101 (Part 4/Sec 4) : 1988
	c) Fineness of grind, microns, <i>Max</i>	50	101 (Part 3/Sec 5) : 1987
iv)	Wet opacity, m ² /10 litre, <i>Min</i>	White, yellow and Red - 90 others — 200	101 (Part 4/Sec 1) : 1988
v)	Colour	Approximate match to the specified IS colour or to the approved sample where IS colour is not specified	101 (Part 4/Sec 2) : 1989
vi)	Fastness to light	To pass the test	101 (Part 4/Sec 3) : 1988
vii)	Pressure test after 4 hours air-drying		101 (Part 5/Sec 1) : 1988
viii)	Flexibility and adhesion 24 h air-drying	No visible damage or detachment of film	101 (Part 5/Sec 2) : 1988
ix)	Resistance to lubricating oil	To pass the test	101 (Part 7/Sec 2) : 1990
x)	Resistance to petroleum hydrocarbon solvent	do	do
xi)	Resistance to water	do	101 (Part 7/Sec 1) : 1989
xii)	Flash point, °C, <i>Min</i>	30	101 (Part 1/Sec 6) : 1987
xiii)	Calcium compounds (as CaCO ₃), percent by mass on dry pigment, <i>Max</i>	10	App. A of IS 63 : 1978
xiv)	Keeping properties	Not less than one year	101 (Part 6/Sec 2) : 1989

NOTE — Tinned mild steel plates of 150 mm × 50 mm × 0.315 mm sizes may also be used.

ANNEX A

(Clause 2)

IS No.	Title	IS No.	Title
63 : 1978	Whiting for paints and putty (<i>second revision</i>)	101 (Part 4/Sec 1): 1988	Part 4 Optical tests on paint films Sec 1 Wet opacity
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) Sec 1 Sampling	101 (Part 4/Sec 2): 1989	Sec 2 Colour
		101 (Part 4/Sec 3): 1988	Sec 3 Light fastness
101 (Part 1/Sec 3): 1986	Sec 3 Preparation of panels	101 (Part 5/Sec 1): 1988	Part 5 Mechanical test on paint films Sec 1 Hardness Tests
101 (Part 1/Sec 5): 1991	Sec 5 Consistency	101 (Part 5/Sec 2): 1988	Sec 2 Flexibility and adhesion
101 (Part 1/Sec 6): 1987	Sec 6 Flash Point	101 (Part 6/Sec 2): 1989	Part 6 Durability tests on paint films Sec 2 Keeping properties
101 (Part 1/Sec 7): 1987	Sec 7 Mass per 10 litres (<i>third revision</i>)	101 (Part 7/Sec 1): 1989	Part 7 Environmental tests on paint films Sec 1 Resistance to water
101 (Part 2/Sec 1): 1988	Part 2 Tests on liquid paints (Chemical Examination) Sec 1 Water content	101 (Part 7/Sec 2): 1990	Sec 2 Resistance to liquids
101 (Part 3/Sec 1): 1986	Part 3 Tests on paint film formation, Sec 1 Drying time	1070 : 1992	Reagent grade water — Specification (<i>third revision</i>)
101 (Part 3/Sec 4): 1987	Sec 4 Finish	1303 : 1983	Glossary of terms related to paints (<i>second revision</i>)
101 (Part 3/Sec 5): 1987	Sec 5 Fineness of grind	5661 : 1970	Code of practice for packing and marking of packages of paints, enamels, varnishes and allied products

ANNEX B

(Clause 4.6.1)

TEST FOR DURABILITY**B-0 OUTLINE OF THE METHOD**

The painted panels are subjected to cycles, consisting of exposure in accelerated weathering apparatus for 20 h followed by 2 h refrigeration at 0°C to – 5°C and finally subjecting to 2 h salt spray. The condition of the paint film after 5 cycles is examined for deterioration.

B-1 APPARATUS**B-1.1 Accelerated Weathering Apparatus**

An artificial weathering apparatus of the carbon arc type for uniform and controlled exposure to the effects of heat, light and water.

IS 138 : 1992**B-1.2 Refrigeration Device**

Suitable to be operated between 0 to -5°C .

B-1.3 Salt Spray Apparatus

The apparatus illustrated diagrammatically in Fig. 1 and Fig. 2 consists essentially of a chemically inert container with a close fitting cover in which a fine mist of the spray solution is produced through an atomizer in such a way that:

- panels supported on non-metallic supports with the test face upwards at an angle of approximately 15° to the vertical, are evenly coated with droplets of the solution;
- the salt spray is prevented by a baffle from impinging directly on the test faces of the panels; and
- salt solution drained from the test panels is not recirculated.

B-2 PROCEDURE**B-2.1 Preparation of Panels**

Prepare a mild steel or tinned mild steel panel of size 150 mm $\times$ 100 mm $\times$ 1.25 mm with one coat of paint of a contrast colour (see IS 168 : 1973 or IS 8982 : 1978) as prescribed in IS 101 (Part 1/Sec 3) : 1986. Allow to air dry for 48 h at room temperature. Mark the panel with the paint to this specification (sample under test) by appropriate means. Allow to dry in vertical position for further 24 h. Then expose the panel to the test cycles specified in B-2.2 to B-2.5.

B-2.2 Accelerated Weathering

Place the painted panels on galleries along the circumference of the container in such a way that the painted surface of each panel is facing the beam of light. Suspend centrally in the container three water atomizers by means of which the test panels are sprayed with water, one atomizer being opposite each gallery. The container (not the lid, atomizer and arc) revolves in a horizontal plane once every 20 minutes. Water is discharged through the

atomizer at a rate of approximately 5 litres per hour, with an air pressure of approximately 0.5 kg/cm^2 in such a manner that the whole of the painted surface of each panel is evenly wetted with a fine mist. The atomizers are so placed that each panel is sprayed approximately a quarter of a revolution before it comes in closest proximity to the arc.

Run off the water from the spray through a waste pipe in the bottom of the container and do not recirculate it through the atomizer. Fix a suitable thermometer through the lid of the container diametrically opposite to the atomizer with the bulb approximately 10 cm from the side of the container and 10 cm below the lid. Adjust the temperature of air in the range 38 to 44°C by adjusting the lid. Subject the panels to the water spray for 24 hours and note the condition of the paint film.

B-2.3 Refrigeration

Subject the same panels after the exposure in accelerated weathering apparatus to refrigeration for 2 hours at temperature of 0 to -5°C .

B-2.4 Salt Spray

The spray solution shall have the following composition:

Calcium sulphate	1.3 g
Magnesium chloride	2.6 g
Magnesium sulphate	1.7 g
Sodium chloride	21.4 g
Water	To make up to one litre

Suspend the same panels, after the accelerated weathering test and refrigeration, in the cabinet and expose it for 2 hours to a baffled spray of the salt spray solution.

B-2.5 The above cycle shall commence with exposure to accelerated weathering and end with salt spray and shall be carried out 5 times. Remove the panel and examine for any sign of deterioration and fading. The material shall be deemed to have passed the test if no deterioration of film and fading is noticed.

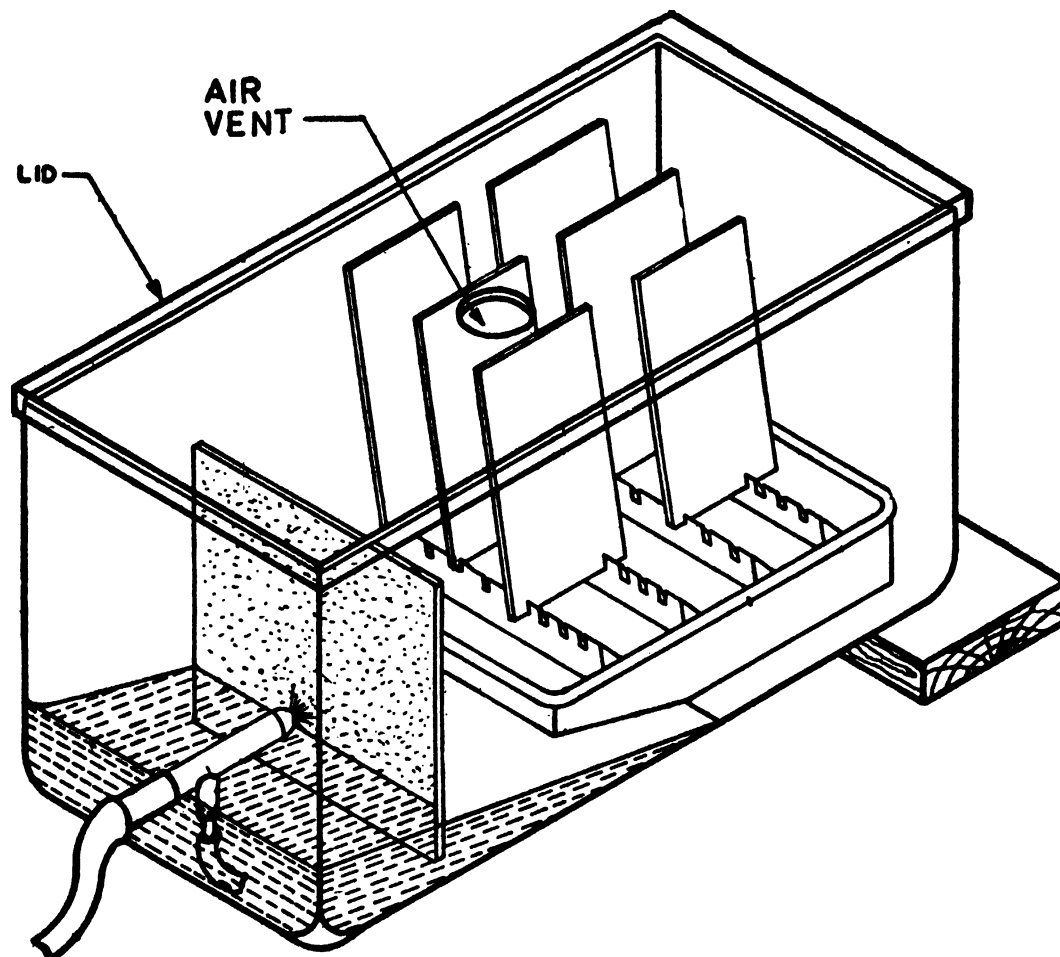


FIG. 1 SALT SPRAY APPARATUS

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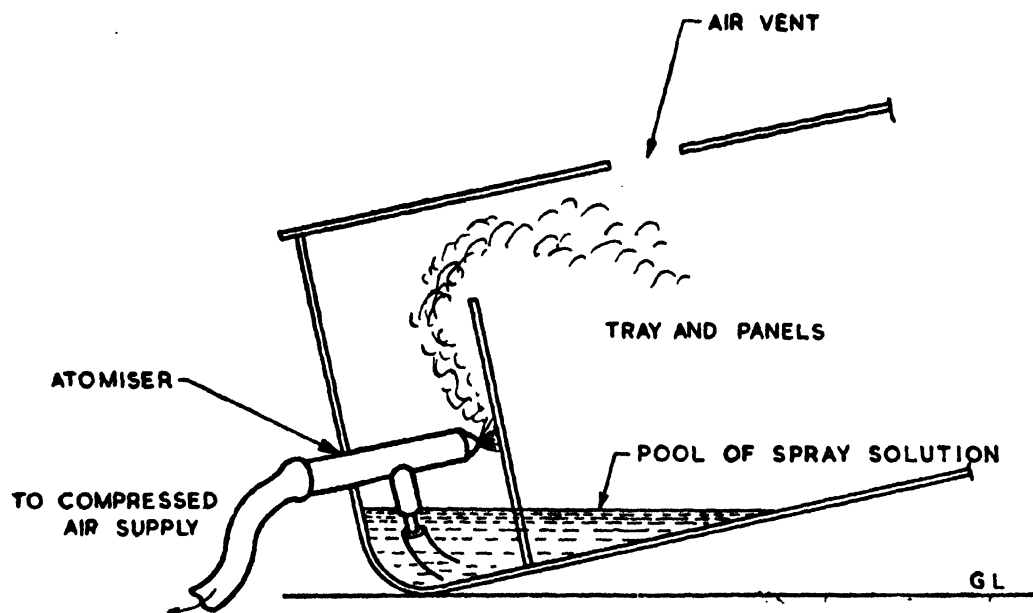


FIG. 2 PART SECTIONAL VIEW OF SALT SPRAY APPARATUS

ANNEX C

(Clause 4.6.2)

TEST FOR ACCELERATED STORAGE STABILITY

C-1 PROCEDURE

The paint sample is stored in a closed container and kept at 60°C for 96 hours. After the test, paint shall not gel, curdle or show increase in efflux time by more than 20 percent and there

shall be no evidence of seeding. The paint shall meet the drying time requirements and shall produce dry film that is uniform in appearance and free from streaking, mottling and seediness. Further, the change in gloss value from the original shall not be more than 5 units.

Standard Mark

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 Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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