

SSPC: The Society for Protective Coatings

PAINT SPECIFICATION NO. 11

Red Iron Oxide, Zinc Chromate, Raw Linseed Oil and Alkyd Primer*

1. Scope

1.1 This specification covers a slow drying red iron oxide, zinc chromate, raw linseed oil and alkyd primer for steel. It has excellent rust inhibitive characteristics, good wetting ability, about 24 hours drying time, and good resistance to weathering for normal periods before field coating.

1.2 This primer is suitable for exposures in Environmental Zones 1A (interior, normally dry) and 1B (exterior, normally dry), and is intended for brush or spray application over steel surfaces prepared in accordance with SSPC-SP 2, "Hand Tool Cleaning." The performance will be improved by a better degree of surface preparation. It is suitable as a shop primer, field primer, maintenance primer, or intermediate coat and is to be applied in accordance with SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel." If the primed part of the structure is to be exposed to the weather, it should be topcoated as soon as practical.

2. Description

2.1 The good wetting ability of this primer is the result of its high proportion of raw linseed oil. Details of the composition are given in Table 1.

2.2 This primer contains approximately 70% by volume of nonvolatile film-forming solids (pigment and binder). The theoretical spreading rate for a 2.0 mil (51 micrometers) dry film thickness is 560 square feet/U.S. gallon (13.8 square meters/liter). Actual spreading rates can be significantly lower.

3. Reference Standards

3.1 The standards referenced in this specification are listed in Sections 3.4 through 3.7 and form a part of this specification.

3.2 The latest issue, revision, or amendment of the referenced standards in effect on the date of invitation to bid shall govern unless otherwise specified.

3.3 If there is a conflict between the requirements of any of the cited reference standards and this specification, the requirements of this specification shall prevail.

3.4 SSPC STANDARDS:

PA 1	Shop, Field, and Maintenance Painting of Steel
SP 2	Hand Tool Cleaning

3.5 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS:

D 185	Test Methods for Coarse Particles in Pigments, Pastes, and Paints
D 234	Specification for Raw Linseed Oil
D 235	Specification for Mineral Spirits (Petroleum Spirits) (Hydrocarbon Dry Cleaning Solvent)
D 478	Specification for Zinc Yellow (Zinc Chromate) Pigments
D 562	Test Method for Consistency of Paints Using the Stormer Viscometer
D 600	Specification for Liquid Paint Driers
D 605	Specification for Magnesium Silicate Pigment (Talc)
D 1208	Test Methods for Common Properties of Certain Pigments
D 1210	Test Methods for Fineness of Dispersion of Pigment-Vehicle Systems
D 1296	Test Method for Odor of Volatile Solvents and Diluents
D 1475	Test Method for Density of Paint, Varnish, Lacquer, and Related Products
D 1542	Test Method for Qualitative Detection of Rosin in Varnishes
D 2369	Test Method for Volatile Content of Coatings
D 2371	Test Method for Pigment Content of Solvent-Reducible Paints
D 3278	Test Methods for Flash Point of Liquids by Setaflash Closed-Cup Apparatus
D 3722	Specification for Natural Red and Brown Iron Oxide Pigments
D 3925	Practice for Sampling Liquid Paints and Related Pigmented Coatings

3.6 FEDERAL STANDARDS:

TT-R-266	Resin, Alkyd: Solutions
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FED-STD-141: Paint, Varnish, Lacquer and Related Materials: Methods of Inspection, Sampling and Testing

Method 3011	Condition in Container
Method 3021	Skinning (Partially Filled Container)
Method 4021	Pigment Content (Ordinary Centrifuge)
Method 4053	Nonvolatile Vehicle Content
Method 4061	Drying Time

3.7 AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) STANDARD:

Z129.1	Hazardous Industrial Chemicals— Precautionary Labeling
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4. Composition

4.1 Ingredients and proportions shall be as specified in Table 1.

4.2 The primer based on the specified ingredient 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.

4.3 The paint shall conform to the composition (analysis) requirements of Table 2.

5. Properties

5.1 The paint shall meet the requirements of Table 3 and Sections 5.2 through 5.7.

5.2 ODOR: Shall be normal for the materials permitted (ASTM D 1296).

5.3 COLOR: The color shall be typical of the specified mixture of zinc yellow and red iron oxide.

5.4 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 (FED-STD-141, Method 4023).

5.5 WORKING PROPERTIES: The paint shall be easily applied by all three methods when tested in accordance with FED-STD-141, Methods 4321, 4331, and 4541. The paint shall show no streaking, running, or sagging after drying.

5.6 CONDITION IN CONTAINER: The paint shall show no thickening, curdling, gelling, or hard caking when tested as specified in FED-STD-141, Method 3011, after storage for six months from date of delivery, in a full, tightly covered container, at a temperature of 50-110°F (10-43°C).

**TABLE 1
COMPOSITION**

INGREDIENTS	REQUIRED		TYPICAL COMPOSITION		INGREDIENT STANDARDS	
	Min. Wt. %	Max. Wt. %	Wt.%	Vol.%	ASTM	Federal
PIGMENT: (50 ± 2 wt. %)						
Red Iron Oxide (85% Fe ₂ O ₃)	40	—	20.0	6.8	D 3722*	—
Magnesium Silicate	—	20	10.0	5.5	D 605	—
Zinc Chromate	40	—	20.0	8.5	D 478 Type I	—
VEHICLE: (50 ± 2 wt. %)						
Raw Linseed Oil	33	—	16.5	27.0	D 234	—
Alkyd Resin Solids	33	—	16.5	23.5	—	TT-R-266, Type II
Mineral Spirit Thinner	—	34	17.0	17.0	D 235	—
Driers	—	—	—	—	D 600 Class B	—
TOTALS		100.0	100.0			

* The Red Iron Oxide (Natural) shall also comply with the following:

Water Solubles	0.3% Max.
Coarse Particles on 325 Mesh Sieve	0.1% Max.
Moisture and Other Volatile Matter	0.2% Max.
Organic Matter	None