

MATERIAL AND EQUIPMENT STANDARD**FOR****COLORED ALKYD PAINT FOR TOP COAT****(FINISH)****EXCEPT WHITE****ORIGINAL EDITION****MAY 1993**

This standard specification is reviewed and updated by the relevant technical committee on Aug. 1998(1) and May 2014(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 is based on internationally acceptable standards and includes 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 documents.

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 which is generated from SSPC-paint 104 covers the minimum requirements for the composition, analysis, properties, storage life, packaging, inspection and labeling of alkyd paint for top coat (finish).

Note 1:

This standard specification is reviewed and updated by the relevant technical committee on Aug. 1998. The approved modifications by T.C. were sent to IPS users as amendment No. 1 by circular No. 64 on Aug. 1998. 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 May 2014. The approved modifications by T.C. were sent to IPS users as amendment No. 2 by circular No. 420 on May 2014. 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.

SSPC (STEEL STRUCTURES PAINTING COUNCIL)

SSPC-PA Guide 3	"A Guide to Safety in Paint Application"
SSPC 104	"White or Tinted Alkyd Paint"

ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)**(Specifications for Ingredients)****(Specifications for Packaging)**

D3951	"Standard Practice for Commercial Packaging"
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(Test Methods for Properties)

D185	"Coarse Particles in Pigments"
D523	"Specular Gloss"
D562	"Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer"
D1208	"Common Properties of Certain Pigments"
D1210	"Fineness of Dispersion of Pigment-Vehicle Systems by Hegman-Type Gage"
D1296	"Odors of Volatile Solvents and Diluents"

D2369	"Volatile Content of Coatings"
D 2371	"Pigment Contract of Solvent-Reducible Paints"
D2801	"Leveling Characteristics of Paints by Draw Down Method"
D3278	"Flash Point of Liquids by Small Scale Closed-Cup Apparatus"

UFS (US FEDERAL STANDARDS)**(Standard Specifications for Ingredients)****(US Federal Test Method Standard No. 141)**

Method 3011	"Condition in Container"
Method 3021	"Skinning (Partially Filled Container)"
Method 4053	"Nonvolatile Vehicle Content"
Method 4061	"Drying Time"
Method 4203	"Reducibility and Dilution Stability"
Method 4321	"Brushing Properties"
Method 4331	"Spraying Properties"
Method 4494	"Sage Test (Multinotch Blade)"
Method 4541(Canceled)	"Working Properties and Appearance of Dried Film"
Method 6221	"Flexibility"

ANSI (AMERICAN NATIONAL STANDARDS INSTITUTE)

ANSI Z400.1/Z129.1	"Safety Data Sheet and Hazard Evaluation and Precautionary Labeling Preparation"
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BSI (BRITISH STANDARDS INSTITUTION)

BS 381 C	"Colors for Identification, Coding and Special Purposes"
BS 5493	"Code of Practice for Protective Coating of Iron and Steel Structures Against Corrosion"

IPS (IRANIAN PETROLEUM STANDARDS)

IPS-E-GN-100	"Engineering Standard for Units"
IPS-E-TP-100	"Engineering Standard for Paints"
IPS-M-TP-125	"Material and Equipment Standard for White Alkyd Paint for Top Coat (Finish)"

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 Ingredients and Proportions

Ingredients and proportions shall be as specified in Table 1.

The paint based on the specified ingredients shall be uniform, stable in storage, and free from grit and coarse particles no rosin or rosin derivatives may be used. Beneficial additives such as anti-skinning agents, suspending agents, or wetting aids may be added. Type II covers Medium to Light Gray to Tan Paint; Type III covers Light Green Paint; and Type IV covers a Dark or Forest Green Paint. The shades are variable and are to be agreed upon between the purchaser and the supplier.

4.2 Percentage

This paint shall contain approximately 45% by volume of nonvolatile film forming solids (pigment and binder).

TABLE 1 – COMPOSITION

INGREDIENTS	Type I	TYPICAL COMPOSITION			INGREDIENT STANDARDS	
		Type II	Type III	Type IV	ASTM	FEDERAL
PIGMENT: (± 2.5 wt. %)	See to IPS-M-TP-125	(42.4)	(44.8)	(21.5)	---	---
Titanium Dioxide (Min.)		30.0	30.0	---	D 476	---
Reinforcing and Tinting Pigments (Max.)		70.0	70.0	10.0	D 602 D 605	---
Chrome Green		---	---	90.0	D 212	---
TOTALS		100.0	100.0	100.0		
VEHICLE: (± 2.5 wt. %)		(57.6)	(55.2)	(78.5)		
Alkyd Resin Solids		50.1	50.9	56.0	---	TT-R-266
Mineral Spirit Thinner		49.9	49.1	44.0	D 235	---
Driers		---	---	---	D 600, Class B	---
TOTALS		100.0	100.0	100.0		

5. ANALYSIS

5.1 The paint shall conform to the composition (analysis) requirement of Table 2.

TABLE 2 – ANALYSIS

CHARACTERISTICS	REQUIREMENTS				ASTM	FED-STD-141
	Type I	Type II	Type III	Type IV		
Pigment (Min.)	See to IPS-M-TP-125	39.9	42.3	19.0	D 2371	4021
Volatiles (Max.)		30.0	29.0	36.0	D 2369	—
Nonvolatile vehicle (Min.) calculated by difference		27.5	26.5	42.5	—	4053
Uncombined water (Max.)		1.0	1.0	1.0	D 1208	—
Coarse particles and skins, as retained onstandard 325 mesh screen (Max.)		1.0	1.0	1.0	D 185	—
Rosin or rosin derivatives		0	0	0	D 1541	—

6. PROPERTIES**6.1 Requirements**

The paint shall meet the requirements of Table 3 and Sections 6.2 through 6.8.

6.2 Odor

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

6.3 Color

The color shall be agreed upon by the parties concerned.

6.4 Compatibility

There shall be no evidence of incompatibility of any of the ingredients of the paint when two volumes of the paint are slowly mixed with one volume of mineral spirits (US Federal Standard No. 141, Method 4203).

6.5 Skinning

There shall be no skinning in a three quarters filled closed container after 48 hours when tested in the standard manner specified in US Federal Standard No. 141, Methods 3021.

6.6 Working Properties

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

6.7 Flexibility

The film prepared as described in US Federal Standard No. 141, Method 6221, after baking 24 hours at 93°C, shall show no cracking when suddenly chilled to 0°C and quickly bent sharply on itself through 180° over a 3 mm mandrel.

The film on the bent part of the panel shall show satisfactory adhesion.

6.8 Gloss

The gloss shall be no lower than eggshell (ASTM Standard D 523).

TABLE 3 – PROPERTIES

CHARACTERISTICS	REQUIREMENTS				ASTM	FED-STD-141
	Type I	Type II	Type III	Type IV		
Viscosity ¹ shear rate 200 rpm	See to IPS-M-TP-125	65	65	65	D 562	—
Kreb units (Min.)		85	85	85	D 562	—
Kreb units (Max.)						
Weight per U.S. gallon, pounds (Min.)		10.7 (1.29 kg/L)	11.2 (1.35 kg/L)	9.0 (1.08 kg/L)	D 1475	—
Fineness of grind, Hegman units		6	6	6	D 1210	—
Drying time, hours						
Dry hard (Max.)		18	18	18	—	4061
Flash point, °F (Min.)		86 (30°C)	86 (30°C)	86 (30°C)	D3278	—
Sag Resistance, mils (Min.) ²		6	6	6		4494

¹ Viscosity 48 hours or more after manufacture.

² 6 mils = 150 micrometers

7. STORAGE LIFE AND PACKAGING

7.1 Condition in Container

The paint shall show no thickening, curding, gelling, or hard caking when tested as specified in US Federal Standard No. 141, Method 3011, after storage for 24 months from the date of delivery, unless otherwise specified by company in a full, tightly covered container.

7.2 Packaging

The packaging shall meet the relevant requirement of ASTM D3951 (88).

8. INSPECTION

8.1 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.

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

8.3 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).

9. LABELING

9.1 Labeling Standard

Labeling shall be in accordance with ANSI Standard Z129.1 "Precautionary Labeling of Hazardous Industrial Chemicals."

9.2 Marking of Containers

Each container shall be legibly marked with the following information:

Name: Colored Alkyd Paint for Top Coat (Finish) Except White

Specification: [IPS-M-TP-130](#)

MESC No. :

No. of component

Maximum temperature resistance

Type of spray

Kind and size of spray nozzle tip

Cleaning material

Flash point °C.....

Pot life (hours)

Drying time for overcoating

Kind of thinner

Color: (Paint color).....

Lot Number:

Stock Number:

Storage temp:.....

Date of Manufacture:

Quantity of Paint in Container:

Inspection date:.....

Information and Warnings if needed

Manufacturer's Name and Address:

Design Guide: For guidance on the usage of this Paint for Various application/environments and temperature range, reference shall be made to [IPS-E-TP-100](#) "Paints".

9.3 Directions for Use

The following directions for use shall be supplied with each container of paint:

Directions for use of Alkyd Paint

This paint is intended for use as top coat (finish) over rust inhibitive primers on structural steel, over intermediate paint, over itself, or over other oleoresinous paint. All oil, grease, dust, and loose or nonadherent paint shall be removed, as residues of oil and grease

remaining on the surface will result in decreased paint performance. If the undercoat is damaged, the steel shall be spot cleaned and spot primed with rust inhibitive primer.

Mix paint thoroughly before use. If the pigment has settled, pour off most of the liquid. Thoroughly mix the pigment with the remaining liquid, taking care to scrape all the pigment off the bottom of the can. Gradually add the poured off liquid into a clean container and mix thoroughly. Mixing may be made easier by transferring contents to a larger container or by pouring the paint to and from another container. Examine bottom of container for unmixed pigment. Screen paint before applying.

Thin paint if necessary, using only mineral spirits. For brush application under normal conditions, no thinning should be necessary. For spray applications, add up to one liter of thinner per eight liters of paint when necessary.

Apply by brush or spray to the specified film thickness or if none is specified, to at least 38 microns dry or approximately 75 microns wet. The surface to be painted shall be dry; the surface temperature shall be at least 3°C above the dew point; and the temperature of the air shall be over 4°C. Do not paint outdoors in rainy weather or if freezing temperatures are expected before the paint dries.

Allow paint at least 18 hours drying time in good weather before recoating.

9.4 Direction for Safety

The following directions for safety shall be supplied with each container of paint:

Paints are hazardous because of their 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 paints 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 paints 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 paint may not comply with some air pollution regulations because of its hydrocarbon solvent content.

Ingredients in this paint which may pose a hazard include hydrocarbon solvent, and lead-drier. Applicable regulations governing safe handling practices shall apply to the use of this paint.