

CERAKOTE™ DUAL STAGE CLEAR PERFORMANCE RESULTS

Material: Sample A. Untreated Aluminum with dual-stage clear coat, MC 156.
 Sample B. Chrome-treated Aluminum with dual-stage clear coat, MC 156.
 Date: 8/12/11

Test Summary:

Various quality control tests were performed to determine the capabilities of a dual-stage clear coat on untreated and chrome treated aluminum. In order to determine the performance, NIC Industries, Inc, tested aluminum panels coated with the dual-stage clear coats. The panels were coated, and then cured in accordance with application guide specifications. Following the cure cycle, the panels underwent adhesion, impact, mar resistance, pencil hardness, solvent resistance, salt spray, humidity, water immersion, thermal shock and CASS testing.

Test Results:

The untreated aluminum with dual-stage clear coat panels were designated as Sample A, while the chrome-treated aluminum with dual-stage clear coat panels were designated as Sample B. The average film thickness for Experiment A was 2.7-2.8 mils (with the exception of the CASS test, which used 1.8-2.2 mils). The average film thickness for Experiment B was 2.5-2.6 mils. The results for Experiments A and B with respect to each quality control test are in Figure 1 below.

Sample Tested	Test	Specification Number	Test Method/Parameters	Test Results	Tech Sign/Date
A B	Initial Adhesion	ASTM D3359	Adhesion Cross Cut Method. No loss of adhesion.	A: 100% Pass B: 100% Pass	P.F.O. 7/25/2011
A B	Impact: Direct/Indirect	ASTM D2794	Amount of in-lbs able to withstand without flaking, chipping off.	A: 60 in-lbs/20 in-lbs B: 60 in-lbs/20 in-lbs	P.F.O. 8/11/2011
A B	Mar Resistance	Chrysler Specification 463PB-43-01	Thumbnail Scratch No Marring	A: 100% Pass B: 100% Pass	P.F.O. 8/11/2011
A B	Pencil Hardness	ASTM D3363	Pencil Strength that will not cut through to substrate for 3 mm.	A: 6H B: 6H	P.F.O. 7/25/2011
A B	Solvent Resistance	Chrysler Specification 463PB-07-01	Rub 8 times with Xylene. No loss of gloss. No change.	A: 100% Pass B: 100% Pass	P.F.O. 8/11/2011
A B	Salt Spray	ASTM B117	Apply 5% salt spray till panels are rusted.	A: 1000+ hrs B: 1000+ hrs	P.F.O. 7/25/2011
A B	Humidity	ASTM D1735-02	100°F RH 100% for 240 hours. No loss of adhesion. No change.	Testing Currently in Progress	-
A B	Water Immersion	Chrysler Specification 463PB-45-01	Immerse in room temperature water for 720 hours. No loss of adhesion, no discoloration.	A: 100% Pass B: 100% Pass	P.F.O. 7/25/2011
A B	Thermal Shock	GM9525P	100°F for 3 hrs. \ Freeze for 3hrs.min. \ Steam blast 30 sec. No loss of adhesion. No change.	A: 100% Pass B: 100% Pass	P.F.O. 7/25/2011
A	CASS (Copper-Accelerated Acetic Acid-Salt Spray)	ASTM B368	Apply 5% sodium chloride with one gram of copper chloride dehydrate per 3.8 liters of solution spray against scribed panel. Corrosion Creep is measured.	A: 168 hours - 0.5 mm max creep at scribe. 336 hours - 1.5 mm max creep at scribe No field blisters at both times. B: Not Tested	P.F.O. 7/25/2011

Figure 1. Results of Quality Control Tests on Dual-stage Clear Coats.