PT8902
High Impact Urethane
For Prototype & Production Parts

DESCRIPTION

PT8902 is a unique two-component urethane casting system that has very high cured properties, which allow it to produce extremely durable parts and shapes that have very good heat resistance. PT8902 has a notched Izod Impact strength greater than 2.0! It also has a Glass Transition Temperature (Tg) of 213°F. This material will make tough parts!!

Three hardeners with different working times and very low mixed viscosity with PT8902 Part A make it very easy to handle and cast by hand pour or machine casting techniques. The low viscosity fills thin sections and complicated shapes with ease. The cured material is very tough, and it can be demolded from the toughest mold configuration without breaking. The natural white color of PT8902 can be easily tinted or pigmented for a broad range of colored parts. There is a black version of Part B2, for a cured color of black. Try PT8902 on your most difficult parts and see how easily it produces very successful castings that are tougher than any previously available material.

PRODUCT SPECIFICATIONS

	PT8902 Part A	PT8902 Part B	PT8902 Part B1	PT8902 Part B2	ASTM Method
Color	Lt. Amber	Clear	Clear	Clear*	Visual
Viscosity,	80 - 100 cps	650 cps	650 cps	650 cps	D2392
Specific Gravity, gms./cc	1.17	1.11	1.11	1.11	D1475
Mix Ratio	---	100 Parts A to 50 Parts B, B1 or B2**			PTM&W
Pot Life, 4 fl.oz. Mass @ 77°F	---	6 - 7 min.	10 - 12 min	90 seconds	D2471

*** There is a Black version of Part B2, to provide Black parts. When ordering, specify PT8902 Part B2 - Black.**

**** The Mix Ratio when using Part B2 Black is 100 Parts A to 60 Parts B2 - Black.**

HANDLING and CURING

With hardeners B, B1 and B2, the two clear components of PT8902 form a tough, white, opaque solid when cured properly. The material needs heat to effect a proper cure. At room temperature, the white color change does not occur, and the optimum physical properties are not obtained. You must give this material some heat to initiate the proper cure structure and achieve correct cross linking, which is indicated by the color change. With the Part B2 - Black, there is no visual cue color change when using it, so heat curing is absolutely mandatory in this case.

The mixed PT8902 should be poured into a warm mold (heated to 110°F - 140°F) and given an initial oven heat cure before demolding. The material can be demolded after a minimum of 2 to 3 hours at 150°F to 160°F, and then the cure can be completed out of the mold. If the part has relatively thick wall sections and has a flat surface it can be positioned on, then it can be post cured unsupported in the oven. However, if there are thin walls or standing sections, the part should be supported on a fixture in the oven for the post cure. It is advisable to support the part in the mold or on a fixture all cases for repeatable good results.

The type and extent of post cure will be determined by the eventual operating parameters of the part. With the proper cure, PT8902 achieves very high impact strength as well as very good heat resistance. The high impact strength properties are achieved with even a low to moderate post cure, but the ultimate Tg (heat resistance) is not achieved unless a proper elevated temperature post cure is utilized.

The ultimate cured properties, as listed in this bulletin, were obtained by the following curing cycle: The mixed material was poured into a mold heated to 130°F, and allowed to gel in a pressure chamber. The mold was placed in an oven and cured for 2 ½ hours at 150°F. The mold was removed from the oven, allowed to cool to 100°F, or below, and the part was demolded without distortion. The part was then cured overnight at 180°F, and the samples were tested 7 days after casting.

Here are the results of various cure schedules, to aid in selecting one to obtain the proper cured properties for the intended application:

Handling & Initial Cure Details	Post Cure Used	Izod	Tg	E′
**Pour into Mold Heated to 130°F, Cure 2-2 1/2 hr @ 150°F, Cool, Demold	Overnight @ 180°F	2.1	213°F	193°F
Pour into Mold Heated to 130°F, Cure 2-2 1/2 hr @ 150°F, Cool, Demold	After 7 Days @ Room Temp.	2.04	192°F	159°F
Pour into Mold Heated to 130°F, Cure 2-2 1/2 hr @ 150°F, Cool, Demold	Overnight @ 150°F	1.72	205°F	186°F
Pour into Mold Heated to 130°F, Cure 2-2 1/2 hr @ 150°F, Cool, Demold	2 hours @ 180°F	1.6	205°F	184°F
Pour into Mold Heated to 130°F, Cure 2-2 1/2 hr @ 150°F, Cool, Demold	2 hous @ 150°F	1.5	195°F	174°F
Pour into Mold Heated to 160°F, Cure 1 hr @ 160°F, Cool, Demold	After 7 Days @ Room Temp.	2.1	197°F	175°F
Pour into Mold Heated to 160°F, Cure 1 hr @ 160°F, Cool, Demold	2 hr. @ 160°F, then 7 Days @ R.T.	2.1	206°F	187°F

****Recommended**

TYPICAL MECHANICAL PROPERTIES

	PT8902 Part A with B, B1 or B2	ASTM Method
Mix Ratio, By Weight	With B, B1 or B2 Natural: 100 Resin to 50 Hardener With Part B2 - Black: 100 Resin to 60 Hardener	PTM&W
Color	White (With Part B2 - Black: Black)	Visual
Mixed Viscosity, centipoise	495 cps	D2393
Working Time, 4 fl. Oz. Mass, @77oF	B:6-7 min., B1:10-12 min., B2:90 sec.	D2471
Cured Hardness, Shore D	85 Shore D	D2240
Specific Gravity, grams, cc	1.15	D1475
Density, lb./cu. Inch lb. / gallon	.0417 9.6 lb. / Gallon	D792
Specific Volume, cu. in./lb.	24.0	
Tensile Strength, psi	10,010 psi	D638
Elongation at Break, %	21.6 %	
Tensile modulus, psi	371,155 psi	
Flexural Strength, psi	15,574 psi	D790
Flexural Modulus, psi	386,612 psi	
Compressive Strength, psi	11,943 psi	D695
Compressive Modulus, psi	357,510 psi	
Izod Impact Strength, ft.lbs./inch of Notch, Method A, Notched	2.1	D256
Glass Transition Temperature, DMA: Tg (Peak) E′ (Onset)	213^{o}F 193^{o}F	D4065
Heat Deflection Temperature, @ 64 psi Load	190^{o}F	D648
Coefficient of Thermal Expansion, Range 50^{o}C to 100^{o}C	6.09 x 10^{-5} in/in/^{o}F	D696

PACKAGING WEIGHTS

	Gallon Kit	Pail Kit	Drum Kit
PT8902 Part A	8 lb.	40 lb.	460 lb.
PT8902 Part B, Bi or B2 (Natural)	4 lb.	20 lb.	230 lb.
PT8902 Part B2 (Black)	4.8 lb.	24 lb.	276 lb.

SAFETY and HANDLING

PTM&W urethane 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 urethane 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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