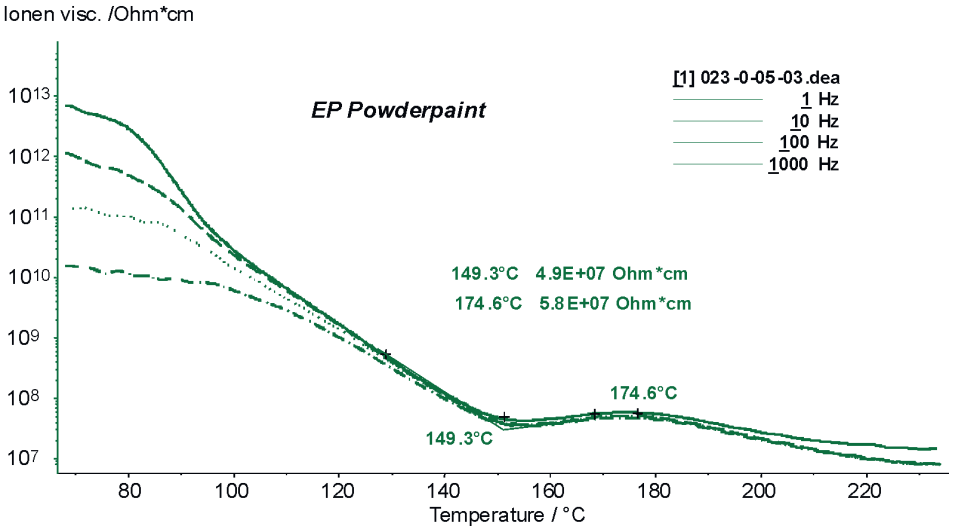
APPLICATION**SHEET**

Polymers · Paints & Coatings
DMA 242 E *Artemis*

Epoxy Powder Coating

Introduction

Powder coatings are dry types of coatings which are applied as free-flowing, dry powders. The main difference between a conventional liquid paint and a powder coating is that the powder coating does not require a solvent to keep the binder and filler parts in a liquid suspension form. The coating is typically applied electrostatically and is then cured under heat to allow it flow and form a "skin". Powders are generally thermoplastics or thermoset polymers. They are usually used to create a hard finish that is tougher than conventional paints. Powder coatings are mainly used for coating of metals, such as "white goods", aluminum extrusions, and automotive and motorcycle parts. The most common polymers used are polyester, epoxy or acrylics. During production, the polymer granule is mixed with hardener, pigments and other powder ingredients. The mixture is heated in an extruder, rolled flat, broken into small chips and then milled to make a fine powder.



Test Conditions

Temperature range:	50 ... 235°C
Heating/cooling rate:	5 K/min
Atmosphere:	Air (static)
Sensor:	IDEX
Frequencies:	1 ... 1000 Hz

Test Results

For the measurement, an IDEX comb sensor was coated with the powder. Then, the setup was placed into the lab furnace and heated. Presented in the figure is the logarithm of the ion viscosity measured during the temperature increase. Up to 149°C, the ion viscosity decreases. The powder coating melts. Generally, the powder paint starts flowing during this temperature range and creates a smooth homogeneous surface coating. Above 149°C, the ion viscosity increases. In this range, crosslinking/curing of the polymer occurs. In the temperature range above 175°C, the powder coating becomes again softer.

NGB · Application Sheet 101 · E · 0621 · Technical specifications are subject to change.

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