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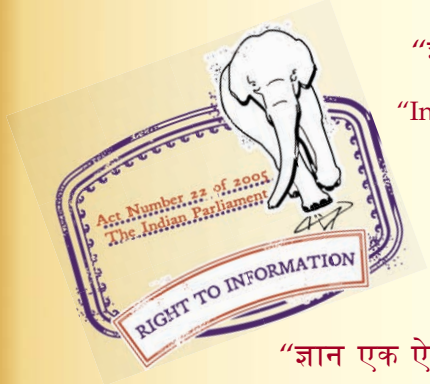

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Indian Standard

SPECIFICATION FOR READY MIXED PAINT, BRUSHING, ZINC CHROME, PRIMING

(Second Revision)

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Indian Standard

SPECIFICATION FOR READY MIXED PAINT, BRUSHING, ZINC CHROME, PRIMING

(Second Revision)

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Indian Standard

SPECIFICATION FOR READY MIXED PAINT, BRUSHING, ZINC CHROME, PRIMING

(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 27 July 1979, 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 1962. In this revision requirements for chromic anhydride and zinc oxide content in zinc chromate have been included. Method of test for zinc chromate has also been included. The optional requirements for spreading capacity and spreading time have been dropped and a regular requirement for wet opacity been included. Amendment No. 1 issued in November 1969 to this standard has been incorporated.

0.3 This standard contains clause **4.1** 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, brushing, zinc chrome, priming, air drying.

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

1.1.1 The material is used for the protection of aluminium and light alloys and may also be used for steelwork. It may be used under marine and inland outdoor conditions.

2. TERMINOLOGY

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

3. REQUIREMENTS

3.1 Composition — The material shall consist of 60 ± 4 percent by mass of pigment in accordance with **3.1.1** together with suitable medium, thinners and driers in such proportions as to satisfy the requirements of this standard.

3.1.1 The pigment when tested as prescribed in Appendix A shall contain not less than 40 percent by mass of zinc chrome conforming to Type 2 of IS : 51-1979‡ which shall correspond to a minimum of 17·2 percent by mass of chromic anhydride and 14·6 to 16·0 percent by mass of zinc oxide. The balance of the pigment composition shall consist of such other rust inhibitors (other than lead pigments) or extenders, as may be considered necessary.

3.1.2 Gypsum and calcium sulphate shall not be used.

3.2 Resistance to Salt Spray — When tested as prescribed in Appendix B panel prepared from the material shall show no signs of corrosion after continuous exposure for 4 days in salt-spray cabinet.

3.3 Mass in kg/10 Litre — The minimum mass in kg/10 litres of the material when tested in accordance with **25** of IS : 101-1964† shall be 14·0. It shall be, however, within ± 3 percent by mass of the sample approved against this specification, if any.

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

4. PACKING AND MARKING

4.1 Packing — Unless otherwise agreed between the purchaser and the supplier, the paint shall be packed in metal containers conforming to IS : 1407-1968§ or IS : 2552-1970‖.

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*Glossary of terms relating to paints (*revised*).
†Methods of test for ready mixed paints and enamels (*second revision*).
‡Specification for zinc chrome for paints (*third revision*).
§Specification for round paint tins (*first revision*).
‖Specification for steel drums (galvanized and ungalvanized) (*first revision*).

TABLE 1 REQUIREMENTS FOR READY MIXED PAINT, BRUSHING ZINC CHROME, PRIMING

(*Clause* 3.4)

Sl No.	Characteristic	Requirement	Method of Test (Ref to Cl No. in IS : 101-1964*)
(1)	(2)	(3)	(4)
i)	Drying time: hard dry	Not more than 18 hours	7.1, 7.2 and 7.3
ii)	Consistency	Smooth and uniform and suitable for application by brushing without appreciable drag on the brush	7.4
iii)	Finish	Smooth and matt or egg-shell flat	7.5
iv)	Wet opacity	Between —10 percent and +20 percent of the approved sample	10
v)	Colour	That of zinc chrome	11
vi)	Water content (if water is suspected to be present), percent by mass, *Max*	0·5	14
vii)	Scratch hardness	No scratch as to show the bare metal	15.1
viii)	Flexibility and adhesion after 48 hours air-drying	No visibile damage or detachment of film	16
ix)	Protection against corrosion under conditions of condensation	No signs of corrosion	18
x)	Flash point, °C, *Min*	30	24
xi)	Keeping properties, *Min*	One year	31

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

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 containers may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI 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 ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

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

5. SAMPLING

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

5.2 Criteria for Conformity — A lot shall be declared as conforming to the requirements of this standard if the test results of the composite sample satisfy the requirements prescribed under **3.**

6. TEST METHODS

6.1 Tests shall be conducted as prescribed in Appendices A and B and IS : 101-1964*. Reference to the relevant clauses of that standard is given in col 4 of Table 1 and **3.3,** and of Appendices in **3.1.1** and **3.2** respectively.

6.2 Quality of Reagents — Unless otherwise specified, 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.

*Methods of test for ready mixed paints and enamels (*second revision*).
†Specification for water for general laboratory used (*second revision*).

APPENDIX A

(*Clause* 3.1.1)

DETERMINATION OF CHROMIC ANHYDRIDE AND ZINC OXIDE

A-0. GENERAL

A-0.1 Outline of the Method — Chromic anhydride is determined by titrating the iodine liberated from potassium iodide with standard sodium thiosulphate solution. Zinc oxide is determined in the same solution by titrating the iodine subsequently liberated on addition of potassium ferricyanide, with standard sodium thiosulphate solution.

A-1. REAGENTS

A-1.1 Dilute Sulphuric Acid — approximately 7 N.

A-1.2 Potassium Iodine Solution — freshly prepared, 10 percent.

A-1.3 Standard Sodium Thiosulphate Solution — 0·1 N.

A-1.4 Starch Solution — 0·5 percent.

A-1.5 Ammonia Solution — 1 : 1 (*v*/*v*).

A-1.6 Potassium Ferricyanide Solution — M/10, prepared in cold water, filtered rapidly and kept in a dark bottle. The solution can be suitably used for seven days if in dark when not in use.

A-1.7 Ammonium Bifluoride [$(NH_4)HF_2$] — solid.

A-2. PROCEDURE

A-2.1 Weigh accurately about 0·5 g of the extracted pigment in a 500-ml conical flask. Add 70 ml of water and 30 ml of dilute sulphuric acid. Boil slowly for 2 to 3 minutes and cool.

A-2.2 Transfer the solution to a 500-ml iodine flask containing 100 ml water and 20 ml dilute sulphuric acid. Add 30 ml of potassium iodide solution and allow to stand for 5 minutes. Titrate the liberated iodine with standard sodium thiosulphate solution after adding 5 ml of starch solution as indicator. Note the volume of sodium thiosulphate solution used in the titration (V_1).

A-2.3 After the titration for chromic anhydride, add ammonia solution dropwise until the litmus test paper first turns blue. (An excess of

ammonia solution, more than 3 to 4 drops, should not be added as it is essential that the blue litmus should turn red with ammonium bifluoride to be added subsequently). Cool and add 2 to 3 g of ammonium bifluoride and sufficient water to make volume approximately 250 ml. (Sometime traces of iodine liberated during neutralization can be cleared up by one or two drops of sodium thiosulphate solution). Add $V_1/3$ ml of potassium ferricyanide solution. Stir and allow to stand for about 2 minutes. Titrate the liberated iodine with standard sodium thiosulphate solution. After the end point the colour of the test solution will be bright pale-greenish yellow. Note the volume of sodium thiosulphate solution used in the second titration (V_2). In case V_2 is less than 6 ml, the titration is to be repeated with the addition of (V_2+2) ml of potassium ferricyanide solution in place of $V_1/3$ ml.

A-2.4 If V_2 is less than 3 ml, the titration is to be repeated, starting from extracted pigment, with the addition of 5 ml of potassium ferricyanide solution.

A-3. CALCULATION

A-3.1 Chromic anhydride percent by mass (CrO_3) $= \dfrac{3{\cdot}334 \times V_1 \times N}{M}$

where

V_1 = volume in ml of sodium thiosulphate solution used in first titration,

N = normality of sodium thiosulphate solution used, and

M = mass in g of the material taken for the titration.

A-3.1 Zinc oxide (ZnO), percent by mass $= \dfrac{12{\cdot}45 \times V_2 \times N}{M}$

where

V_2 = volume in ml of sodium thiosulphate soltion used in the second titration, and

N and M have the same legends as in **A-3.1** above.

APPENDIX B

(*Clause* 3.2)

TEST FOR RESISTANCE TO SALT SPRAY

B-1. APPARATUS

B-1.1 The apparatus illustrated diagrammatically in Fig. 1 and 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 atomiser in such a way that:

a) 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;

b) the salt spray is prevented by a baffle from impinging directly on the test faces of the panels; and

c) salt solution drained from the test panels is not re-circulated.

B-2. SPRAY SOLUTION

B-2.1 The spray solution shall have the following composition:

Calcium sulphate	1·3 g
Mangesium chloride	2·6 g
Magnesium sulphate	1·7 g
Sodium chloride	21·4 g
Water	To make up to one litre

B-3. PROCEDURE

B-3.1 Prepare a panel of 150 × 100 × 1·25 mm mild steel plate as described in **18.2** of IS : 101-1064* and expose it for 4 days to a baffled spray of the spray solution.

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

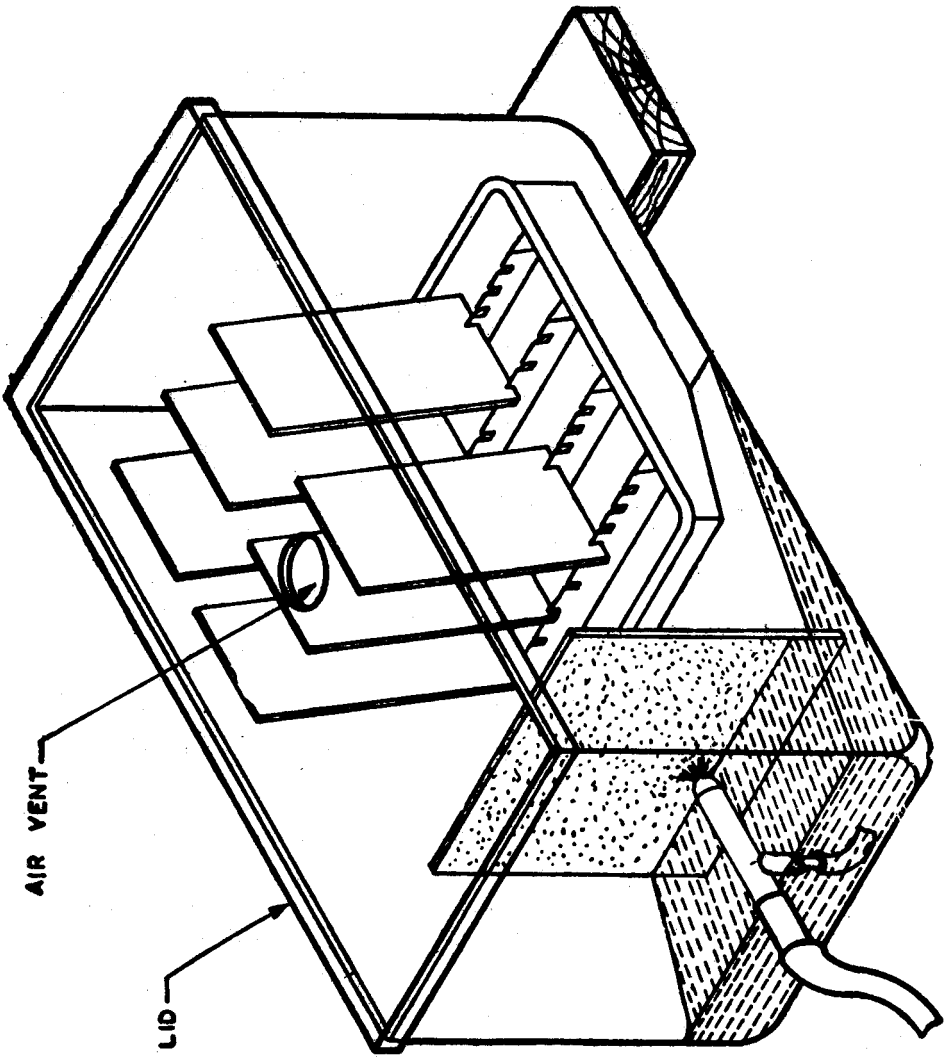

FIG. 1 SALT SPRAY APPARATUS

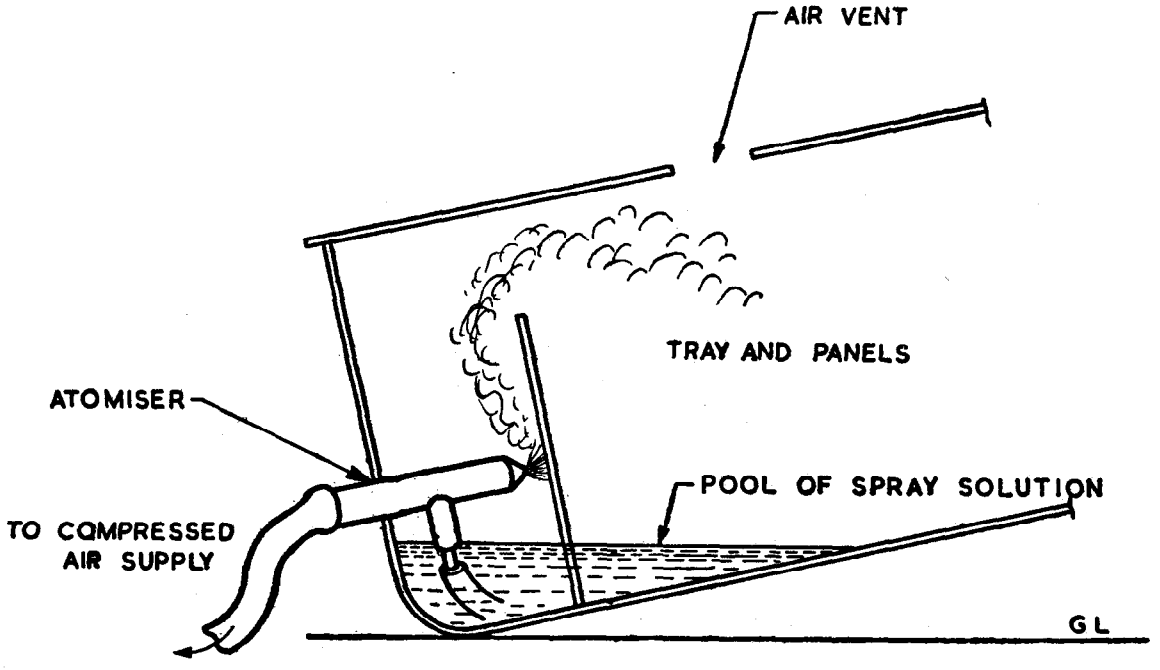

FIG. 2 PART SECTIONAL VIEW OF SALT SPRAY APPARATUS

B-3.2 Reporting — Remove 25 mm strip of the film from the centre of the panel along the length, carefully, with a suitable paint remover and examine the exposed metal for signs of corrosion, neglecting 25 mm portions of the exposed surface from each edge.

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AMENDMENT NO. 1 SEPTEMBER 1988
TO
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(Second Revision)

(*Page* 4, *clause* **3.1.2**) — Delete.

(CDC 8)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 2 MARCH 1999
TO
IS 104 : 1979 SPECIFICATION FOR READY MIXED PAINT, BRUSHING, ZINC CHROME, PRIMING

(Second Revision)

(*Page* 4, *clause* 3.1.1, *line* 4) — Substitute 'a minimum 14.6 percent by mass of zinc oxide' *for* '14.6 to 16.0 percent by mass of zinc oxide'.

(CHD 20)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 3 APRIL 2006
TO
IS 104 : 1979 SPECIFICATION FOR READY MIXED PAINT, BRUSHING, ZINC CHROME, PRIMING

(Second Revision)

[*Page* 5, *Table* 1, *Sl No.* (vi)] — Delete and renumber the subsequent serial numbers.

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