Product Datasheet

SP&S Specialty Polymers and Services

EpoPRO 9533A RESIN with 9284B, 9286B or 9282B Hardener

ALUMINUM FILLED HIGH TEMPERATURE EPOXY CASTING SYSTEM

EpoPro 9533A resin with EpoPro 9284B, 9286B or 9282B hardener is an aluminum filled epoxy casting system designed for use where temperatures may reach 350ºF. It gels at room temperature, but a post cure is required to achieve ultimate mechanical properties. This resin system is excellent for fabricating vacuum forming molds, wet lay-up/vacuum bagged parts, molds for prepreg, RTM parts, RIM parts and compression molded parts. It is also low viscosity and machines well.

HANDLING PROPERTIES

	VALUE				Test Method
	9533A	9284B	9286B	9282B	
Resin Density at 25ºC, lbs/gal	14.6				ASTM D1475
Hardener Density at 25ºC, lbs/gal		8.1	8.1	8.1	ASTM D1475
Resin Viscosity at 25ºC, cP	35,000				ASTM D2196
Hardener Viscosity at 25ºC, cP		40	40	40	ASTM D2196
Mix Ratio By Weight			100A : 6B		Calculated
Mix Ratio By Volume			9.25A : 1B		Calculated
Mixed Viscosity at 25ºC, cP			18,000		ASTM D2196
Gel Time at 25ºC, 150g mass, minutes		45	90	140	ASTM D2471
Suggested Maximum Casting Thickness:					
Wood or Plaster Molds, inches		~½"	1"	2"	
Metal Molds, inches		~1"	2"	3"	

PHYSICAL PROPERTIES(1)

	VALUE	Test Method
Color	Gray	Visual
Hardness, Shore D	89	ASTM D2240
Tensile Strength, psi Tensile	6,800	ASTM D638
Modulus, psi Compressive	480,000	ASTM D638
Strength, psi Flexural	35,000	ASTM D695
Strength, psi Flexural	11,500	ASTM D790
Modulus, psi Linear	450,000	ASTM D790
Shrinkage, in/in	<0.002	ASTM D2566
HDT, Room Temperature Cure, ºF	PCR 355	ASTM D648
HDT, Post Cure, ºF CTE, in/in/ºF	2.10×10^{-5}	ASTM D648
Density, Cured, g/cm^3 (lbs/in^3)	1.63 (0.059)	ASTM D696
Volumetric Yield, in^3/lb	16.9	ASTM D792
Thermal Conductivity, BTU/hr/ft/ft^2/ºF	0.58	ASTM D792
		ASTM E1225

(1)Properties achieved when cured using the Option 1 or Option 2 cure schedule (see page 2 - cure increments)

MIXING AND HANDLING:

Premixing of the resin is required to insure complete suspension of the aluminum filler. Mix the resin for at least 5 minutes with a power mixer and an appropriate size blade for the container dimensions. Once mixed, add the hardener in a ratio of 100 parts resin (part A) to 6 parts hardener (part B) by weight and mix for 5 minutes or until mixture is thoroughly blended. Pour the mixed material slowly and consistently into the mold cavity to reduce trapped air and do not exceed the specified casting thickness of the system being used. It may be necessary to pour in multiple stages to minimize heat generated by the exothermic reaction. Each stage must cool to room temperature before the next stage is poured to eliminate undesired heat and shrinkage. Always use clean dry tools for mixing and applying. Material temperatures should not be below 65ºF when mixing.

CURE INCREMENTS:

High temperature epoxy systems require an elevated temperature post cure to enable the resin and hardener to develop their full physical and temperature properties. Select one of the following cure schedules depending upon the physical properties of the master and the desired physical properties of the final tool. Please contact technical service if you find it necessary to have a different post cure schedule.

24 hrs. at 77ºF (25ºC)	Initial (S)	Initial (S)
2 hrs. at 150ºF (66ºC)	+ (S)	
4 hrs. at 150ºF (66ºC)		+ (S)
1 hrs. at 200ºF (93ºC)	+ (S)	+ (U)
1 hrs. at 250ºF (121ºC)	+ (S)	+ (U)
1 hrs. at 300ºF (149ºC)	+ (S)	+ (U)
1 hrs. at 350ºF (177ºC)	+ (S)	+ (U)

S = Supported Curing U = Unsupported Curing

TOOL, MOLD AND/OR PATTERN PREPARATION:

Wood structures should be sealed. The moisture in wood not sealed will react with the epoxy system to cause a greater exothermic reaction and a froth-like condition near the wood. Gypsum molds should be dried to remove free moisture and sealed with the PFP process or appropriate sealer. Non-porous tools, molds or patterns should be treated with release or parting agents which can withstand the temperature that the part will be cured at while remaining in a supported position.

ALUMINUM PARTICLE ADDITIVES:

The addition of aluminum grain, shot, granules, puffs or chopped wire will lower the exothermic temperature of large pours while curing. The cured part will have greater dimensional stability when exposed to temperature variations and higher impact resistances. Care must be taken on the selection of particle size and hardness if additional machining operations are required.

STORAGE:

Store at 60-90ºF in a dry place. After use, tightly reseal. Store products on pallets during cold weather and avoid storing near outside walls or doors. Epoxy resins that are contaminated with dust or moisture or are subjected to low temperatures may crystallize. Do not use material that has any sign of crystallization until it has been melted. A crystallized resin or hardener can be returned to its original state by heating the material to 140ºF to 150ºF and stirring until its liquid consistency is regained.

HANDLING PRECAUTIONS:

Mandatory and recommended industrial hygiene procedures should be followed whenever these products are being handled and processed. For additional information please consult the corresponding material safety data sheets.

PERSONAL HYGIENE:

EpoPro 9533A
CAUTION! May cause eye & skin irritation. Prolonged or repeated skin contact or inhalation of vapors may cause allergic skin or respiratory reactions. Harmful if inhaled or swallowed. Avoid contact with eyes, skin, or clothing. Wear eye protection and impervious gloves when handling. Wash thoroughly after handling. Avoid breathing vapor or mist. Keep containers closed when not in use. Use only with adequate ventilation. Do not take internally.

EpoPro 9282B, 9284B, & 9286B
WARNING! May cause eye & skin irritation. Prolonged or repeated skin contact or inhalation of vapors may cause allergic skin or respiratory reactions. Harmful if inhaled or swallowed. Avoid contact with eyes, skin, or clothing. Wear eye protection and impervious gloves when handling. Wash thoroughly after handling. Avoid breathing vapor or mist. Keep containers closed when not in use. Use only with adequate ventilation. Do not take internally.

FIRST AID

In case of contact:
Skin – Immediately wash skin thoroughly with mild soap and water. Remove contaminated clothing and wash before reuse. Destroy contaminated shoes and other articles made of leather.
Eyes – Immediately flush eyes with plenty of water for 15 minutes and get prompt medical attention.
Inhalation - Remove person to fresh air. Administer oxygen or artificial respiration if necessary. Call a physician.
Ingestion - Do not induce vomiting. Dilute with plenty of water and contact physician immediately. Never give anything by mouth to an unconscious person.

DISCLAIMER:

IMPORTANT: The following supercedes Buyer's documents. **SELLER / MANUFACTURER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE**. No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller / Manufacturer be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict liability, tort or contract arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results presented are based on controlled or laboratory work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended

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