

SSPC: The Society for Protective Coatings

PAINT SPECIFICATION NO. 25

Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel Type I and Type II

1. Scope

1.1 This specification covers a slow drying French process zinc oxide, raw linseed oil and alkyd primer suitable for use over hand-cleaned steel.

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, roller or spray application over steel surfaces prepared in accordance with SSPC-SP 2, "Hand Tool Cleaning," or better. (See Note 9.6.) Within the limitation stated in 2.1 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 This specification contains requirements to ensure barrier inhibition composition. Consequently, performance is comparable to that customarily expected from paints containing lead and chromate pigments.

It has good wetting ability, even for non-blast cleaned steel, about 36 hours drying time (generally it can be recoated after 24 hours, although the coating will not have achieved a through dry) and good resistance to weathering before field coating. The good wetting ability of this primer is the result of its high proportion of raw linseed oil. Type II has a lower percentage of volatile organic compounds (VOC) than Type I. The reduced VOC content of Type II was achieved by replacing some of the mineral spirits with high flash naphtha and by making other minor composition changes. Details of the compositions are given in Table 1 for Type I and in Table 2 for Type II.

2.2 The Type I primer contains approximately 65% by volume of nonvolatile film forming solids (pigment and binder). The theoretical spreading rate for a 50 micrometer (2.0 mil) dry film thickness is 12.8 m²/L (520 ft²/U.S. gallon). Actual spreading rates can be significantly lower. On a calculated basis, the VOC is 270 g/L (2.3 lb/gal).

2.3 The Type II primer contains approximately 70% by volume of nonvolatile film forming solids (pigment and binder). The theoretical spreading rate for a 50 micrometer (2.0 mil) dry film thickness is 13.8 m²/L (560 ft²/U.S. gallon). Actual spreading rates can be significantly lower. On a calculated basis, the VOC content is 240 g/L (2.0 lbs/gal).

3. Referenced Standards

3.1 The latest issue, revision, or amendment of the referenced standards in effect on the date of invitation to bid shall govern, unless otherwise specified. Standards marked with an asterisk (*) are referenced only in the Notes, which are not requirements of this specification.

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

3.3 SSPC STANDARDS AND JOINT STANDARDS:

Guide 13	Guide for the Identification and Use of Industrial Coating Material in Computerized Product Databases
*Guide 7	Guide for the Disposal of Lead-Contaminated Surface Preparation Debris
PA 1	Shop, Field, and Maintenance Painting of Steel
SP 2	Hand Tool Cleaning
*SP 3	Power Tool Cleaning
*SP 5/NACE No. 1	White Metal Blast Cleaning
*SP 6/NACE No. 3	Commercial Blast Cleaning
*SP 7/NACE No. 4	Brush-Off Blast Cleaning
SP 8	Pickling
*SP 10/NACE No. 2	Near-White Metal Blast Cleaning
*SP 11	Power Tool Cleaning to Bare Metal
*SP 12/NACE No. 5	Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating
*SP 15	Commercial Grade Power Tool Cleaning

3.6 ASTM INTERNATIONAL STANDARDS:

D 79	Specification for Zinc Oxide
D 185	Test Method 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 522	Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings
D 562	Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-type Viscometer



Documents

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D 600	Specification for Liquid Paint Driers	D 3278	Test Methods for Flash Point of Liquids by Small-Scale Closed-Cup Apparatus
D 605	Specification for Magnesium Silicate Pigment (Talc)	D 3722	Specification for Natural Red and Brown Iron Oxide Pigments
D 607	Specification for Wet Ground Mica Pigments	D 3724	Specification for Synthetic Brown Iron Oxide Pigment
D 1208	Test Methods for Common Properties of Certain Pigments	D 3734	Specification for High-Flash Aromatic Naphthas
D 1210	Test Methods for Fineness of Dispersion of Pigment-Vehicle Systems by Hegman-type Gage	D 3925	Practice for Sampling Liquid Paints and Related Pigmented Coatings
D 1296	Test Method for Odors of Volatile Solvents and Diluents	D 3951	Practice for Commercial Packaging
D 1475	Test Method for Density of Liquid Coatings, Inks, and Related Products	D 4400	Test Method for Sag Resistance of Paints Using a Multinotch Applicator
D 1542	(Withdrawn) Test Method for Quantitative Test for Rosin in Varnishes		
D 1640	Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature		
D 2369	Test Method for Volatile Content of Coatings		
D 2371	Test Method for Pigment Content of Solvent-Reducible Paints		
* D 2448	Test Method for Water-Soluble Salts in Pigments by Measuring the Specific Resistance of the Leachate of the Pigment		
D 2832	Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings		

3.7 FEDERAL SPECIFICATIONS AND STANDARDS:

TT-R-266 Resin, Alkyd: Solutions

FED-STD-141 Paint, Varnish, Lacquer and Related Materials: Methods of Inspection, Sampling and Testing

Method 3011	Condition in Container
Method 3021.1	(Canceled) Skinning (Partially Filled Container)
Method 4203	Reducibility and Dilution Stability

TABLE 1
COMPOSITION
SSPC-Paint 25, Type I

INGREDIENTS	Min. Wt. %	Max. Wt. %	Wt. %	Vol. %	ASTM	Federal
PIGMENT ¹ (52.5 ± 2 wt. %)						
Zinc Oxide	15.0	17.08.	8.4	2.2	D 79, Dry Pigment, French Process	
Iron Oxide (85% minimum Fe ₂ O ₃)	39.0	---	21.5	7.9	D 3722/D 3724	---
Magnesium Silicate	---	33.0	17.3	9.1	D 605	---
Mica	10.0	12.0	5.3	2.7	D 607	---
TOTAL PIGMENT			52.5	21.9		
VEHICLE: (47.5 ± 2 wt. %)						
Raw Linseed Oil	30.5	---	14.5	23.2	D 234	---
Alkyd Resin Solids	30.5	---	14.5	19.8	---	TT-R-236, Type I, Class A
						Type II, Class B
Mineral Spirit Thinner	---	39.0	18.5	35.0	D 235	---
Driers	---	---	---	---	D 600, Non-Lead	---
TOTAL VEHICLE:			47.5	78.0		
TOTAL:	100		100	100		

The preblended composite pigment shall comply with the following:

PROPERTY	METHOD	REQUIRED
pH	---	7 to 8
Specific Resistance of Leachate	ASTM D 2448	5000 ohm-cm minimum

¹ see Note 9.3 for supplier of preblended pigment and Note 9.4 for properties of component pigments.