Technical Data Sheet

EPON™ Resin 1031

Product Description

EPON™ Resin 1031 is a solid, novolac-free multifunctional epoxy resin. It is most frequently used to improve the properties of cured epoxy resin systems particularly at elevated temperatures. It finds applications in electrical laminates, high performance aerospace composites and adhesives, powder coatings, and molding compounds. The use of EPON Resin 1031 in epoxy formulations increases the crosslink density of cured systems and, subsequently, raises the glass transition temperature. At elevated temperatures, such systems have greater strength and rigidity and show improved moisture resistance and retention of electrical properties. EPON Resin 1031 also provides the fluorescence and UV blocking properties often required for printed wiring board applications.

Applications

In part due to its excellent thermal performance and optical properties, EPON Resin 1031 is commonly included in formulations to make laminates for the supportof low and high density electrical circuits. Properly formulated systems using this resin are capable of meeting the demanding dimensional stability and automated optical inspection requirements of multilayer printed circuit boards. Furthermore, the addition of EPON Resin 1031 helps prevent solder mask “print through” for all circuit boards. The low level of ionic impurities in this resin contributes to high electrical resistance. The low saponifiable chloride content helps to improve varnish reactivity consistency and shorten cure time with selected curing agents, the latter of which can lead to improved laminate production speeds.

For rigid and multilayer laminate applications, EPON Resin 1031 is often used at a level of 5 to 30% by weight with a brominated epoxy resin. Laminates prepared from prepregs with this level of EPON Resin 1031 modification possess many of the same properties as conventional FR-4 boards, but with a substantial increase in thermal resistance. Glass transition temperatures up to 160 °C (by DSC) can be achieved at the 30 weight percent solids level. No special handling of prepreg by fabricators is typically necessary as pre-preg press conditions are similar to those for conventional FR-4 systems.

EPON Resin 1031 is also used in structural composites and adhesives. High performance products are made for aircraft and aerospace applications where cured resin systems are used for metal-to-metal bonding and structural components. The strong adhesive properties of epoxy resins as well as the retention of other physical properties at higher temperatures are particularly important in these end uses.

The ease of grinding EPON Resin 1031 into uniform particle sizes combined with its low melt viscosity also make it an excellent candidate for use in epoxy resin powder coatings and molding compounds.

Benefits

- An average of greater than three reactive groups per molecule
- Low saponifiable chloride content
- Low ionic contaminants
- Low melt viscosity
- Optical fluorescence
- Strong absorbance of UV light
- Easily ground into uniform particle size
- Good storage stability

Sales Specifications

Property	Value	Unit	Test Method
Epoxide Equivalent Weight	195 - 230	g/eq	ASTM D1652
Viscosity at 25°C	Z – Z5	Gardner	ASTM D1545

Typical Properties

Property	Value	Unit	Test Method
Color[1]	18 - 0	Gardner	ASTM D1544
Melt Viscosity at 150°C	15	P	
Saponifiable Chloride	0.08	% wt.	

[1] 80%wt solution in Methyl Ethyl Ketone (MEK)

General Information

While EPON Resin 1031 is a solid material, inadvertent exposure of EPON Resin 1031 to excessively high temperatures, typically greater than 95 °F (35 °C) for several days, or high humidity conditions can lead to some sintering or blocking of the flaked material. Sintering can be minimized by storing the material in cool, dry conditions. While sintering of EPON Resin 1031 can cause handling difficulties, it does not chemically alter the resin or change the performance benefits.

Safety, Storage & Handling

Please refer to the MSDS for the most current Safety and Handling information.

Please refer to the Hexion web site for Shelf Life and recommended Storage information.

This product is prone to "blocking" or "sintering", i.e., softening of the particles and agglomeration to a semi-solid mass, when stored at slightly elevated temperatures. Blocking does not affect the performance of the resin. This product should be stored in a cool dry place to minimize handling problems due to blocking.

Exposure to these materials should be minimized and avoided, if feasible, through the observance of proper precautions, use of appropriate engineering controls and proper personal protective clothing and equipment, and adherence to proper handling procedures. None of these materials should be used, stored, or transported until the handling precautions and recommendations as stated in the Material Safety Data Sheet (MSDS) for these and all other products being used are understood by all persons who will work with them. Questions and requests for information on Hexion Inc. ("Hexion") products should be directed to your Hexion sales representative, or the nearest Hexion sales office. Information and MSDSs on non-Hexion products should be obtained from the respective manufacturer.

Packaging

Available in bulk and drum quantities.

Contact Information

For product prices, availability, or order placement, please contact customer service:

www.hexion.com/Contacts/

For literature and technical assistance, visit our website atwww.hexion.com