

**Product Name**

TP-4005 Polyurethane

**Description**

TP-4005 is a tough, impact resistant polyurea formulated for vacuum assisted casting systems and short mold cycle times. Excellent physical properties can be obtained without the utilization of mercury, MOCA, or TDI. TP-4005 simulates high impact Thermoplastic Olefin (TPO) materials for a range of prototyping and production applications.

Physical Properties

Mix Ratio	Resin:Hardener (parts by weight)		100:75	
Mix Ratio	Resin:Hardener (parts by volume)		100:75	
Viscosity (cps@100°F)	Resin	1000	Gel Time	10.5 ± 2.5 Minutes
	Hardener	325		
	Mixed	700	Color	Amber
Specific Gravity (g/cc)	Resin	1.20	* Demold time is always mass dependant.	
	Hardener	1.20		

Cure 1 ► 24 hours at 77°F
Cure 2 ► 1 hour at 150°F + 7 days at 77°F

Cured Properties

	Method	Cure 1	Cure 2
Hardness (shore D)	ASTM D-2240	70 ± 5	70 ± 5
Tensile Strength (psi)	ASTM D-638	3,350	6,200
Elongation at Break	ASTM D-638	10%	10%
Compression Strength (psi)	ASTM D-695	N/A	N/A
Compression Modulus (psi)	ASTM D-695	N/A	N/A
Ultimate Flex Strength (psi)	ASTM D-790	8,000	10,000
Flexural Modulus (psi)	ASTM D-790	145,000	200,000
Notched Izod (ft.lbs./in.)	ASTM D-256	1.5	1.5
Linear Shrink (in./in.)	ASTM D-2566	N/A	N/A
Heat Deflection Temp. (66psi)	ASTM D-648	93°C / 199°F	130°C / 266°F
Heat Deflection Temp. (264psi)	ASTM D-648	75°C / 167°F	90°C / 194°F
Specific Gravity (g/cc)		1.12	1.12

Processing Notes

Formulated for hand-batch equipment. For best results, de-air the material prior to casting, then pressurize to 60 psi until cured. The hardener component will darken as it ages. It is recommended that dry nitrogen be used to protect the material from oxidizing and being moisture contaminated.

Agitate the hardener and resin before use to ensure that the formula is homogeneous.

Safety and Handling

DO NOT USE UNTIL MSDS HAVE BEEN READ AND UNDERSTOOD. Store containers in a dry location. Partially used containers should be blanketed with dry nitrogen to prevent moisture contamination. Moisture will react with the resin component, creating carbon dioxide gas and a possible pressure increase in the container.
SPECIFICATION WRITERS: The above values are meant to represent typical properties only. Users are encouraged to qualify products in their own laboratories prior to specification publication.
PURCHASER has the responsibility for determining any applicability of and compliance with federal, state, and local laws concerning labeling, use, and waste disposal, particularly in making consumer items. Innovative Polymers, Inc. makes no warranty, expressed or implied, for merchantability or fitness of use. The sole liability of Innovative Polymers, Inc. for any claim arising out of the manufacture, use, or sale of its products shall be the buyers purchase price.