

D.E.R. 331

Liquid Epoxy Resin

Description

D.E.R.* 331* liquid epoxy resin is a reaction product of epichlorohydrin and bisphenol-A.

Introduction

D.E.R. 331 epoxy resin is a general purpose, widely used liquid epoxy resin. It is recognized as a standard from which many variations have been developed. A wide variety of curing agents is available to cure liquid epoxy resins at ambient conditions. The most frequently used are aliphatic polyamines, polyamides, amidoamines, cycloaliphatic amines and modified versions of these curing agents. These systems are sometimes cured at an elevated temperature to improve selected properties such as chemical resistance and glass transition temperature. Elevated temperature cures are necessary and long post-cures are required to develop full end properties if anhydride or catalytic curing agents are employed.

Typical Applications

This product is suitable for use in applications such as:

- Adhesives
- Casting and Tooling
- Civil Engineering
- Composites
- Automotive Coatings
- Can Coating
- Coil Coating
- Marine & Protective Coatings
- Photocure Industrial Coatings
- Potting and Encapsulation

Safety and Handling

The Dow Chemical Company provides its customers with a product specific Material Safety Data Sheet (MSDS) to cover potential health effects, safe handling, storage, use and disposal information. Dow strongly encourages its customers to review the MSDS on its products and other materials prior to their use. For further

Typical Properties¹

Epoxy Equivalent Weight, (g/eq)	182 - 192	ASTM D-1652
Percentage Epoxide, (%)	22.4 - 23.6	ASTM D-1652
Epoxide group Content, (m mol/kg)	5200 - 5500	ASTM D-1652
Viscosity @ 25°C (77°F), (mPa.s)	11000 - 14000	ASTM D-445
Color, Platinum Cobalt	75 Max.	ASTM D-1209
Hydrolyzable Chloride Content, (ppm)	500 Max.	RPM 105-D
Epichlorohydrin Content, (ppm)	5 Max.	RPM 900-A
Water Content, (ppm)	700 Max.	ASTM E-203
Density @ 25°C (77°F), (g/ml)	1.16	ASTM D-4052
Flash point, °C (°F)	252 (486)	ASTM D-93
Non-volatile Content, (wt%)	100	RPM 104B
Shelf Life, (Months)	24	

¹ Typical properties; not to be construed as specifications

handling information consult the Dow brochure entitled, *Dow Epoxy Resins Product Stewardship Manual Safe Handling and Storage*, Form No. 296-00312-898.

Product Stewardship

The Dow Chemical Company has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis of our Product stewardship philosophy by which we assess the health and environmental information on our products and then take the appropriate steps to protect employee and public health and the environment. The Dow Chemical Company has enduring commitments to Responsible Care® in the management of chemicals worldwide. Our Product Stewardship program rests with every individual involved with Dow products from the initial concept and research to the manufacture, sale, distribution, and disposal of each product.

Customer Notice

Dow encourages its customers and potential users of Dow products to review their applications for such products from the standpoint of human health and environmental quality. To help ensure that Dow

products are not used in ways for which they were not intended or tested, Dow personnel are available to assist customers in dealing with ecological and product safety considerations.

Your Dow sales representative can arrange for the proper contacts. Dow literature, including Material Safety Data Sheets should be consulted prior to the use of Dow products.

Food Contact Statement

When properly formulated and cured for food contact applications, this resin will comply with the U.S. Food, Drugs and Cosmetics Act as amended under Food Additive Regulation 21 CFR 175.300. This use is subject to good manufacturing practices and limitations specified in each regulation, which should be consulted for complete details.

If your applications include food contact requirements, please contact your Dow representative for further information and forthcoming EC regulations. Also consult the Dow data sheet, *Food Additive Status for Epoxy Resins, Curing Agents and Epoxy Novolac Resins*, Form No. 296-01425.

Regulatory Status

This epoxy resin is regarded as a polymer according to the 6th Amendment of Council Directive 67/548/EEC and as a substance according to Council Directive 92/32/EEC of 30 April 1992; the 7th Amendment of that same directive. This product has been reported to the EC Commission as a No-Longer Polymer (NLP), is registered under NLP # 500-033-5, and is, therefore, exempt from the European Inventory of Existing Chemical Substances (EINECS). In addition, Dow confirms that the chemicals and intentional additives which form the basis of this product are listed on EINECS. Please be informed that Dow utilizes CAS Reg. Nr. 2508-99-8 (bisphenol-A diglycidyl ether homopolymer) for bisphenol-A based liquid epoxy resins instead of CAS Reg. Nr. 25068-38-6 (bisphenol-A polymer with epichlorohydrin) which is utilized for similar resins in the market place. Both CAS numbers describe epoxy resins produced by the condensation of

Chemical Inventory List

CAS Number*		25085-99-8(25068-38-6)
Europe	EINECS	NLP#500-033-5
United States	TSCA	25085-99-8
Canada	DSL	25085-99-8
Australia	AICS	25085-99-8
Japan	MITI	7-1279
Korea	KECL	KE-24083
Philippines	PICCS	25085-99-8
China	Informal 1997 PRC Inventory	25085-99-8

* Please refer to the Material Safety Data Sheet (MSDS) or SDS for this product to ensure this CAS number is consistent with the product(s) you use.

epichlorohydrin with bisphenol-A.

With respect to China, please note that there is currently no formal Chinese Chemical Inventory legislation in place. The Chinese Authorities are in the process of drafting such legislation. There is in place an "Informal 1997 PRC Chemical Inventory List" and the above mentioned CAS Reg. Nr. is listed on it.

For more information on the regulatory status of this product, please refer to the Material Safety Data Sheet (MSDS) or SDS for this product.

For additional information:

In the U.S. and Canada,
Contact the Customer Information Group at:
1-800-441-4369 or 517-832-1426
Fax: 517-832-1465

In the Pacific,
Contact the Dow Customer Service Center at:
81-120-024394 (toll-free in Japan) or
81-3-5460-2114 (outside Japan)

In Europe, Middle East and Africa,
Contact the Dow Information Center at:
++31-20-6916268
Fax: ++ 31-20-6916418

In Latin America,
Contact the Dow Chemical Service Center at:
In Brazil, call 55 11 51889367
In Mexico, call 95-800-441-4369 (toll-free in Mexico) or
52-5-2014718 (outside Mexico)
In Argentina, call 54-11-4390329

Visit our Web site at www.dowepoxy.com

NOTICE: No freedom from any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. Dow assumes no obligation or liability for the information in this document. **NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE ARE EXPRESSLY EXCLUDED.**

Published December, 2000



Dow Plastics

We don't succeed unless you do.