PT2520
Unfilled High Temperature Epoxy Laminating Resin

DESCRIPTION

PT2520 is an amber, unfilled epoxy laminating resin designed for the construction of tooling and components that will operate in the intermediate high temperature service range. PT2520 will gel at room temperature for subsequent oven post curing off the pattern with both of the Part B hardeners listed here. Part B and Part B1 hardeners have different working times, so that by selecting the proper hardener, various sized tools and parts can be fabricated. PR2520 Part B has a 45 to 50 minute pot life, and the Part B1 has a 4 to 4.5 hour pot life, depending upon shop temperature. The mixed viscosity of PT2520 provides a system that penetrates the reinforcing fabric quite readily and holds the fabric in place, for fast, reliable fabrication. With the capability to post cure the laminate off the pattern, it is possible to use low temperature pattern materials such as wood or plaster for lower fabrication costs, since they will not be put into the oven for post cure. PT2520 has found good acceptance in such applications as vacuum form tools, foam molds, bond fixtures, layup molds, resin transfer molds, and other situations where repetitive heating and cooling cycles are involved.

There are no restricted or regulated raw materials used in these high temperature products. PT2520 Part A does not contain vinylcyclohexane diepoxide (VCHD), or other hazardous or potentially restricted diluents. The PT2520 Part B hardeners do not contain methylene dianiline (MDA) or other potentially harmful aniline derivatives. They are non-staining, and will not crystallize in normal shipping and storage conditions.

PRODUCT SPECIFICATIONS

	PT2520 Part A	PT2520 Part B	PT2520 Part B1	ASTM Method
Color	Amber	Amber	Amber	Visual
Viscosity, @77°F, centipoise	2,650 cps	1,700 cps	500 cps	D2392
Specific Gravity, gms./cc	1.15	1.08	0.98	D1475
Mix Ratio, By Weight		100 : 16	100 : 19	PTM&W
Pot Life, 4 fl.oz. Mass @ 77°F		45 - 50 min.	4 - 4.5 hours	D2471

HANDLING and CURING

When using PT2520 Part B, the system will gel hard in 18 to 24 hours at 77°F. In lower temperature service, non-critical applications, the system can usually achieve its full cure in service. However, for maximum stability, an oven post cure is recommended, and is mandatory in applications where continuous service temperature is over 250°F. When using the Part B1 hardener, under normal conditions the system will gel to a hard demoldable state in 24 to 36 hours. In colder shop environments, or unusual conditions, the user should check closely to insure that the resin has fully gelled before the tool is post cured.

In very cold environments, it may be necessary to give the tool a slight amount of heat cure before it is removed from the pattern to avoid distortion due to insufficient cure. A few hours at 100°F to 150°F, depending upon what temperature the pattern material can withstand, will harden the tool to the point where it can be given an unsupported post cure. The lower the curing temperature that is used, the longer the curing time should be.

SUGGESTED POST CURE CYCLES		
HARDENER	Initial RT Cure Cycle	Post Cure Cycle
Part B	Gel 18-24 hrs. @ 77°F	Post Cure for 3 hours each @: 150°F, 250°F and 300°F
Part B1	Gel at least 24 hrs. @ 77°F	Post Cure for 3 hours each @: 150°F, 200°F, 275°F and 325°F
NOTE: if the expected service temperature is to be higher than the final cure temperature listed, then an additional 2 to 3 hours at 25°F above the expected service temperature is recommended.		

TYPICAL MECHANICAL PROPERTIES

	PT2520 A/B	PT2520 A/B1	ASTM Method
Mix Ratio, By Weight	100 : 16	100 : 19	PTM&W
Color	Amber	Amber	Visual
Mixed Viscosity, @77^{O}F, centipoise	1,900 cps	1,275 cps	D2393
Pot Life, 4 fl. Oz. Mass, @77^{O}F	45 - 50 minutes	4 - 4.5 hours	D2471
Cured Hardness, Shore D	88 Shore D	88 Shore D	D2240
Specific Gravity, grams, cc	1.17	1.12	D1475
Density, lb./cu. Inch	.0422	.0406	D792
Specific Volume, cu. in./lb.	23.7	24.7	
Tensile Strength, psi *	36,680 psi	34,377 psi	D638
Elongation at Break, % *	1.79 %	1.55 %	
Tensile modulus, psi *	2.34 x 10^{6} psi	2.30 x 10^{6} psi	
Flexural Strength, psi *	52,679 psi	48,768 psi	D790
Flexural Modulus, psi *	3.01 x 10^{6} psi	3.08 x 10^{6} psi	
Compressive Strength, psi	15,120 psi	15,773 psi	D695
Glass Transition Temperature, TMA: Tg Peak	272^{o}F	315^{o}F	D3386
Coefficient of Thermal Expansion, Range 75^{O}C to 125^{O}C	3.82 x 10^{-5} in./in./ ^{o}F	3.97 x 10^{-5} in./in./ ^{o}F	D696

* These Properties were Determined with a 1/8" Laminate, Style 7500 Glass Tooling Cloth, Resin Content of 40% - 45%.

PACKAGING WEIGHTS

	Gallon Kit	Pail Kit	Drum Kit
PT2520 Part A	9 lb.	40 lb.	470 lb.
PT2520 Part B	1.48 lb.	6.5 lb.	75 lb.
PT2520 Part B1	1.72 lb.	7.6 lb.	90 lb.

SAFETY and HANDLING

PTM&W 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 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, breathing of mist or vapors may cause allergenic respiratory reaction, especially in highly sensitive individuals. As such, avoid contact with eyes and skin, and avoid breathing vapors. Wear protective rubber apron, clothing, nitrile rubber 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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