

Technical Data Sheet

Re-issued August 2001

EPIKOTE™ Resin 1163 and 1163-T-60

Product Description

EPIKOTE™ Resin 1163, a highly brominated epoxy resin, is designed for applications requiring a high degree of flammability resistance. It is a solid epoxy resin with a relatively low softening point and will sinter or block at room temperature. EPIKOTE Resin 1163 is commonly handled in solvent for laminating applications, as a hot melt for casting and molding compound applications, or as a blend with liquid epoxy resins for miscellaneous casting, potting, encapsulation and floor topping uses that require processing at ambient or slightly elevated temperatures.

EPIKOTE Resin 1163 is also commercially available as a solution in toluene at 60 weight percent solids, designated as EPIKOTE Resin 1163-T-60.

EPIKOTE Resin 1163 is a reaction product of tetrabromobisphenol A and epichlorohydrin.

Sales Specification

Property	Units	Value	Test Method/Standard
EPIKOTE Resin 1163			
Weight per Epoxide	g/eq	380 – 410	SMS 2026
Color	Pt-Co	200 max. ¹	SMS 2858
EPIKOTE Resin 1163-T-60			
Weight per Epoxide	g/eq	380 – 410	ASTM D1652
Color	Pt-Co	300 max.	ASTM D1209

Typical Properties

Property	Units	Value	Test Method/Standard
EPIKOTE Resin 1163			
Viscosity at 25°C		---	
Bromine Content	% wt.	50	
Solids	% wt.	100	ASTM D1259
Softening Point	°C	64	
Density at 25°C	g/cc	1.84	

Appearance		Off white, coarse powder ²	
EPIKOTE Resin 1163-T-60			
Viscosity at 25°C	cP	10	
Bromine Content	% wt.	50	
Solids	% wt.	59 – 61	ASTM D1259
Softening Point	°C	---	
Density at 25°C	g/cc	1.27	
Appearance		Transparent liquid	

¹80 weight percent solution in methylethylketone.

² EPIKOTE Resin 1163 will sinter or block at room temperature.

Processing/How to use

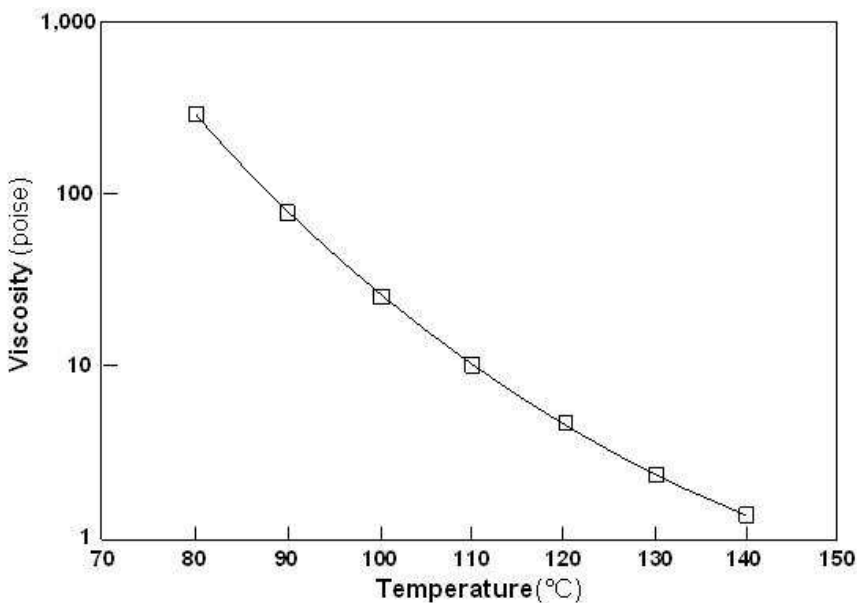
Applications

EPIKOTE Resin 1163 offers an alternative for formulators seeking replacements for tetrabromobisphenol A, octa- and decabromodiphenyl oxides, antimony trioxide, phosphorus compounds, and other flame retardant additives for a variety of applications. EPIKOTE Resin 1163 can be used in laminating, powder coating, or composite applications, to manufacture flame retardant vinyl esters, or as a flame retardant additive for thermoplastic polymers. EPIKOTE Resin 1163-T-60 is widely used as a reactive flame retardant component for phenolic resins used for the manufacture of printed circuit boards conforming to NEMA FR-1 and FR-2 specifications. EPIKOTE Resin 1163-T-60 can also be used for high performance circuit board applications including the epoxy-based FR-4 and FR-5 grades.

Processing

EPIKOTE Resin 1163 is advantaged by its relatively low melt viscosity (see Figure 1), high bromine content, very good compatibility with epoxy resins, and efficient flame retardant performance. In epoxy based resin systems, 10-20 weight percent bromine is generally sufficient to impart the desired level of flammability resistance. Blending EPIKOTE Resin 1163 with bisphenol A-based epoxy resins and/or reactive diluents to reduce the bromine content of the total system is a common practice and such modifications often result in a liquid product. A composition's resistance to flame spread can also be enhanced by adding a synergistic flame retardant such as antimony trioxide or an intumescent agent such as ammonium polyphosphate.

Figure 1 / **Temperature-viscosity relationship of EPIKOTE™ Resin 1163**



Standard epoxy curing agents can be employed with EPIKOTE Resin 1163. While the reactivity of EPIKOTE Resin 1163 varies slightly from that of the liquid bisphenol A-based epoxy resins, cure schedules commonly employed with conventional epoxy systems are suggested as a starting point.

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.

EPIKOTE Resin 1163 and EPIKOTE Resin 1163-T-60 should be kept in cool, dry conditions in tightly closed containers, preferably in the original packaging. Under these conditions, the products should have a storage life of at least one year. While EPIKOTE Resin 1163 is prone to “blocking” or sintering (i.e., softening of the particles and agglomeration to a semisolid mass) at or above room temperature, blocking does not affect the performance of the resin. To minimize blocking, the solid material should be stored at temperatures below 60 °F.

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 at: www.hexion.com

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PDS-4038- (Rev.7/15/2015 11:17:38 AM)