

TWO PACK AMINE CURED EPOXY RESIN PAINT**AS****PRIMER, INTERMEDIATE AND TOP COAT****FOR****ATMOSPHERIC ENVIRONMENT****ORIGINAL EDITION****MAR. 1996**

This standard specification is reviewed and updated by the relevant technical committee on July 2000(1) & Jun 2015(2). The approved modifications are included in the present issue of IPS.

FOREWORD

The Iranian Petroleum Standards (IPS) reflect the views of the Iranian Ministry of Petroleum and are intended for use in the oil and gas production facilities, oil refineries, chemical and petrochemical plants, gas handling and processing installations and other such facilities.

IPS are based on internationally acceptable standards and include selections from the items stipulated in the referenced standards. They are also supplemented by additional requirements and/or modifications based on the experience acquired by the Iranian Petroleum Industry and the local market availability. The options which are not specified in the text of the standards are itemized in data sheet/s, so that, the user can select his appropriate preferences therein.

The IPS standards are therefore expected to be sufficiently flexible so that the users can adapt these standards to their requirements. However, they may not cover every requirement of each project. For such cases, an addendum to IPS Standard shall be prepared by the user which elaborates the particular requirements of the user. This addendum together with the relevant IPS shall form the job specification for the specific project or work.

The IPS is reviewed and up-dated approximately every five years. Each standards are subject to amendment or withdrawal, if required, thus the latest edition of IPS shall be applicable

The users of IPS are therefore requested to send their views and comments, including any addendum prepared for particular cases to the following address. These comments and recommendations will be reviewed by the relevant technical committee and in case of approval will be incorporated in the next revision of the standard.

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GENERAL DEFINITIONS

Throughout this Standard the following definitions shall apply.

COMPANY :

Refers to one of the related and/or affiliated companies of the Iranian Ministry of Petroleum such as National Iranian Oil Company, National Iranian Gas Company, National Petrochemical Company and National Iranian Oil Refinery And Distribution Company.

PURCHASER :

Means the "Company" where this standard is a part of direct purchaser order by the "Company", and the "Contractor" where this Standard is a part of contract document.

VENDOR AND SUPPLIER:

Refers to firm or person who will supply and/or fabricate the equipment or material.

CONTRACTOR:

Refers to the persons, firm or company whose tender has been accepted by the company.

EXECUTOR :

Executor is the party which carries out all or part of construction and/or commissioning for the project.

INSPECTOR :

The Inspector referred to in this Standard is a person/persons or a body appointed in writing by the company for the inspection of fabrication and installation work.

SHALL:

Is used where a provision is mandatory.

SHOULD:

Is used where a provision is advisory only.

WILL:

Is normally used in connection with the action by the "Company" rather than by a contractor, supplier or vendor.

MAY:

Is used where a provision is completely discretionary.

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1. SCOPE

This Standard Specification covers the minimum requirements for the composition, properties, storage life, packaging, inspection and labeling of a two-pack amine cured epoxy resin paint for indirect sun light atmospheric environment.

Note 1:

This standard specification is reviewed and updated by the relevant technical committee on July 2000. The approved modifications by T.C. were sent to IPS users as amendment No. 1 by circular No. 122 on July 2000. These modifications are included in the present issue of IPS.

Note 2:

This standard specification is reviewed and updated by the relevant technical committee on June 2015. The approved modifications by T.C. were sent to IPS users as amendment No. 2 by circular No. 455 on June 2015. These modifications are included in the present issue of IPS.

2. REFERENCES

Throughout this Standard the following dated and undated standards/codes are referred to. These referenced documents shall, to the extent specified herein, form a part of this standard. For dated references, the edition cited applies. The applicability of changes in dated references that occur after the cited date shall be mutually agreed upon by the Company and the Vendor. For undated references, the latest edition of the referenced documents (including any supplements and amendments) applies.

ANSI (AMERICAN NATIONAL STANDARD INSTITUTE)

ANSI Z400.1/Z129.1 "Hazard Evaluation and Safety Data Sheet and Precautionary Labeling Preparation"

ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIAL)

| | |
|--------|---|
| D 2697 | "Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings" |
| D 3951 | "Standard Practice for Commercial Packaging" |
| D 1210 | "Fineness of Dispersion of Pigment Vehicle Systems" |
| D 1296 | "Odor Test" |
| D 1210 | "Fineness of Grind" |
| D 522 | "Mandrel Bend Test of Attached Organic Coatings" |
| D 1640 | "Drying, Curing or Film Formation of Organic Coatings at Room Temperature" |

BSI (BRITISH STANDARDS INSTITUTION)

BS 381C "Specification for Colors for Identification Coding and Special Purposes"

IPS (IRANIAN PETROLEUM STANDARDS)

[IPS-E-TP-100](#) "Engineering Standards for Paints"

[IPS-C-TP-101](#) "Construction Standard for Surface Preparation"

SSPC (STEEL STRUCTURES PAINTING COUNCIL) Volume 2

SSPC-PA (Discontinued)"Guide to Safety in Paint Application"

NACE (NATIONAL ASSOCIATION OF CORROSION ENGINEERING)

NACE "Amine Cured Epoxy Resin Coatings for
Publication 6B170 Resistance to Atmospheric Corrosion"

US FEDERAL STANDARD

Federal Test Method "Paint, Varnish, Laquer, and Related Materials"
Standard

Method 3011.1 "Condition in Container"

Method 4061.1 "Drying Time of Coating"

Method 4321 "Brushing Properties"

Method 4331 "Spraying Properties"

3. UNITS

This standard is based on international system of units (SI), as per [IPS-E-GN-100](#) except where otherwise specified.

4. COMPOSITION

4.1 The paint shall be furnished in two components. Component A shall consist of bisphenol-A epichlorohydrine resin combined with pigments and suitable solvent. Component B shall consist of suitable polyamine properly combined with volatile solvents and act as the curing agent for Component A.

Components A and B shall be packaged separately and furnished in kit form (see 6.3) and when mixed and applied in accordance with the manufacturer's instructions a product meeting the requirements of this Standard specification shall result. The ingredients used in the manufacture of these products shall be best commercially available.

4.2 Percentage

The total solids for the admixed components of this paint shall not be less than 35% by volume when tested in accordance with ASTM D 2697.

5. PROPERTIES

5.1 Requirements

The mixed paint in the ratio recommended by the manufacturer shall meet the requirements of Subclauses 5.2 through 5.9.

5.2 Odor

The odor of the paint material shall not be obnoxious, when tested in accordance with ASTM D1296.

5.3 Color

The color shall be as specified by the Purchaser with reference to Table 1.

5.4 Spraying Properties

The paint shall spray satisfactorily in all respects and shall show no running, sagging, or streaking and the dried film shall show no dusting, mottling, or color separation and shall present a smooth lusterless finish free from seediness when sprayed on a steel panel to a dry film thickness between 25 and 28 microns and tested in accordance with Methods 4331 of US Federal Standard No. 141.

5.5 Flexibility

Determine flexibility in accordance with ASTM D 522. Draw down a film of the mixed paint shall not be cracking or flaking when subjected to the flexibility.

5.6 Drying Time

The drying time of paint shall meet the purchaser requirements when tested in accordance with Method 4061.1 of US Federal Standard No. 141 or ASTM D 1640.

5.7 Fineness of Grind

The fineness of grind of the mixed paint shall not be more than 15 micron, for the colors paint. The tests shall be made 1 hour after mixing, in accordance with ASTM D 1210.

TABLE 1 - COLOR CODE

| PAINT COLOR | COLOR No. TO BS 381 C | COLOR No. RAL (APPROX) |
|-----------------|--------------------------|---------------------------|
| Arctic blue | 112 | 5024 |
| Sea green | 217 | 6017 |
| Brilliant green | 221 | 6002 |
| Canary yellow | 309 | 1018 |
| Light straw | --- | 1000 |
| Middle brown | 411 | 8007 |
| Signal red | 537 | 3020 |
| Light orange | 557 | 2000 |
| Light gray | 631 | 7033 |
| White | --- | 1000 |

5.8 Adhesion

Adhesion test shall be according to ASTM D 4541 and minimum acceptance criteria is 280/000 kg/m² or 3 Mp_a.

6. STORAGE LIFE AND PACKAGING

6.1 Storage Life

The product shall meet the requirements of Clause 5 after storage of at least 12 months from the date of delivery, in a full tightly covered container at standard condition.

6.2 Condition in Container

The paint (both components A and B) as received shall show no evidence of livering, skinning, or hard settling of pigments. The material shall be easily mixed in liquid portion by hand stirring to form a smooth, homogeneous paint free from persistent foam when tested in accordance with Method 3011.1 of US Federal Standard No. 141, after storing for 12 months from the date of delivery.

6.3 Packaging

The epoxy paint shall be supplied in a kit, packaged as a unit consisting of pigmented compound marked "Component A" and the unpigmented (or clear) hardner marked "Component B". The packaging shall meet the relevant requirement of ASTM D 3951 unless otherwise specified by the Purchaser.

6.4 Packing

Packing shall be accomplished in a manner which will insure acceptance by common carrier, at lowest rate, and will afford protection against physical or mechanical damage during shipment.

6.5 Marking

Shipment marking information, in addition to the labeling required (see 8.2) shall be provided on interior package and exterior shipping containers.

7. INSPECTION

7.1 All materials supplied under this Standard specification shall be subject to timely inspection by the Purchaser or his authorized representative. The Purchaser shall have the right to reject any material(s) supplied which is (are) found to be defective under this Standard specification. In case of dispute, the arbitration or settlement procedure, established in the procurement documents shall be followed.

7.2 The supplier and/or manufacturer shall be responsible for the performance and costs for all laboratory test requirements as specified in this Standard specification.

7.3 The supplier shall place free of charge at the disposal of the Purchaser's inspector(s) all means necessary for carrying out their inspection, specification results or tests, checking of conformity of materials with this Standard specification, checking of marking and packing and temporary acceptance of materials.

7.4 The Supplier and/or Manufacturer shall furnish the Purchaser with a certified copy of results of tests made by the manufacturer covering physical and performance characteristics of each batch (1) of product to be supplied under this Standard specification. The supplier shall furnish, or allow the purchaser to collect samples of the material representative of each batch of product. Certified test reports and samples (1) furnished by the supplier or collected by the purchaser shall be properly identified with each lot (1) of product.

7.5 Prior to acceptance of the supplier's material, samples of material submitted by the supplier or collected by the purchaser will be tested in the wittiness of the purchaser inspector. If any sample is found not to conform to this Standard specification, material represented by such sample will be rejected.

7.6 The number of samples for testing shall consist of 10 percent of the lot or batch (1), but in no case shall be less than one or more than 10 containers. The results of the tests on two specimens (top and bottom) shall be averaged for each test specified in this Standard specification to determine conformance with the specified requirements.

7.7 A lot or bach shall consist of an indefinite number of containers offered for acceptance and filled with a homogeneous mixture of material from one isolated container, or filled with a homogeneous

mixture of material manufactured by a single plant run (not exceeding 24 hours) through the same processing equipment, with no change in ingredient material.

8. LABELING

8.1 Refer to ANSI Standard Z 129.1 precautionary labeling of Hazardous Industrial Chemicals.

8.2 Marking of Containers

Each container kit (contains Components A and B) shall be legibly marked with the following information:

Name: Two Pack Amine Cured Epoxy Resin Paint

Specification: [IPS-M-TP-250](#)

MESC. No.:

Flash Point °C:

Stock No.:

Date of manufacture:

Quantity of paint in container:

Kind of thinner:

Maximum temperature resistance:

Type of spray:

Kind and size of spray nozzle tip:

Shelf Life:

Pot life (hours):

Lot or batch number:

Additional Sticker:

Manufacturer name and address:

Design guide:

MSDS:

INSPECTON DATE:

For guidance on the usage of this paint for various application/environment and temperature range, reference shall be made to [IPS-E-TP-100](#).

8.3 Direction for Use

In addition to the manufacturer's instructions for use, consisting complete instructions covering uses, surface cleanliness, mixing, thinning, application method, application condition, pot life, wet and dry film thickness per coat, temperature and humidity limitation, drying time, etc., with each kit, the following directions shall also be supplied with each container of paint: "The surface of substrates shall be prepared in accordance with [IPS-C-TP-101](#) before applying the primer".

Apply by or spray to the specified film thickness or, if none is specified, to at least 125 (5 mils) microns D.F.T.

The surface to be painted shall be dry and the surface temperature shall be at least 3°C above the dew point.

8.4 Direction for Safety

In addition to the manufacturer's instructions for safety, the following directions shall also be supplied with each container of paint.

- This paint is hazardous because of its flammability and potential toxicity. Proper safety precautions shall be observed to protect against these recognized hazards. Safe handling practices are required and should include but not be limited to, the provisions of SSPC-PA Guide 3, "A Guide to Safety in Paint Application" and to the following.
- Keep paint away from heat, sparks, and open flame during storage, mixing, and application. Provide sufficient ventilation to maintain vapor concentration at less than 25% of the lower explosive limit.
- Avoid prolonged or repeated breathing of vapors or spray mists, and prevent contact of the paint with the eyes or skin.
- Clean hands thoroughly after handling paint and before eating & smoking.
- Provide sufficient ventilation to insure that vapor concentration do not exceed the published permissible exposure limits. When necessary, supply appropriate personal protective equipment and enforce its use.
- This paint may not comply with some air pollution regulation because of its hydrocarbon solvent content.