

SSPC: The Society for Protective Coatings

COMMENTARY ON PAINT SPECIFICATIONS

1. Description

Since 1955, the SSPC has issued specifications for coatings that have performed well in actual use on steel structures. When these paint specifications are used in conjunction with the SSPC standards for surface preparation, paint application, and thickness measurement, they provide complete paint systems for most steel structures and environments. Tables 1 and 2 summarize the SSPC paint specifications. Each paint specification contains a scope and a description of the paint. The composition specifications also contain directions for use. Performance specifications provide wide latitude on composition but require minimum performance levels that the coating must meet.

2. Approaches to Procuring Paint

Procurement of paint by specification represents an attempt by the purchaser to exercise a degree of control over the quality of the product. That degree of control may range from tight, as when one of the SSPC paints with composition specification is cited, to virtually nil, as when a minimally descriptive, generic designation is used, e.g., a zinc-rich primer, a shop coat, a urethane. In addition to purchaser control, specifications make competitive procurement practical.

Another approach to the purchase of paint is represented by the naming of a specific proprietary product, the composition of which may be described in a label analysis. Usually, the citation of a proprietary product denotes a high degree of confidence in that product's performance record. It also implies confidence in the manufacturer's reputation for quality and integrity - in other words, in the likelihood that the manufacturer will continue to maintain the quality for which the product has become known.

Unfortunately, in a vain attempt to promote competition, faith in the performance expected of a known proprietary product is often undermined by addition of the bland phrase "or equal." Adding an "or equal" provision to a procurement specification without specifying the criteria that characterize equality of performance is a meaningless exercise.

Composition specifications offer the assurance of a desired measure of quality, but they also have the disadvantage of "locking in" a product to the level of quality or value prevailing during a specific period in the history of an evolving technology. One of the important objectives of SSPC is to focus on the expertise of its highly qualified, voluntary collaborators on critical evaluations of the products of new technology, so that those products may be assimilated into the spectrum of reliable materials with deliberate speed.

While no organization deliberating by consensus can operate at a rapid pace, the background of information generated by a mature organization such as SSPC presents the user with enough choices of time-tested paints, both old and new, to justify deferral of judgment on commercial products that are not as yet backed by documented history of proven performance in the field.

If a paint is procured through a pure composition specification, SSPC-Paint 16 for example, the purchaser knows the physical, chemical, and performance properties of the product. The manufacturer follows the formula to produce the paint.

If paints are not being supplied to a composition specification, the purchaser is entitled, without transgressing into the area of proprietary information, to request a statement of the product's principal composition and performance parameters, such as the following:

- Case histories of field performance
- Performance in standard salt fog, combination cyclic salt fog/UV condensation tests, and condensing cabinet tests
- Non-volatile content by weight and volume
- Volatile organic compound (VOC) content
- Viscosity range at a specified temperature
- Viscosity reduction resulting from specification dilution ratios with thinners
- Spreading rate for complete hiding
- Specific resistance properties where resistance to unusual chemical exposures is required
- Special or unusual drying time requirements
- Suitability for one or another type of application, such as brushing, airless spray, etc.
- Lightfastness rating of the color pigments
- Chalk resistance and gloss retention rating (for top-coats) under specified conditions of test at named exposure locations for indicated periods of time

While not all of these criteria may be important in specific circumstances, they are indicative of the kind of questions that any discriminating purchaser is entitled to ask any manufacturer who is supplying paint for exterior exposure. If purchasers believe that there are no specification paints available that exactly fit requirements, or if they feel that they would like to have a better paint than can be obtained from among the available specification paints, they may engage qualified professional consultants to secure informed and objective guidance.

3. Current SSPC Specification Trends

3.1 COMPOSITION AND PERFORMANCE: In many of the current SSPC specifications, an attempt is made to



TABLE 1
SSPC PAINTS

PRIMER	DESCRIPTION	PIGMENT	APPROX. Wt. % PIGMENT	VEHICLE SOLIDS	APPROX. SET TO TOUCH (h)	DRY THROUGH (h)	MINIMUM SURFACE PREP. RECOMMENDED	% VOLUME SOLIDS
SSPC- Paint 8	A vinyl-aluminum primer; may be used over bare steel, or wash primer, or over other vinyls. Suitable for very severe neutral exposures and immersion.	Aluminum 100%	6.7	Vinyl	0.25	1	Near-white blast or pickling	14
SSPC-Paint 9	Vinyl primer similar to above. Recommended for alkaline or acidic exposure.	Titanium dioxide 95% min., tint 5% max.	12	Vinyl	0.25	0.5	Near-white blast or pickling	17
SSPC-Paint 15	Fast-drying shop paints for temporary protection of steel joists; performance based.	Not specified	—	Not Specified	—	—	Hand cleaning	—
SSPC-Paint 16	Two-component coal tar epoxy self-priming paint for water immersion, chemical, and underground.	Magnesium silicate or iron oxide	31	Coal tar pitch and polyamide and epoxy resins	—	—	Commercial blast	75
SSPC- Paint 17	Chlorinated rubber inhibitive primer for non-submerged surfaces and most submerged surfaces.	Rust inhibitor 65%, extender 35%	29-49	Chlorinated rubber 66%, chlorinated plasticizer 34%	0.25	1	Commercial blast	32
SSPC- Paint 18	Chlorinated rubber intermediate paint (or topcoat) in white or tints.	Titanium dioxide 75%*, magnesium silicate 15%, mica 10%	16-30	Chlorinated rubber 75%, chlorinated plasticizer 25%	0.25	1	Commercial blast	35
SSPC- Paint 19	Chlorinated rubber topcoat in white or tints.	Various	18-28	Chlorinated rubber 72% chlorinated plasticizer 28%	0.25	1	Commercial blast	35
SSPC-Paint 20 Type I Type II	Inorganic zinc-rich primer Organic zinc-rich primer	Zn Level 1 ≥85% Zn Level 2 77 to 85% Zn Level 3 65 to 77%	Varies	Not Specified	—	—	Commercial blast	—
SSPC-Paint 21 Type I high gloss Type II med. gloss	Highly weather resistant white or colored silicone-alkyd paint suitable for finish coat.	Various	Type I, 11-37 Type II, 29-48	Silicone alkyd	2	8	Commercial blast	60-67
SSPC-Paint 22**	Primer—Two-component polyamide epoxy primer for industrial exposure marine environment and some chemical exposure.	Red iron oxide, magnesium oxide, mica	46	Epoxy/poly-amide 65/35	2	8	Commercial blast	65
	Intermediate—Two-component polyamide epoxy intermediate coat.	Red iron oxide, magnesium oxide, mica	40	Epoxy/poly-amide 65/35	2	8	Commercial blast	65
	Topcoat—Two-component polyamide epoxy topcoat.	Titanium dioxide, chromium oxide, magnesium silicate, mica, lampblack	36	Epoxy/poly-amide 65/35	2	8	Commercial blast	60
SSPC- Paint 23	Air drying latex primer and intermediate coat for blast cleaned steel.	Not Specified	Not Specified	Latex	4	24	Commercial blast	36
SSPC Paint 24	Air drying semi-gloss latex topcoat.	Not Specified	Not Specified	Latex	4	24	Commercial blast	27

TABLE 1 (continued)
SSPC PAINTS

PRIMER	DESCRIPTION	PIGMENT	APPROX. WT. % PIGMENT	VEHICLE SOLIDS	APPROX. SET TO TOUCH (h)	DRY THROUGH (h)	MINIMUM SURFACE PREP. RECOMMENDED	% VOLUME SOLIDS
SSPC-Paint 25	Zinc oxide oil and alkyd primer for hand cleaned steel.	Zinc oxide (French process), red iron oxide, magnesium silicate, mica	Type I, 52 Type II, 54	50/50 raw linseed oil/long oil alkyd	20	36	Hand cleaning	Type I, 65 Type II, 70
Type I Type II	Type II has lower VOC content than Type I.							
SSPC-Paint 25 BCS	Zinc oxide oil and alkyd primer for blast cleaned steel.	Zinc oxide (French process), red iron oxide, magnesium silicate, mica	Type I, 52 Type II, 54	Type I, 34/66 raw linseed oil/alkyd; Type II, 33/67 raw linseed oil/alkyd	6	18	Commercial blast	Type I, 82 Type II, 86
Type I Type II	Type II has lower VOC content than Type I.							
SSPC-Paint 26	Very slow drying black one-coat maintenance primer.	Zinc oxide (French process) 16%, basic lanolate 4%, magnesium silicate 75%, lampblack 5%	54	80/20 raw linseed oil/long oil alkyd	24	168	Hand cleaning	87
SSPC Paint 27***	Wash primer for clean steel free of rust and scale or for clean galvanized metal.	Basic zinc chromate	—	Vinyl butyral	0.5	4	Commercial blast	10
SSPC-Paint 28	Water-borne epoxy primer for steel surfaces.	Not specified	—	—	—	—	—	—
SSPC Paint 29	Zinc dust sacrificial primer, performance-based.	Min. 65% zinc in dry film	—	—	—	—	—	—
SSPC-Paint 30	Weld-through inorganic zinc primer	Zinc dust min. 65% by wt of total solids	—	Water or solvent-reducible, self-curing	—	—	—	—
SSPC- Paint 31	Single-package, water-borne alkyd primer, performance-based.	—	—	Ambient drying, single-package	8	24	—	—
SSPC-Paint 32	Coal-tar emulsion coating.	—	—	—	—	—	—	40
SSPC-Paint 33	Coal-tar mastic, cold applied.	—	—	—	—	—	—	70
SSPC-Paint 34	Water-borne epoxy topcoat.	Not specified	—	—	—	—	—	—
SSPC-Paint 35	Zinc oxide and medium oil alkyd primer for blast cleaned steel (air dry or low bake).	Zinc oxide (French process), red iron oxide, magnesium silicate, mica	Type I, 41 Type II, 55	Medium oil alkyd	7 (air dry)	18 (air dry) 0.75 (bake)	Commercial blast	Type I, 37 Type II, 66
Type I Type II	Type II has lower VOC content than Type I.							
SPPC- Paint 36	Two-component weatherable aliphatic polyurethane topcoat, performance-based	—	—	Min. 17% polyisocyanate by wt.	—	—	—	—
SSPC-Paint 37	Water-borne epoxy coating for cementitious substrates, performance based	—	—	Epoxy resin with curing agent min. 40% by weight of total solids	—	—	concrete	—
SSPC-Paint 38	Single-component moisture-cure weatherable aliphatic polyurethane topcoat, performance-based	—	—	Polyisocyanate product that cures through a reaction with atmospheric moisture	—	—	—	—
SSPC-Paint 39	Two-component aliphatic polyurea topcoat, fast or moderate drying, performance-based	—	—	Hindered, non-hindered, or hybrid aliphatic polyurea	30 min to 2 h	—	—	—

*These pigment compositions are from a control formula.

**These pigments listed are for use in reference (or control) paint. A lead- and chromate-free pigment may be used provided it meets performance requirements.

***These paints include chromate-containing pigments. Users are urged to follow all health, safety, and environmental requirements in applying, handling, or disposing of these materials.

Note: Alkyd and vinyl topcoats are summarized in Table 2.