



PR2032 with PH3670: Long Pot Life Laminating System

DESCRIPTION

PR2032 is a medium viscosity, unfilled, light amber laminating resin that is designed for structural production applications. When used with hardener PH3670 listed here, the combination provides excellent wet-out of fiberglass, carbon and aramid fibers. Special additives have been incorporated into these products to promote chemical adhesion to fabrics made with these fibers. Typical applications include aircraft and sail plane skins and structural components, auto bodies, radomes and prototype parts.

Hardener PH3670 was developed to provide a long working time for very large and/or more complicated laminates when needed. As with all of our AEROPOXY laminating hardeners, PH3670 can cure completely at room temperature without additional heat, although the cure time is usually too long to be practical in the production applications for which PH3670 is best suited. Laminates made with PH3670 are normally heat cured, as is recommended.

These products can be considered low toxicity materials that have minimum hazard potential when used properly and in a clean and responsible manner. PR2032 does not contain any hazardous diluents or extenders. Hardener PH3670 do not contain methylene dianiline (MDA), or other potentially harmful aniline derivatives. Neither the resin nor the hardener will crystallize in normal shipping and storage conditions, including refrigerated storage. Both components have excellent moisture resistance, for minimal problems in high humidity environments.

PRODUCT SPECIFICATIONS

	PR2032	PH3670	ASTM Method
Color	Lt. Amber	Lt. Amber	Visual
Viscosity, @77°F, centipoise	1,650 cps	175 - 225 cps	D2392
Specific Gravity, gms./cc	1.15	0.94	D1475
Mix Ratio, By Wt.	100 : 27 By Weight or 3 to 1 By Volume		PTM&W
Pot Life, 4 fl. Oz. Mass @ 77°F	4 hours		D2471

HANDLING and CURING

Hardener PH3670 has a long working time that is useful for vacuum bagging larger parts before the resin has gelled. With this hardener, plan to allow the laminate to cure at least 18 - 24 hours, at a minimum of 72°F, before completing the cure with the addition of heat. The PR2032/PH3670 system can be cured at ambient temperatures, but is best to cure this system at elevated temperatures. This hardener was developed to be used in fabricating large complicated structures that are vacuum bagged. It is only prudent to cure such complicated, expensive laminates in an oven to provide the highest possible properties and minimize the possibility of distortion. If you are working with small laminates or parts, be careful using heat guns and lamps for the heat cure, as they tend to concentrate heat, producing localized hot spots which can damage the epoxy. There are other hardeners in the AEROPOXY line that can be used when there is no access to heat curing. Curing time under heat will depend upon the curing temperature. For example, laminates made with PH3670 hardener can be cured in 2 - 3 hours at 180°F, but will take 4 - 6 hours at 150°F. If curing temperature of only 120°F to 130°F can be achieved, then the laminate should be cured for 12 to 14 hours, after the above described room temperature gel. With PH3670, the higher the curing temperature, the higher the resulting service temperature. With a higher temperature cure, a safe service temperature over 200°F can be obtained.

TYPICAL MECHANICAL PROPERTIES

	PR2032 with PH3670	ASTM Method
Mix Ratio	100 : 27 By Weight, or 3 to 1 By Volume	PTM&W
Pot Life, @ 77°F	4 hours	D2471
Color	Lt. Amber	Visual
Mixed Viscosity, @77°F, cps	925 - 975 cps	D2393
Cured Hardness, Shore D	86 Shore D	D2240
Specific Gravity, grams, cc	1.16	D1475
Density, lb./cu. Inch	.0420	D792
Specific Volume, cu. in./lb.	23.8	D792
Tensile Strength, psi ⁽¹⁾	38,993 psi	D638
Elongation at Break, % ⁽¹⁾	1.76 %	D638
Tensile modulus, psi ⁽¹⁾	2,550,000 psi	D638
Flexural Strength, psi ⁽¹⁾	59,684 psi	D790
Flexural Modulus, psi ⁽¹⁾	2,510,000 psi	D790
Glass Transition Temp., Tg	208°F	TMA
Thermal Coef. of Expansion Range: 100°F to 150°F	4.80 x 10 ⁻⁵ in./in./°F	D696
⁽¹⁾ These Properties Derived with A 10 Ply Laminate, Hand Lay-up, Style 181 Glass Fabric, 55% Glass Content		

PACKAGING WEIGHTS

	Gallon Kit	Pail Kit	Drum Kit
PR2032	7.5 lb.	48 lb.	500 lb.
PH3670	2 lb.	13 lb.	135 lb.
Kit	9.5 lb.	61 lb.	635 lb.

SAFETY and HANDLING

PTM&W AEROPOXY epoxy products are made from raw materials carefully chosen to minimize or even eliminate toxic chemicals, and therefore offer the user high performance products with minimum hazard potential when properly used. Generally, the PTM&W AEROPOXY epoxy resins and hardeners will present no handling problems if users exercise care to protect the skin and eyes, and if good ventilation is provided in the work areas. However, all epoxy resins and hardeners can be irritating to the skin, and prolonged contact may result in sensitization; and breathing of mist or vapors may cause allergic respiratory reaction, especially in highly sensitive individuals. As such, avoid contact with eyes and skin, and avoid breathing vapors. Wear protective rubber apron, clothing, gloves, face shield or other items as required to prevent contact with the skin. In case of skin contact, immediately wash with soap and water, followed by a rinse of the area with vinegar, and then a further wash with soap and water. The vinegar will neutralize the hardener and lessen the chances of long term effects. Use goggles, a face shield, safety glasses or other items as required to prevent contact with the eyes. If material gets into the eyes, immediately flush with water for at least 15 minutes and call a physician. Generally, keep the work area as uncluttered and clean as possible, and clean up any minor spills immediately to prevent accidental skin contact at a later time. Keep tools clean and properly stored. Dispose of trash and empty containers properly. Do not use any of these types of products until Material Safety Data Sheets have been read and understood.

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