Guard Insulate

PRODUCT DESCRIPTION

Guard Insulate is a series of insulating powder coatings specially designed to meet stringent requirements of EV battery and energy storage industries. It provides safe and reliable solution with electrical insulation resistance, voltage resistance, heat resistance, chemical resistance and moisture resistance properties.

The product is also tested in accordance to UL 94 requirements for flame retardant properties.

Application areas

Typical application areas:
Battery packs
Busbar
Cooling system
Fixed rotor
Capacitor
Structural parts
Other equipment parts with insulation requirements

POWDER PROPERTIES

Property	Standard	Result
Specific gravity	Calculated	Typically 1.6 ± 0.2 g/cm^3

Storage

Keep in a dry cool area. Maximum temperature 25 °C. Maximum relative humidity 60 %. If stored longer than 6 months a quality test must be performed.

APPLICATION

Pretreatment

The overall performance of the coating system is largely dependent on the nature of the substrate and the type and quality of the pretreatment. For optimal results, it is recommended to follow the pretreatment supplier's instructions and recommendations.

Powder application

Curing schedule	Object temperature	Time
Guard Insulate	200 °C	10 minutes

Other curing schedules can be created upon technical approval.

Recommended film thickness (µm): 150-200

Equipment

This Technical Data Sheet supersedes those previously issued.

The Technical Data Sheet (TDS) is recommended to be read in conjunction with the Safety Data Sheet (SDS) and the Application Guide (AG) for this product. For your nearest local Jotun office, please visit our website at www.jotun.com

Suitable for Corona or Tribo charging equipment.

APPEARANCE

Colour The product is available in a wide assortment of custom-made colours, including RAL and NCS.

Gloss ISO 2813 (60°) 60-100

Finish Smooth

If the significant surface is too small or unsuitable for the gloss to be measured with the glossmeter, the gloss should be compared visually with the reference sample (from the same viewing angle).

Other gloss levels are available upon technical approval.

PERFORMANCE

The technical data provided below are typical for this product when applied as follows:

Substrate Chrome-free aluminum panels

Film thickness (µm) 150-200

Typical values when tested.

Property	Standard	Result
Adhesion	ISO 2409 GB/T 9286	Cross-cut adhesion rating Gt0
Film hardness	ASTM D 3363 Gauge test (modified) GB/T 6739 Modified	≥HB (No damage of film)
Dielectric strength	IEC 60243-1 GB/T 1408.1	> 40 KV/mm
Impact resistance	GB/T 1732	≥5J direct impact No cracking Impact position meet the requirements of insulation and voltage resistance after test.
Surface resistivity	IEC 62631-3-2	$>10^{14}$ ρs (Ω/sq)
Volume resistivity	IEC 62631-3-1	$>10^{15}$ ρv (Ω·cm)
Insulation resistance	Internal Method (DC 1000V, 60s)	>9000 MΩ
Voltage resistance	Internal Method (DC 3800V, 60s)	Leakage current <0.05 mA
Insulation after abrasion resistance	ISO 7784-2 ASTM D4060 GB/T 1768 (loading 1KG, CS-17, 45/min, 3000 cycles)	Meet the requirements of insulation and voltage resistance after abrasion test
Cyclic temperature and humidity test	GB 38031 (55 °C, 6 cycles)	No blistering, no cracking, no peeling off and no loss of adhesion.. Meet the requirements of insulation and voltage resistance after test.
High temperature resistance	ISO 3248 GB/T 1735 (130 °C, 1000 Hrs)	No blistering, no cracking, no peeling off and no loss of adhesion. Meet the requirements of insulation and voltage resistance after test.

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Cyclic temperature test	ISO 6469-1 Modified GB 38031 Modified (-40°C~85°C, 1000 cycles)	No blistering, no cracking, no peeling off and no loss of adhesion. Meet the requirements of insulation and voltage resistance after test.
Acid and Alkaline resistance	ISO 2812-1 GB/T 9274 (5% HCl-2Hrs & 5% NaOH-2 Hrs)	No blistering, no wrinkling, no cracking, no peeling off and no loss of adhesion. Meet the requirements of insulation and voltage resistance after test.
Water resistance	ISO 2812-2 GB/T 1733 (25°C, 168Hrs)	No blistering, no cracking, no peeling off and no loss of adhesion. Meet the requirements of insulation and voltage resistance after test.
Flame retardancy	UL 94	Rating V-0
Prohibited substances	RoHS ELV REACH	Meet all requirements
Hydrothermal ageing	IEC 60068-2-67 GB/T 2423.50 (85°C and 85% RH for 1000 hours)	No blistering, no cracking, no peeling off and no loss of adhesion.

Sustainability

Powder coating is applied in air-and-powder mix in a strictly controlled factory process using electrostatic gun and a high temperature curing oven to create film. Virtually no VOCs are released in the process compared to traditional liquid paints. Unused or oversprayed powder can be recycled with minimal wastage. In addition, all Jotun Powder Coatings' products do not contain intentionally added lead.

Disclaimer

The information in this document is given to the best of Jotun's knowledge, based on laboratory testing and practical experience. Jotun's products are considered as semi-finished goods and as such, products are often used under conditions beyond Jotun's control. Jotun cannot guarantee anything but the quality of the product itself. Minor product variations may be implemented in order to comply with local requirements. Jotun reserves the right to change the given data without further notice.

Users should always consult Jotun for specific guidance on the general suitability of this product for their needs and specific application practices.

If there is any inconsistency between different language issues of this document, the English (United Kingdom) version will prevail.

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