



KARUMEL EX4511 is a epoxy/polyester resin based thermosetting powder coatings including conductive raw material. It has excellent antistatic and chemical resistance.

Recommended use	- As a antistatic coating for use on electric components, interior materials etc.
	- Preventing the disaster (fire, explosion), the dust-contamination by electrostatic.
	- Not recommended for exterior

Physical Properties

Finish and Color	Colors and patterns are available on request						
Specific gravity	AIR PYCNOMETER METHOD 1.3~1.7 according to color						
Spreading rate (Theoretical)	60μm dry film thickness 9.3 ~ 12.2 m ² /kg						
measurements of electronic resistance	1. POINT TO POINT RESISTANCE 1) Place electrodes on any two spots of the coating plate. 2) Set up the proper voltage(500volt) and plug in the earth line & the measure line to the measurement equipment. 3) Connect two lines with electrodes on the plate 4) Place the electrode connected with measure line on any four different spots on the plate without moving the earth line and check each impedance. Then, make the average of four values. The distance between two electrodes should be at least 10CM. 5) Make the average of impedance of earth line by following the same way shown no. 4) 6) Measurement at least twice is required to gain the final result. 2. Equipment Specifications 1) Electrode : Diameter : 6.5CM, Weight: 2.3±0.05kg(SPECIFICATION:ESD S4.1-1997) 2) TESTER:HIOKI社 3453 Digital MΩ Hitester 3) Condition of Voltage : 500 volt						
Evaluation methods and results of electrification	In general, electrification property of painting shall be evaluated as measure of electrical resistance. • Measurement method . 1) Point-to-point resistance(500 Volt, 1M Ohms) Value of electrical resistance between to electrodes in any two points on the surface of flooring. 2) Resistance to ground Electrical resistance is measured between floor surface and an electrode placed on ground. • Evaluation of results : Value of surface electrical resistance display 10⁴~10¹⁰ ohms.						
FILM PROPERTIES	The data are typical for EX4511 applied to Cold Rolled Steel panels(thickness 0.7mm) pretreated with zinc phosphate, coated with a thickness of 60μm, and cured at 180℃ (356°F) for 14 minutes. Typical values for glossy white color powder coating. <table><tr><td>Property</td><td>Test Method</td><td>Test Description</td><td>Result</td></tr></table>			Property	Test Method	Test Description	Result
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Adhesion	ASTM D3359	Cross-cut 100/100, 1mm tester	100/100
Gloss	ASTM D523	Gloss meter (60°)	Above. 5~90%
Hardness	ASTM D3363	MITSUBISHI UNI Pencil	F
Impact	ASTM D2793	Dupont Impact Tester(1/2"Φ)	500g/50cm
Bending	ASTM D552	6mm Mandrel at 180°	No crack

*Salt spray resistance according to substrate and surface treatment.

Application details

Surface preparation	-The surface must be clean and free from rust, dust, oil, grease and other contamination. Types of pre-treatment are recommended as follows: *Steel : Iron Phosphate, Zinc Phosphate *Aluminum : Chromate		
Drying time	The following theoretical curing schedules are recommended to achieve the best performance properties.		
	Temperature		Cure Time
	180°C (356°F) Gloss Semi-Gloss, Flat-gloss		14 minutes(M.P.T)
	*The cure time may have deviations influenced by various factors.		
	*M.P.T means metal peak temperature.		

Storage and package

Shelf life	12 months at 25℃ with relative humidity 65% sealed state (77°F) cool and dry place (Cooler temperature and lower humidity are recommended)
Packing Unit	20 kg

Remarks

Note	Remarks - Do not mix with any other type of powder to avoid the reduction of gloss and defect of physical properties. - The mixing ratio of reclaim powder with virgin powder should be less than 30% and should be well sieved prior to being mixed. Notice - Separation of metallic and mica pigments can take place from the powder during application. - The information is believed to be accurate without any obligation to KCC Corporation. - Refer to Material Safety Data Sheet for complete hazard and safety information. - All data are based on laboratory testing and practical experience. - Contact KCC sales representative for further information.
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Revision	

Disclaimer : The information in this data sheet is believed to the best of our knowledge based on laboratory test and practical experience. However, there are many factors affecting the performance of product and the product quality itself, so we are not able to guarantee without the confirmation of the purpose of using the product from us in writing. We reserve the right to change the data without notice and you should check that this data sheet is current prior to using the product.

