# Powder Coating JSP-04-06

**1.0 Scope.** This specification covers a powder coating finish for metallic components.

**2.0 Basis of Acceptance.** Basis of acceptance of the powder coated components will be based on a manufacturer's certification, including certified test results for all performance requirements, submitted by the contractor and upon results of any tests performed by the engineer. The contractor shall repair any areas damaged during the testing process by a written method of repair recommended by the powder coating manufacturer. All repairs shall be subject to the engineer’s approval.

**3.0 Material.**

**3.1 Color.** The finished powder coating shall be in the color specified in the contract.

**3.2 Powder Coating Type.** The powder coating shall be a urethane or triglycidyl isocyanate (TGIC) polyester resin type.

**3.3 Galvanizing.** When galvanizing is specified, all surfaces of the component shall be galvanized prior to powder coating in accordance with ASTM A 123. Components shall not be water or chromate quenched prior to powder coating.

**3.3.1** **Testing of Galvanizing.** The procedure for determining the mass of coating shall be in accordance with ASTM A 90. This method shall be used in cases where the area of the test specimen can be accurately tested. On specimens shaped so that the area cannot be calculated, the mass of coating shall be determined with a magnetic gauge in accordance with ASTM E 376. The powder coating shall be removed by solvent removal or other any other method that does not affect the zinc coating.

**4.0 Workmanship.**

**4.1 Fabrication.** After fabrication of the component, all welds, bolted connections, holes, cut ends, etc. shall be free of slag, burrs or other imperfections that would affect the overall appearance or performance of the finished product.

**4.2 Finish of Galvanized Components.** When galvanizing is required prior to powder coating, all galvanized surfaces shall be in accordance with the Finish and Appearance requirements of ASTM A 123 prior to application of the powder coating. Prior to powder coating, all surfaces shall be free of uncoated areas, blisters, flux deposits, gross dross inclusions, lumps, globules, runs, drips and sags. Zinc high spots, such as metal drip line, and other rough areas shall be removed by cleaning with hand or power tools as described in SSPC Surface Preparation Specification 2 or 3. The zinc shall be removed until the zinc is level with the surrounding area, taking care that the base coating is not removed by the cleaning methods. The final galvanized surface shall be an applicable substrate to ensure proper adhesion of the powder coating. After removal of high spots and other rough areas, the coated surface shall be inspected to verify the required zinc coating thickness is in accordance with ASTM A 123 utilizing a magnetic field type thickness instrument in accordance with ASTM E 376. Any component that does not comply with the zinc coating thickness requirement before or after removal of high spots or rough areas shall be repaired in accordance with ASTM A 780.

**4.3 Finish of Powder Coating.**  The powder coated surface shall be smooth, free of thin spots, pinholes, blemishes, and other coating imperfections.

**5.0 Powder Coating Application.** The powder coating shall be applied in accordance with all requirements of the supplier of the powder coating material. When powder coating is to be applied over galvanized surfaces, the powder coating application shall also be in accordance with the requirements supplied by the galvanizer. This shall include storage and pre-treatment of the component prior to application of the powder coating. If there is a conflict in application method between the powder coating supplier and the galvanizer, the powder coater shall resolve the conflict prior to application of any powder coating.

**6.0 Performance Requirements.**  The finished components shall be delivered to the project site with no damage to the powder coating. The contractor shall repair any damaged areas in accordance with the requirements of the powder coating manufacturer at the engineer’s discretion. Damage to the powder coating may be cause for rejection.The powder coating of the finished components shall be in accordance with the following requirements:

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| **Item** | **Test Method** | **Requirement** |
| Salt Spray Corrosion, 500 hrs, single scribe | ASTM B 117 | Creepage shall not exceed ¼” in either direction from scribe |
| Cross Hatch Adhesion, min | ASTM D 3359 | 5A and 5B |
| Pencil Hardness, Gouge, min | ASTM D 3363 | F  |
| Pencil Hardness, Scratch, min | ASTM D 3363 | F |
| Coating Thickness, mils, min a | ASTM E 376 | 3.0  |
| Gloss, 60°, min | ASTM D 523  | 20  |
| Chemical Resistance b | ASTM D 1308 | Coating shall show only a slight circular mark |

a For components with an underlying non-magnetic coating over steel, the powder coating thickness will be the difference in thickness measurements with and without the powder coating.

b The open spot test shall be performed with 5 drops 95% toluene/5% MEK for 30 s.