

Flammadur[®] E292

Flammadur[®] E292 is a two component polyurethane resin which is used to seal through mechanical parts in penetrations to protect them from fire within the penetration. **Flammadur[®] E292** is flexible flame retardant which has excellent resistance to water, contains no asbestos or harmful solvents. (see attached UL systems summary or go to www.flammadur.com).

Industry Qualifications:

Made in Germany by AIK Flammadur Brandschutz, GmbH

Features: Product Features:

- Tight seal for high water pressure can be obtained by inserting, inside E473, a layer of high polyurethane based Flammadur[®] E292.
- Safety seal, for high pressure firestop requirements besides fire-proofing
- smoke and water tightness after a fire (pressure and flood-water resistant).
- Developed for the protection of expensive buildings and installations.
- The FWG System excels especially in high loading capacity, mechanical stability, optimum bonding to concrete and durability.
- Non Toxic: Contains no asbestos or harmful solvents. (Avoid contact with bare skin and eyes.)

Preparation and Installation:

- The hardener is contained in a small chamber that is effectively the lid of the main container.
- Remove the plastic cap in the lid with a screwdriver or similar tool, and puncture the base of the lid.
- Its contents, the hardener, will drain into the resin in the container.
- Remove the metal clamp and the lid from the container.
- Stir the compound until the mixture reaches an even color indicating that the mixture is homogeneous.
- Do not leave any of the resin in the bottom of the container.

Uses:

- With the Geaquello System on ships for passage through bulkheads and decks
- For cables E292 is used on a deck, on the top of E950 for a depth of 10 mm (see the website www.flammadur.com under the heading **transit box** for details),
- For electric busway in Geaquello System, (see the website www.flammadur.com under heading **Electric Busway** for details)

- After the resin and the hardener have been well mixed, use immediately.
- Tools and spills must be cleaned with an organic solvent.
- Apply the mixture by pouring directly from the can or with the aid of a hand pump.
- No special equipment is needed.
- Do not apply below 5°C (41°F).

Spraying:

Special spraying equipment can be used to spray a mixture of 7.25 parts resin to one part of hardener.



Fire Protection Technologies, Inc.

Product Data Sheet

Physical Properties

Main Application	FWG System						
Material Composition	High fill polyurethane						
Final Color	Brown						
Consistency	Liquid resin						
Required Additive	Ready made						
Mixing Ratio by weight by volume	9 parts resin to 1 part hardener 7.75 parts resin to 1 part hardener						
Pot Life at 68°F (20°C)	40- 60 minutes						
Cure Time at 68°F (20°C)	16-24 hours						
Shelf Life	1 year in closed container						
Final Density Hardner, A Resin, B Cured	1.22 g/cm ³ 1.70 g/cm ³ 1.65 g/cm ³						
Shearing Strength Concrete Steel Pipe	<table> <tr> <td>Psi</td> <td>kPa</td> </tr> <tr> <td>350</td> <td>2,400</td> </tr> <tr> <td>2,150</td> <td>14,840</td> </tr> </table>	Psi	kPa	350	2,400	2,150	14,840
Psi	kPa						
350	2,400						
2,150	14,840						
Resistance to Water Penetration	6.9 atmospheres (7 bars) for 24 hours 689 kPa (100 psi) for 24 hours						
Gamma Ray Extinction Coefficient (decadic) Co60 Cs137	<table> <tr> <td>12.0 inch.(31 cm)</td> </tr> <tr> <td>9.1 inch. (23 cm)</td> </tr> </table>	12.0 inch.(31 cm)	9.1 inch. (23 cm)				
12.0 inch.(31 cm)							
9.1 inch. (23 cm)							
Cleaning Solvent	Organic Solvent						
Retrofit	Yes						
Life Expectancy	50 years						
Application Method	Manual or by pump						

Gamma Ray Resistance - Exposure to 200 million rads (equivalent to the average cumulative dose for an exposure of 40 years in nuclear power plant) shows no change in mechanical and chemical properties.

* Tested at Official Concrete Testing Laboratories, Feb. 1982 in Gesamthochschule Kassel, Germany, according to DIN 1048 Part 1

Flammadur® E292 is available by special order in pails

Products and Technical Assistance available from

	<p style="text-align: center;">Fire Protection Technologies, Inc. Suite 160 8000 Research Forest Drive The Woodlands, TX 77382 Website: www.flammadur.com</p>	
<p>Adolf R. Hochstim, PhD Technical Director</p>	<p>e-mail: ahochstim@earthlink.net</p>	<p>Phone: (818) 730-7749 FAX: (936) 271-4114 (Fax only)</p>
<p>Charles R. Eminhizer, PhD Thermal Physicist</p>	<p>e-mail: charles.eminhizer@yahoo.com ceminhizer@att.net</p>	<p>Phone: (858) 442-2192</p>

Warranty:

The information provided is based upon typical installation conditions and tests Fire Protection Technologies, Inc. believes to be reliable. However, due to a wide variety of possible use conditions, the manufacturer and distributor does not guarantee that typical values expressed will necessarily be obtained. THE FOLLOWING IS MADE IN LIEU OF ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING MERCHANTABILITY. Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. NEITHER SELLER, DISTRIBUTOR, OR MANUFACTURER SHALL BE LIABLE FOR ANY INJURY, LOSS, OR DAMAGE, DIRECT, INCIDENTAL OR CONSEQUENTIAL, ARISING OUT OF THE USE OF OR THE INABILITY TO USE THE PRODUCT. Before using, user shall determine the suitability of the product of their intended use, and user assumes all risk and liability whatsoever in connection therewith. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of the manufacturer, or distributor.