ER2188

Epoxy Resin

DESCRIPTION

ER2188 is a flame retardant, general purpose, two-part potting and encapsulating compound. The system utilizes a hardener free of DDM or other aromatic amines. The flame retardant technology used is of a 'clean' type leading to relatively low toxicity fumes and low smoke emission.

READ ENTIRE TECHNICAL BULLETIN BEFORE USING THIS PRODUCT

FEATURES AND BENEFITS

- General purpose resin ideal for many applications; cost effective protection
- UL recognized: UL94 V-0 flame retardancy rating
- Excellent electrical properties; offers protection in a wide range of conditions
- Does not contain abrasive fillers; low wear on dispensing machinery

APPROVALS

Standard	Status
RoHS Compliant (2015/863/EU)	Yes
UL Approval	UL94 V-0 (File: E100107)

PRODUCT INFORMATION

For available packaging sizes please visit:

electrolube.com

PHYSICAL PROPERTIES

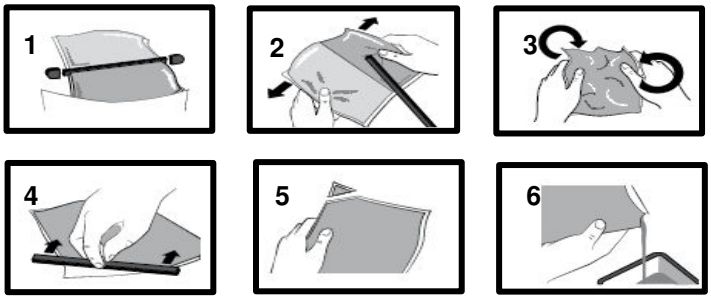
Category	Results
Liquid Properties	
Base Material	Epoxy
Color Part A - Resin Part B - Hardener	 Black Amber
Density Part A - Resin (g/mL) Part B - Hardener (g/mL)	 1.83 1.02
Viscosity (mPa s 23 °C) Part A Part B Mixed System	 150000 320 9000
Mix Ratio Weight Volume	 9.92:1 5.53:1
Usable Life (20 °C)	60 minutes
Gel Time (23 °C)	150 minutes
Cure Time 23 °C 60 °C 100 °C	 24 hours 2 hours 20 minutes
Storage Conditions	Dry Conditions: Above 15 °C, Below 35 °C
Shelf Life	24 Months – Bulk (Resin Pack – 18 Months)
Exotherm (Measured on 100 mL sample, cylinder of diameter 49.4 mm @ 23 °C)	<35 °C
Shrinkage	<1.0%
Cured System	
Color (Mixed System)	Black
Thermal Conductivity (W/m.K)	1.1

Category	Results
Cured Density (g/mL)	1.69
Temperature Range (°C)	-40 to 120
Max Temperature Range (Short Term (°C)/30 Mins) (Application and Geometry Dependent)	+140
Volume Resistivity (ohm-cm)	10^{14}
Relative Thermal Index (°C) UL File #E100107	+130
Dielectric Strength (kV/mm) ASTM D149-09	16.6
Breakdown Voltage (kV) ASTM D149-09, 3.3 mm	56.5
Shore Hardness	D85
Flame Retardancy	Yes
Tensile Strength (MPa)	50
Compressive Strength (MPa)	120
Deflection Temperature (°C)	50
Coefficient of Expansion (ppm/°C)	40
Loss Tangent @ 50 Hz	0.04
Permittivity @ 50 Hz	4.00
Comparative Tracking Index	>850 Volts
Water Absorption (9.7 mm thick disk, 51 mm diameter) 10 days @ 20 °C / 1 hour @ 100 °C	< 0.5% / < 1.0%
Elongation at Break	0.4%

APPLICATION GUIDELINES – RESIN PACKS

Mixing Procedures

When in Resin pack form, the resin and hardener are mixed by removing the clip and moving the contents around inside the pack until thoroughly mixed. To remove the clip, remove both end caps, grip each end of the pack and pull apart gently. By using the removed clip, take special care to push unmixed material from the corners of the pack. Mixing normally takes from three to four minutes depending on the skill of the operator and the size of the pack. Both the resin and hardener are evacuated prior to packing so the system is ready for use immediately after mixing. The corner may be cut from the pack so that it may be used as a simple dispenser. There is also a YouTube video (Epoxy Mixing Instructions) available on the Electrolube channel to show the mixing process.



APPLICATION GUIDELINES - BULK

Bulk Mixing

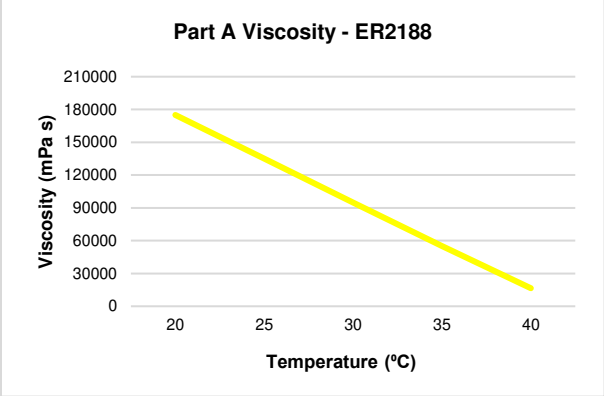
When mixing, care must be taken to avoid the introduction of excessive amounts of air. Automatic mixing equipment is available which will not only mix both the resin and hardener accurately in the correct ratio but do this without introducing air. Containers of Part A (Resin) and Part B (Hardener) should be kept sealed at all times when not in use to prevent the ingress of moisture. Bulk material must be thoroughly mixed before use. Incomplete mixing or use of the wrong mix ratio will result in erratic or partial curing.

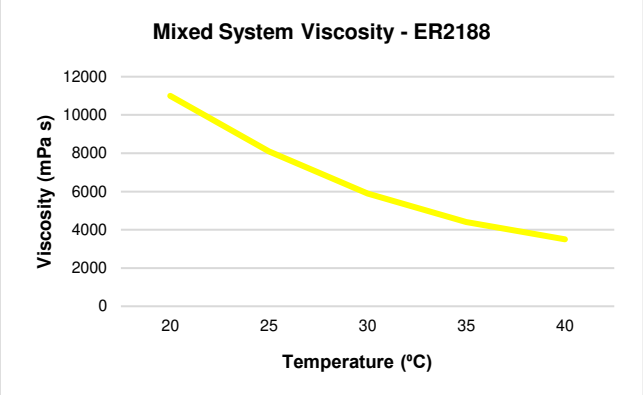
GENERAL

Sedimentation of the resin has been minimized by careful attention to the formulation. However, any sediment which may have occurred over long periods of time must be dispersed before removing any material from the container. This dispersion can be carried out (if necessary) by stirring with a broad bladed spatula or gently rolling the can. Take care not to introduce excessive amounts of air during this operation or it may be necessary to re-evacuate the resin. Sedimentation will be accelerated by storage at high temperatures. Sedimentation found in resin packs forms no problem since the sediment is re-mixed when the pack is used.

ADDITIONAL INFORMATION

Viscosity: Heat can be used to reduce the viscosity of the resin to aid flow during the potting process.





Cleaning: It is far easier for machines & containers to be cleaned before the resin has been allowed to cure. RRS is suitable for cleaning machines and containers and cured resin may be slowly softened and removed by soaking in our RRS.

Curing: Do not heat cure large volumes immediately. Allow these to gel at room temperature and post-cure at high temperature if required (refer to liquid properties for details). Small volumes (250 mL) may be heat cured immediately.

Storage: When storing under very cold conditions, the hardener may crystallize. If this occurs, simply warm (40 °C) the container gently until all crystals have re-melted.

SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available.**

CONTACT INFORMATION

To confirm this document is the most recent version, please contact TechnicalSupportTeam@hkw.co.uk

www.electrolube.com

North America	Europe	Asia
109 Corporate Blvd. South Plainfield, NJ 07080, USA 1.800.367.5460	Ashby Park Coalfield Way Ashby de la Zouch Leicestershire, LE65 1JR, UK 44.01530.41960	8/F., Paul Y. Centre 51 Hung To Road Kwun Tong, Kowloon, Hong Kong 852.3190.3100

Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE . Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588

DISCLAIMER: All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. No statement or recommendation shall constitute a representation unless set forth in an agreement signed by officers of seller and manufacturer. NO WARRANTY OF MERCHANTABILITY, WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY IS MADE. The following warranty is made in lieu of such warranties and all other warranties, express, implied, or statutory. Products are warranted to be free from defects in material and workmanship at the time sold. The sole obligation of seller and manufacturer under this warranty shall be to replace any noncompliant product at the time sold. Under no circumstances shall manufacturer or seller be liable for any loss, damage or expense, direct, indirect, incidental or consequential, arising out of the inability to use the product. Notwithstanding the foregoing, if products are supplied in response to a customer request that specifies operating parameters beyond those stated above, or if products are used under conditions exceeding said parameters, the customer by acceptance or use thereof assumes all risk of product failure and of all direct, indirect, incidental and consequential damages that may result from use of the products under such conditions, and agrees to exonerate, indemnify, defend and hold harmless MacDermid, Incorporated and its affiliates therefrom. No suggestion for product use nor anything contained herein shall be construed as a recommendation to use any product in a manner that infringes any patent or other intellectual property rights, and seller and manufacturer assume no responsibility or liability for any such infringement.

© 2019 MacDermid, Inc. and its group of companies. All rights reserved. "(R)" and "TM" are registered trademarks or trademarks of MacDermid, Inc. and its group of companies in the United States and/or other countries.