

MATERIAL AND EQUIPMENT STANDARD

FOR

FAST DRYING SYNTHETIC PRIMER

FOR

USE WITH HOT APPLIED COAL TAR OR BITUMEN

(ASPHALT) ENAMEL

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1. SCOPE

This standard specification covers the minimum requirements for the composition, properties, storage life and packaging, inspection and labeling of fast drying synthetic primer for use with hot applied coal tar and bitumen (asphalt) enamels.

2. REFERENCES

Throughout this Standard the following standards and codes are referred to. The editions of these standards and codes that are in effect at the time of publication of this Standard shall, to the extent specified herein, form a part of this Standard. The applicability of changes in standards and codes that occur after the date of this Standard shall be mutually agreed upon by the Company and the Vendor:

ANSI (AMERICAN NATIONAL STANDARDS INSTITUTE)

- ANSI Z129.1 "Precautionary Labeling of Hazardous Industrial Chemicals"
- ANSI/AWWAC 203 "Coal-Tar Protective Coatings and Linings for Teel Water Pipelines-Enamel and Tape-Hot-Applied"

ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)

- D 1296 "Odors of Volatile Solvent and Diluents"

BSI (BRITISH STANDARDS INSTITUTION)

- BS 2000 Part 170 "Flash Point by the Abel Apparatus (Non Statutory Method)"
- BS 3900 Part A6 (1986) "Determination of Flow Time by Use of Flow Cups"
- BS 4147 "Specification for Bitumen-based Hot Applied Coating Materials for Protecting Iron and Steel Including Suitable Primers Where Required"
- BS 4164 "Specification for Coal-Tar-Based Hot Applied Coating Materials for Protecting Iron and Steel Including a Suitable Primer"

IPS (IRANIAN PETROLEUM STANDARDS)

- E-TP-100 "Engineering Standard for Paints (Not applicable for Procurement)"
- M-TP-290 "Coal Tar Enamel (Hot Applied)"
- M-TP-295 "Bitumen Enamel (Hot applied)"

MIL (MILITARY STANDARD SPECIFICATION)

- MIL-C-429 "Chlorinated Paraffin, Technical"

SSPC (STEEL STRUCTURES PAINTING COUNCIL (VOLUME 2))

- SSPC Paint 17 "Chlorinated Rubber Inhibitive Primer"
- SSPC-PA Guide 3 "A Guide to Safety in Paint Application"

FS (US FEDERAL STANDARDS)

Federal Method Standard No. 141	"Paint, Varnish, Laquer, and Related Materials"
Method 3011	"Condition in Container"
Method 4203	"Reducibility and Dilution Stability"

3. UNITS

This Standard is based on International system of units (SI), except where otherwise specified.

4. COMPOSITION

The synthetic primer for cold application shall consist of chlorinated rubber and plasticizer and coloring matter, together with solvents needed to give a consistency suitable for application by spray, brush or other approved method.

The chlorinated rubber shall contain approximately 66% by weight chlorine. The viscosity (based on a solution of 20% by weight concentration in toluene at 20°C) shall fall in the range of 9 to 14 centipoise, when measured according to ASTM Standard D 445. Up to 50% by weight of the amount of chlorinated rubber could be of the viscosity range of 17 to 25 centipoises.

The plasticizer shall be a chlorinated plasticizer according to MIL-C-429 type 1.

Alternative plasticizers can be used, provided they are compatible, high quality, and chemically resistant.

5. PROPERTIES

5.1 The primer shall comply with the requirements of table 1, and when dry, shall provide an effective bond between the metal and the subsequent coating, in accordance with the appropriate performance requirements given in Tables 2 and 3. The primer shall also meet the requirements of subclauses 5.2 through 5.5.

5.2 Odor

The odor shall be normal for the materials permitted (ASTM Standard D 1296).

5.3 Color

The color shall be black.

5.4 Compatibility

There shall be no evidence of incompatibility of any of the ingredients of the primer when one volume of primer is slowly mixed with one volume of xylene (US Federal Standard No. 141, method 4203).

5.5 Working Properties

The primer shall be easily applied by all three methods (Brush, spray, roller) when tested in accordance with US Federal Standard No. 141, methods 4321, 4331 and 4541. The primer shall show no streaking, running or sagging after drying.

TABLE 1 - PROPERTIES

CHARACTERISTICS	REQUIREMENTS		TEST METHOD
	Min.	Max.	
Flow time (4 mm flow cup) at 23°C seconds	35	60	BS 3900 Part A6
Flash point (abel closed cup)°C	23	—	BS 2000 Part 170
Volatile matter (105°C to 110°C) loss by mass	—	75%	BS 4164 Appendix A

**TABLE 2 - PERFORMANCE REQUIREMENTS OF PRIMER IN CONJUNCTION
WITH COAL TAR ENAMEL (IPS-M-TP-290)**

TEST	GRADE 105/15	GRADE 105/8	GRADE 120/5	METHOD	
				AWWA	BS 4164
SAG. maximum, mm 70°C 24h 80°C 24h	1.5 —	1.5 —	— 1.5	AWWA C203	Appendix G
Low temperature cracking and disbonding -30°C -25°C -20°C	None — —	— None —	— — —	AWWA C203	Appendix H
Bend at 0°C first crack, minimum, mm initial After heating Disbonded area, maximum, mm initial After heating	20 15 2000 3000	15 10 3000 5000	— — — —	—	Appendix J
Impact disbonded area, maximum mm 0°C 25°C	15000 —	— 1000	— —	AWWA C203	Appendix K
Peel, initial and delayed, maximum, mm 30°C 40°C 50°C 60°C 70°C	3.0 3.0 3.0 — —	— 3.0 3.0 3.0 —	— — — 3.0 3.0		Appendix L
Cathodic disbonding in 28 days maximum, mm	5	5	5	—	Appendix M

TABLE 3 - PERFORMANCE REQUIREMENTS OF PRIMER IN CONJUNCTION WITH BITUMEN ENAMEL (IPS-M-TP-295)

TEST	GRADE A	GRADE B	GRADE C	METHOD
				BS 4147
SAG. max., mm. 60°C, 24 h 75°C, 24 h	1.5 —	— 1.5	— 1.5	Appendix E
Bend at 0°C min., mm.	20	15	10	Appendix F
Impact disbonded area, max., mm ² 0°C 25°C	10000 —	15000 —	— 6500	Appendix G
Peel, initial and delayed, max, mm. 30°C 40°C 50°C 60°C	3.0 3.0 3.0 3.0	3.0 3.0 3.0 3.0	— 3.0 3.0 3.0	Appendix H

6. STORAGE LIFE AND PACKAGING

6.1 Storage Life

The product shall show no thickening, curdling, gelling or hard caking when tested as specified in us federal standard No. 141 method 3011 and shall meet the requirements of Clause 5 after storage of at least 24 months from the date of delivery in a full tightly covered container at normal temperature.

6.2 Packaging

The primer shall be packaged in new steel drums containing not more than 200 liters

7. INSPECTION

7.1 All materials supplied under this 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 specification. In case of dispute, the arbitration or settlement procedure, established in the procurement documents shall be followed:

7.2 Samples of any or all ingredients used in the manufacture of this primer may be requested by the purchaser and shall be supplied upon request, along with the supplier’s name and identification for the material.

7.3 Unless otherwise specified, the methods of sampling and testing should be in accordance with US Federal Test Method Standard No. 141, or applicable methods of the American Society for Testing and Materials (ASTM).

8. LABELING

8.1 Labeling Standard

Refer to ANSI Standard Z 129.1 "Precautionary Labeling of Hazardous Industrial Chemicals".

8.2 Marking of Containers

Each container shall be legibly marked with the following information Name: Fast Dring Synthetic Primer for use with hot applied coal tar or bitumen enamel

- Specification: IPS-M-TP-275
 - MESC No.
 - Maximum temperature resistance
 - Type of spray
 - Kind and size of spray nozzle tip
 - Cleaning material
 - Flash point °C
 - Drying time for overcoating
 - Kind of thinner
 - Color: Black
 - Lot Number
 - Stock Number
 - Date of Manufacture
 - Quantity of primer in Container
 - Information and Warnings, (if needed)
 - Manufacturer's Name and Address
- Design Guide: For guidance on the usage of this primer for various application, reference shall be made to IPS-E-TP-100**

8.3 Direction for Use

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

This primer is intended for use as a prime coat on structural steel. The surface of steel shall be prepared in accordance with IPS-C-TP-101 before applying the primer.

This primer is intended to be followed by hot applied coal tar or bitumen enamel conforming to IPS-M-TP-290 or IPS-M-TP-295. Mix primer thoroughly before use.

Apply by brush or spray to the specified film thickness or, if none is specified, to at least 40 microns dry or approximately 125 microns wet. When application is by spraying, the equipment and operating technique should be properly adjusted to prevent dry spray and to deposit a wet film of primer on the substrate. Clean the equipment with xylene or the reducing thinner both before and after use.

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

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

- This primer 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 primer 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 primer and before eating or smoking.
- Provide sufficient ventilation to insure that vapor concentrations do not exceed the published permissible exposure limits. When necessary, supply appropriate personal protective equipment and enforce its use.
- This primer may not comply with some air pollution regulations because of its hydrocarbon solvent content.