



Resins 1600-01

Description

Epoxa us 1600-01 epoxy resin is a clear undiluted difunctional liquid that when mixed with appropriate curing agents transforms into a solid with high performance properties. These include excellent adhesive, mechanical, dielectric and chemical resistance. It is derived from bisphenol A / epichlorohydrin and because of its high performance it has become the standard in fabrication, fusion technology and formulation.

Resin 1600-01 can be mixed with the great majority of liquid or solid epoxy resins to achieved the desired characteristics in a given system. Other liquid modifiers, diluents, flexibilizers can be added to reach optimum properties and because of its medium viscosity, high percentages of fillers can be used in the formulation.

Long shelf life and product stability makes epoxa us 1600-01 resin an ideal main resin in the formulation of today's challenging epoxy systems in the aerospace, electronic, mining, adhesive, coating industries and many others around the world. The cure and physical properties of epoxa us 1600-01 makes the resin an ideal product for application and fabrication techniques including casting, molding, pressure laminating, pultrusion Vacuum bag laminating, filament winding, toweling, spraying and brushing and many more.

Key Features and Benefits

- Molding, casting and tooling applications
- Encapsulation of electronic and electrical systems
- Chemical resistant flooring, grouts and tank linings
- High Impact and compression compounds for mining equipment
- Room temperature cure (depending on curing agent)
- Epoxy fusion technology base resin
- Aerospace, electrical and construction adhesives
- Low VOC with high solids marine, maintenance and industrial coatings
- Carbon and fiberglass laminates
- Fiber reinforced composites, tanks, pipes and electric equipment

Sales Specification

PROPERTIES:	Units	Value	Test Method
Color	Gardner	1	ASTM D1544
Viscosity 77f / 25c	Poise	115-147	ASTM D445
Weight per epoxide	G/EQ	186- 193	ASTM D 1652

Typical Properties

PROPERTIES:	Units	Value	Test Method
Vapor pressure 77f / 25c	MM HG	0.03	
Density 77f / 25c	LB/GAL	9.7	ASTM D1475
Density 77f / 25c	G/ML	1.16	

Typical Properties

PROPERTIES:	Units	Value	Test Method
Refractive index 77f / 25c		1.568	
Specific Heat	BTU/LB/f	115-147	
Weight per epoxide		0.5	

Curing Agents

Epoxy 1600-01 Resin can be cross-linked, hardened or cured with a variety of curing agents. The properties of the final product will depend on the type of curing agent used and the selection of the curing agent will depend on the desired properties of the cured system.

Some commonly used curing agents and their recommended concentrations, typical gel times, density and viscosity data are shown in Table 1.

Table 1 Curing Agents for epoxy 1600-01

Curing Agent	Type	phr (190EEW)	Gel Time/min/25c/77f	Density/lbs/gal	Viscosity/77f/25c/cP	Color/Gardner
epoxy 63-2-01	Liquid	19	90	8.1	80-100	9
epoxy 10-01	Liquid	50	34	8.3	50-100	1
epoxy 20-01	Liquid	13	29	8.2	25 (20c)	2
epoxy 60-01	Viscous Liquid	54	96	8.1	7800-11700 (40c)	9
epoxy 10-A-01	Liquid	39	135	7.9	38-57	1
epoxy 21-01	Liquid	20	14	8.9	2900-4875	6
epoxy 10C-01	Liquid	50-120 (by Volume)	25	8.6	20-45	1
epoxy 61-01	Liquid	50	120	8.1	2850-4000 (40c)	9
epoxy 21-B	Liquid	23	18	8.2	20 (20c)	2

Performance Properties

Adhesive Properties

Epoxy 1600-01 exhibits a strong adhesion to an ample range of substrates and this translates to a shear strength of up to 6000 psi (41Mpa) in systems using this product, low shrinkage during cure contributes to this property due to the low internal stresses of epoxy resin systems compared to other polymers obtaining a strong and durable bond.

Electrical Properties

Epoxy 1600-01 cured systems have very good dielectric and insulating properties. As an example systems with volume resistivities up to 1×10^E16 ohm-cm, dielectric constants of 3-5 and dissipation factors of 0.002 to 0.020 can be obtained at ambient conditions with amine and anhydride curing agents. Encapsulations of electric-electronic, molding and laminate compounds are frequently based on epoxy 1600-01 resin.

Chemical Resistance

Epoxy 1600-01 cured systems have very good chemical resistance to a wide range of chemicals like caustic, acids, solvents and fuels. Chemically resistant applications can be formulated using epoxy 1600-01 resin.

Mechanical Properties

High strength with high performance materials can be obtained using epoxy 1600-01 resin with various hardeners or curing agents. Tensile values greater than 10 000 psi (69 Mpa) with modulus greater than 400 000 psi (2750 Mpa) with unfilled systems are possible. These compounds are usually very hard unless elongation up to 300% is desired.

Curing Information

For additional information covering the use of epoxa us 1600-01 resin with our extensive variety of curing agents and the formulations resulting from them please contact epoxa us by phone, e-mail or letter and our team will work with you to recommend and achieve the system solution for your application.

Epoxy curing agents when mixed with epoxy resin cure faster with high temperature and slower with low temperature, the mixture reaction will generate heat so a thin film of resin and hardener will take longer to cure than a thick mixture or mass of resin and hardener.

Exact cure time will depend on temperature, sample mass or thickness and most importantly curing agent used. Since cure times decrease with mass or volume, special consideration and testing should be conducted when mixing larger amounts of material to achieve desired goals in working times and the overall application of a given system.

Packaging and Dispensing

Epoxa us 1600-01 resin is available in 500 lbs drums, 5 gallon pails and individual gallons.

It can be stored at 120-140 f (49-60c) for ease of handling.

Viscosity will change 10-15 poise for each degree in temperature the product varies from 25c the higher temperature less viscous and lower temperature more viscous.

Always dispense the resin at the lower temperature that works for your application because it is always better to handle low temperature items than otherwise even though epoxa us 1600-01 can be dispensed at 120-140f (49-60c) safely.

Accidental Spill Cleanup

Small Spill

Absorb liquid on vermiculite, floor absorbent or other absorbent material.

Large Spill

Persons not wearing protective equipment should not participate until clean up has been completed. Stop spill at source, dike area of spill to stop spreading of the product, pump liquid to salvage tank and remaining liquid can be taken on sand, clay, or other absorbent material and put into containers.

Dispose of in accordance with all applicable local, state and federal regulations.

Note: If this material becomes a waste, it would not be a hazardous waste by RCRA criteria (40CFR 261).

Place in an appropriate disposal facility in compliance with local and federal regulations

Any clothes affected by the spill should be disposed of to avoid further contamination.

These products are sold and manufactured for industrial use only, Material Data Sheets are available upon request from epoxa us and its affiliates. Epoxa us recommends reading the MSDS completely prior to using the product.

Transportation Information

DOT Description
NON-REGULATED BY D.O.T.
DOT information - 49 CFR 172.101

CFR_ROAD	NOT REGULATED FOR TRANSPORT
IATA_C	NOT REGULATED FOR TRANSPORT
IMDG	NOT REGULATED FOR TRANSPORT
CFR_RAIL	NOT REGULATED FOR TRANSPORT

Requests made to epoxa us about our products shall be handled by a representative. **For product storage and handling procedures to maintain product quality within our stated specifications, please review Certificates of Analysis, which are available.** Use of other materials in conjunction with epoxa us products may require additional procedures and precautions. Please review and follow the safety information provided by the manufacturer of other materials.

Limitations

Customers must evaluate epoxa us products and make their own determination as to fitness of use in their particular applications, projects and methods.

From automotive to mining, from electronics to construction, products from epoxa us incorporated lead the way and have become standard products in their respective industries. We have a strong presence in epoxy systems and advanced materials with a 40+ year heritage of innovation and with applications that improve everyday operations. By knowing our customers needs and creating custom technology for them, we provide science based solutions to help customers increase performance, solve product development issues and engineer better manufacturing processes.

Contact Information

For product prices, availability, or order placement, contact our customer service by visiting www.epoxaus.com
For literature and technical assistance, visit our website or call us with your questions.

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