

# D.E.R. 353

## Liquid Epoxy Resin

### Description

D.E.R.\* 353 liquid epoxy resin is a C<sub>12</sub> - C<sub>14</sub> aliphatic chain glycidyl ether modified bisphenol-A/F based resin.

### Introduction

The performance of D.E.R. 353 liquid epoxy resin in ambient curing coating/flooring formulations is similar to those obtained with D.E.R. 324 epoxy resin. However, the tendency to crystallize is much lower for D.E.R. 353 epoxy resin than for D.E.R. 324. This enhanced crystallization resistance caused by the bisphenol-A/F epoxy resin blend greatly improves the formulation stability, reduces the handling costs, makes emptying drums easier. The diluent lowers the surface tension which results in excellent surface wetting and adhesion. The reactive diluent increases pot-life as well as flexibility (impact resistance), limits the solvent resistance somewhat but improves the acid resistance. A wide variety of curing agents is available to cure this liquid epoxy resin at ambient conditions. Most frequently used are (cyclo) aliphatic polyamines, polyamides, amidoamines, and modified versions of these. These systems are sometimes cured at elevated temperatures 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
- Marine and Protective Coatings
- Potting and Encapsulation

### Typical Properties<sup>1</sup>

Epoxide Equivalent Weight, (g/eq)	190 - 200	ASTM D-1652
Epoxide Percentage (%)	21.5 - 22.6	ASTM D-1652
Epoxide Group Content, (mmol/kg)	5000 - 5260	ASTM D-1652
Viscosity @ 25°C (77°F), (mPa.s)	800 - 1000	ASTM D-445
Color, Gardner	2 Max.	ASTM D-1544
Density @ 25°C (77°F), (g/ml)	1.12	ASTM D-4052
Clarity	Pass	DowM 101303-TE
Flash Point, (°C) (°F)	177 (350)	ASTM D-93
Non-volatile Content, (wt. %)	100	DowM 101188-TE
Shelf Life, (Months)	24	

<sup>1</sup> Typical properties; not to be construed as specifications

### 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 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 Food, Drug and Cosmetic Act as amended under Food Additive Regulation 21 CFR 175.300 (Resinous and Polymeric Coatings). **BUT ONLY FOR BULK DRY FOODS AT ROOM TEMPERATURE OR BELOW.** This use is subject to good manufacturing practice and any limitations that are part of the regulations, 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 regula-

tions. Also consult the Dow data sheet, *Food Additive Status for Epoxy Resins, Curing Agents and Epoxy Novolac Resins*, Form No. 296-01425.

### Regulatory Status

The base Epoxy Resin components of this epoxy resin blend are regarded as polymers according to the 6th Amendment of Council Directive 67/548/EEC and as substances according to Council Directive 92/32/EEC of 30 April 1992; the 7th Amendment of that same directive. These substances have been reported to the EC Commission as No-Longer Polymers (NLP), are registered under NLP # 500-033-5 and NLP # 500-108-2, and are, 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. The bisphenol-A diglycidyl ether component is registered under CAS Reg. Nr. 25085-99-8 on the US Toxic Substances Control Act (TSCA). In Europe, CAS # 25068-38-6

### Chemical Inventory List

CAS Number*		25085-99-8(25068-38-6)/28064-14-4/68609-97-2
Europe	EINECS	NLP #500-033-5 & 500-108-2/271-846-8
United States	TSCA	25085-99-8/28064-14-4/68609-97-2
Canada	DSL	25085-99-8/28064-14-4/68609-97-2
Australia	AICS	25085-99-8/28064-14-4/68609-97-2
Japan	MITI	7-1279/7-2044/2-2426
Korea	KECL	KE-24083/KE-28226/KE-27545
Philippines	PICCS	25085-99-8/28064-14-4/68609-97-2
China	Informal 1997 PRC Inventory	25085-99-8/28064-14-4/68609-97-2

\* 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.

is frequently used (bisphenol-A polymer with epichlorohydrin). Both CAS numbers describe epoxy resins produced by the condensation of bisphenol-A with epichlorohydrin. The bisphenol-F diglycidyl ether component is registered under CAS Reg. Nr. 28064-14-4 on TSCA. The C<sub>12</sub>-C<sub>14</sub> alkyl-glycidyl ether is listed on EINECS under the number 271-846-8 and under CAS Reg. Nr. 68609-97-2. With respect to China, please note that there is currently no formal Chinese Chemical

Inventory legislation. Chinese Authorities are in the process of drafting such legislation. There is an "Informal 1997 PRC Chemical Inventory List" and the components of D.E.R. 353 epoxy resin (CAS # 25085-99-8/28064-14-4 / 68609-97-2) are 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 Dow Customer Information Group at:  
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Fax: 989-832-1465

In Mexico,  
Call 95-800-441-4369 (Toll Free) or  
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In Latin America,  
contact The Dow Chemical Service Center at:  
In Argentina, call 54 11 4390329  
In Brazil, call 55 11 51889367

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