

**DESCRIPTION**

This powder coating type is designed for optimum performance in harsh environments, such as automotive exhaust and other high temperature applications. It has superior heat and corrosion resistance and has been tested to the specifications of automotive and other equipment manufacturers. This product meets or exceeds standard of performance for exhaust and muffler coatings.

**Product Benefits**

- Heat resistance in excess of 1100 °F (593°C)
- Continuous testing for 48 hours at 800°F indicates these products hold gloss, color and physical integrity at this service temperature.
- Testing for 168 hours at 1000°F indicates good performance up to 24 hours; some appearance change at exposure times above 24 hours and with exposure to higher temperatures.
- Tested very well on salt spray resistance testing – no blistering or rusting from scribe after 120 hours.
- Passed a full battery of corrosion performance tests for automotive applications.

**SPECIFICATIONS**

Cure cycle [Substrate temperature]	20 minutes at 450°F (20 minutes at 232°C) 30 minutes at 210°C (30 minutes at 410°F)
Specific Gravity	2.09 +/- 0.05
Theoretical coverage 1 mil	94 ft <sup>2</sup> per pound
Film builds between	1.2 and 2.9 mils
Recommended at	2 mils

**Heavier film builds are not recommended.**

**SURFACE PREPARATION**

High temperature coatings require cleaner substrates to maintain a good bond between metal and coating. Abrasive media blast is an excellent method of surface preparation. Chemical pretreatments are effective, but must be rinsed to a clean surface with no dirt or cleaner residue. **Phosphate pretreatments have their own temperature limits that must be observed.** Contact your chemical pretreatment supplier. Also substrates have limits that must be observed.

**APPLICATION**

This material is designed primarily for electrostatic powder spray application to room temperature substrate with a voltage of approximately 30 - 40 KeV. In order to prevent excessive film builds and to limit the potential problem of the "Faraday Cage Effect," reduced voltages can improve coating film thickness uniformity. Excessive film builds can lead to bubbling and blistering of the cured film. Because of the electrostatic properties of this powder a box gun is not suitable. The air supply line should be equipped with traps to remove water and oil. Drain and service these traps frequently.

**PERFORMANCE TESTING**

<b>Cured Powder at Ambient Air Temp (70°F)</b>	
Salt Spray [ASTM B 117/D 1654]	240+hrs
Humidity [ASTM D 2247]	240+hrs
Adhesion [ASTM D 3359]	5B
Pencil Hardness [ASTM D 3363]	>3H
Int. Gloss @ 60° [ASTM D 523]	15
<b>Heat Resistance</b>	
Crosshatch Adhesion [ASTM D 3359] 24hrs @ 1100°F (Steel) [RES 178800]	5B
Thermal Shock / Quench [RES 178801] Heat to 800°F for 1hr, 3hrs, and 4hrs Then quench after each heat cycle Test for adhesion [ASTM d 3359]	5B
Cyclic Temperature Test [RES 175062] -40°F to 70°F to 1hr 675°F to 70°F -40°F to 70°F to 1hr 750°F to 70°F -40°F to 70°F to 1hr 800°F to 70°F -40°F to 70°F to 1hr 935°F to 70°F Test for adhesion [ASTM d 3359]	5B 5B 5B 5B
<b>Post Heat Resistance Salt Fog</b>	
Heat for 24hrs at 775°F Salt Spray Test [ASTM B 117/D 1654]	<1mm at >500 hrs.

**STORAGE**

This product should be stored at temperatures below 77°F (25°C) for up to 6 months. Under carefully controlled conditions, shelf life may be extended.

**PRECAUTIONS**

Read and understand the MSDS before using. This product is more susceptible to moisture contamination and heat exposure than other powder products. Because of the electrostatic properties of this powder a fluidized hopper is required and box feeders are not recommended.

**LIMITATIONS**

The technical data and suggestions for use in this product data sheet are currently correct to the best of our knowledge, but are subject to change without notice. Because application and conditions vary, and are beyond our control, we are not responsible for results obtained in using this product, even when used as suggested. The user should conduct tests to determine the suitability of the product for the intended use. Our liability for breach of warranty, strict liability in tort, negligence or otherwise is limited exclusively to replacement of the product or refund of its price. Under no circumstance are we liable for incidental and consequential damages.

<b>Cured Powder Coating at Ambient Air Temp</b>			
<b>TEST DESCRIPTION</b>	<b>TEST METHOD</b>	<b>SPECIFICATION</b>	<b>RESULTS</b>
Salt Spray undercut test	ASTM B117/D1654 / JDQ115	<3mm after 240 hrs.	1mm after 240+ hrs.
Humidity Blister Resistance	ASTM D2247 / JDQ120	<3mm after 240 hrs.	NA after 240+ hrs.
Crosshatch Tape Adhesion	ASTM D3359 / JDQ 17	5B	5B
Pencil Hardness	ASTM D3363 / JDQ 11	2H	>3H
Int. Gloss at 60° reflect	ASTM D523 / JDQ 12B	12 – 18	15
Int. Color	ASTM D1729 / JDQ 14	Black	Black
<b>Heat Resistance for Cured Powder RES 178800</b>			
<b>TEST DESCRIPTION</b>	<b>TEST METHOD</b>	<b>SPECIFICATION</b>	<b>RESULTS</b>
Crosshatch Tape Adhesion After 72hrs. @ 1100°F (a)	ASTM D3359 / JDQ 17	>B	4B (b) pass
Crosshatch Tape Adhesion After 24hrs. @ 1000°F (a) (c)	ASTM D3359 / JDQ 17	>B	5B (d) pass
<b>Thermal Shock Resistance for Cured Powder RES 178801</b>			
<b>TEST DESCRIPTION</b>	<b>TEST METHOD</b>	<b>SPECIFICATION</b>	<b>RESULTS</b>
Crosshatch Tape Adhesion After 1hr 800°F and Quench	ASTM D3359 / JDQ 17	>B	5B (b) pass
Crosshatch Tape Adhesion After 3hrs 800°F and Quench	ASTM D3359 / JDQ 17	>B	5B (b) pass
Crosshatch Tape Adhesion After 4hrs 800°F and Quench	ASTM D3359 / JDQ 17	>B	5B (b) pass
<b>Cyclic Temperature Test for Cured Powder RES 175062</b>			
<b>TEST DESCRIPTION</b>	<b>TEST METHOD</b>	<b>SPECIFICATION</b>	<b>RESULTS</b>
Crosshatch Tape Adhesion 1hr @ -40°F then warm to 70°F, then 1hr @ 675°F and cool to 70°F before test (a)	ASTM D3359 / JDQ 17	>B	5B (b) pass
Crosshatch Tape Adhesion 1hr @ -40°F then warm to 70°F, then 1hr @ 750°F and cool to 70°F before test (a)	ASTM D3359 / JDQ 17	>B	5B (b) pass
Crosshatch Tape Adhesion 1hr @ -40°F then warm to 70°F, then 1hr @ 800°F and cool to 70°F before test (a)	ASTM D3359 / JDQ 17	>B	5B (b) pass
Crosshatch Tape Adhesion 1hr @ -40°F then warm to 70°F, then 1hr @ 935°F and cool to 70°F before test (a)	ASTM D3359 / JDQ 17	>B	5B (b) pass
<b>Post Heat Resistance</b>			
<b>Salt Spray Resistance RES 178802</b>			
<b>TEST DESCRIPTION</b>	<b>TEST METHOD</b>	<b>SPECIFICATION</b>	<b>RESULTS</b>
Salt Spray undercut test (a) (c) After 24hrs @ 775°F	ASTM B117/D1654 / JDQ115	<3mm creep after 48 hrs.	<1mm after 500+ hrs.
<b>Salt Spray Resistance INTERNAL</b>			
Salt Spray undercut test (a) (c) After 24hrs @ 1000°F	ASTM B117/D1654 / JDQ115	<3mm creep after 48 hrs.	<1mm after 1,000+ hrs.
<b>Color Stability RES 178805</b>			
Color stability against standard	Color Difference CIE LAB DE	DE < 15	DE < 10

NOTES: (a) Bead Blast Hot Rolled Steel (b) JD Quality Class 4 (c) Bead Blast Cold Rolled Steel (d) JD Quality Class 3