



PT7660 & PT7665 Shore D-60 Hard Urethane Elastomers

DESCRIPTION

The two Shore D-60 urethane systems described here are exceptionally tough, hard elastomers that have cured characteristics which make them well suited for some very demanding industrial uses. Both of these systems have very high tensile and tear strengths and excellent elongation, so tooling or parts made with these materials are very durable. They have very good resistance to abrasion, so they are ideal for the production of foundry tools and patterns. These materials work hard and solve problems!

PT7660 is an amber system with a lower mixed viscosity and a fast cure time at room temperature. The almost 30 minute working time combined with its low mixed viscosity allows PT7660 to be used in both open casts and closed molds. Its faster curing time allows quicker production of multiple-piece patterns and smaller castings.

PT7665 is a tan colored system with a longer pot life and slower cure and is ideal for larger castings, which will exhibit very low cured shrinkage. PT7665 can be used to produce solid mass cast patterns, saving time over surface casting, that is necessary with other, faster curing systems to prevent excessive shrinkage. PT7665's outstanding abrasion resistance makes it perfect for demanding foundry patterns. Its extreme toughness allows it to produce urethane tooling not possible with other materials of this hardness. It has given many years of excellent service in the most difficult tooling situations.

PT7660 and PT7665 can be considered very low hazard potential products, as they do not contain any toxic or regulated raw materials in their makeup. They do not contain methylene dianiline (MDA), or other potentially harmful aniline derivatives, nor do they contain MBOCA or TDI, and they do not include any hazardous or potentially regulated diluents.

PRODUCT SPECIFICATIONS

	Shore D-60 System		Shore D-60 System		ASTM Method
	PT7660 A	PT7660 B	PT7665 A	PT7665 B	
Color	Amber	Amber	Amber	Tan	Visual
Viscosity, @ 77°F, centipoise	2800 cps	180 cps	6,000 cps	Thin Paste	D23932
Specific Gravity, gms./cc	1.03	1.12	1.08	1.11	D1475
Mix Ratio, By Wt.	100 : 44		100 : 60		PTM&W
Pot Life, 4 fl. Oz. Mass @ 77°F	26 minutes		112 minutes		D2471

HANDLING and CURING

Generally, with polyurethane elastomers, full properties are developed in 7 days at room temperature (75°F). Temperatures below 75°F will lengthen the cure time, and if the ambient temperature is below 60°F, additional heat may be necessary for proper cure. Elevated temperatures will accelerate the cure of urethanes, but care must be taken if a higher temperature is used to cure the material. Generally, the higher the curing temperature, the greater the final cured shrinkage. When heat curing for more rapid processing, to best control shrinkage, the casting should be allowed to set for 12 to 18 hours at room temperature before an oven post cure. A typical accelerated curing cycle, therefore, would be: Allow to gel on the pattern for 12 to 18 hours at room temperature (70°F to 80°F), then post cure for a minimum of 8 hours at 150°F to 165°F and allow to cool before demolding.

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TYPICAL MECHANICAL PROPERTIES

	PT7660 A / B	PT7665 A / B	ASTM Method
Mix Ratio, By Weight	100 : 44	100 : 60	PTM&W
Color	Amber	Tan	Visual
Mixed Viscosity, @ 77°F, centipoise	2600 cps	5,000 cps	D2393
Working Time, 4 fl. Oz. Mass, @77°F	26 minutes	112 minutes	D2471
Cured Hardness, Shore D	60 Shore D \pm 5	60 Shore D \pm 5	D2240
Shrinkage, inch/inch, Mold Number 1, Volume: .053 Gallon	0.001 in./in.	Nil	D2566
Mold Number 3, Volume: 1.23 Gallon	—	0.008	
Specific Gravity, grams, cc	1.06	1.09	D1475
Density, lb./cu. Inch	.0383	.0396	D792
Specific Volume, cu. in./lb.	26.1	25.3	D792
Tensile Strength, psi	6,014 psi	5,005 psi	D638
Elongation at Break, %	646 %	554 %	
Tensile modulus @ 100% Elongation	1,896 psi	1,765 psi	D412
Tensile modulus @ 200% Elongation	2,457 psi	2,363 psi	
Tensile modulus @ 400% Elongation	4,071 psi	3,850 psi	
Tear Strength, Die C, pli	565 pli	661 pli	D624
Compression Set, Method B	88 %	56 %	D395
Bashore Rebound	48 %	53 %	D2632
Taber Abrasion, H18 Wheel, 1000 grams, 1000 cycles, mg loss	13 milligrams	19.1 milligrams	D1044

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.

PACKAGING WEIGHTS

	Quart Kit	Gallon Kit	Pail Kit
PT7660 A	2 lb.	8 lb.	40 lb.
PT7660 B	.9 lb.	3.75 lb.	17.75 lb.
Kit	2.9 lb.	11.75 lb.	57.75 lb.
PT7665 A		8 lb.	40 lb.
PT7665 B		4.9 lb.	24 lb.
Kit		12.9 lb.	64 lb.

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