

APPLICATION SHEET

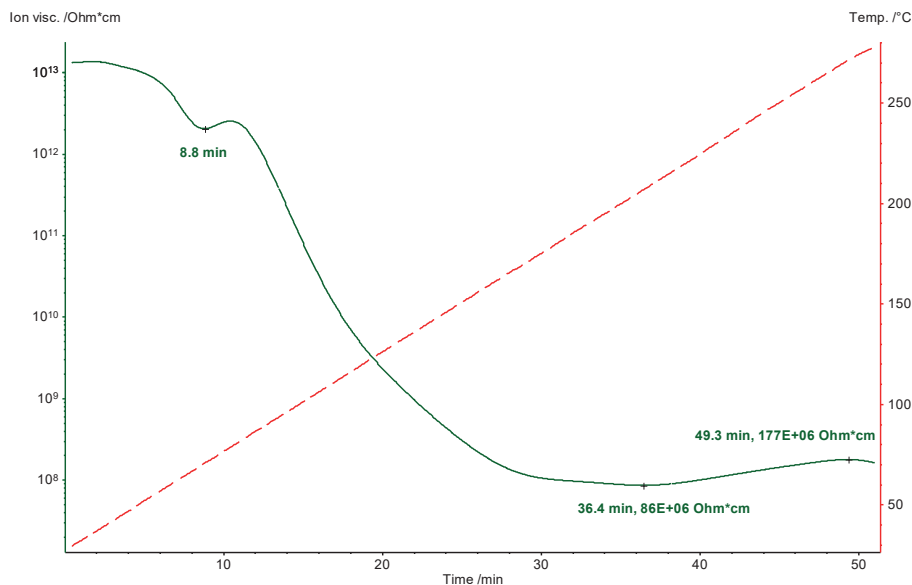
Polymers · Powder & Coatings
DMA 242 Artemis

Powder Coating

Introduction

Powder coatings are dry types of coating which are applied as a free-flowing, dry powder. 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." The powder may be a thermoplastic or thermoset polymer.

It is usually used to create a hard finish that is tougher than conventional paint. 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 granules are 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: 30 ... 280°C
Heating/cooling rates: 10 K/min
Atmosphere: Air (static)
Sensor: IDEX (comb structure and electrode distance of 115 µm)
Frequency: 10 kHz

Test Results

At the beginning of the measurement, the ion viscosity decreased because of softening of the sample due to the temperature increase. The peak at 8.8 min in the ion viscosity curve is caused by the glass transition of the powder coating before curing. After 36 min, the ion viscosity increased indicating curing. The end of curing can be seen from the maximum of the curve (at 49 min).