

**Product Name**

# TP 4004 Polyurethane

**Description**

TP 4004 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 4004 simulates high impact Thermoplastic Olefin (TPO) materials for a range of prototyping and production applications.

**Physical Properties**

<b>Mix Ratio</b>	Resin:Hardener (parts by weight)	<b>100:50</b>		
<b>Mix Ratio</b>	Resin:Hardener (parts by volume)	<b>100:48</b>		
<b>Viscosity</b> (cps@77°F)	Resin	5100	<b>Gel Time</b>	12 ± 2 minutes
	Hardener	100	<b>Demold Time*</b>	1 hour @ 150°F
	Mixed	2100	<b>Color</b>	Transparent Yellow
<b>Specific Gravity</b> (g/cc)	Resin	1.16	* Demold time is always mass dependant.	
	Hardener	1.20		

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

**Cured Properties**

	Method	Cure 1	Cure 2
<b>Hardness (shore D)</b>	ASTM D-2240	65 ± 5	70 ± 5
<b>Tensile Strength (psi)</b>	ASTM D-638	4,000	5,500
<b>Elongation at Break</b>	ASTM D-638	70%	55%
<b>Compression Strength (psi)</b>	ASTM D-695	N/A	N/A
<b>Compression Modulus (psi)</b>	ASTM D-695	N/A	N/A
<b>Ultimate Flex Strength (psi)</b>	ASTM D-790	4,000	5,000
<b>Flexural Modulus (psi)</b>	ASTM D-790	85,000	115,000
<b>Notched Izod (ft.lbs./in.)</b>	ASTM D-256	7.0	6.0
<b>Linear Shrink (in./in.)</b>	ASTM D-2566	0.005	0.005
<b>Heat Deflection Temp. (66psi)</b>	ASTM D-648	100°C / 212°F	121°C / 250°F
<b>Heat Deflection Temp. (264psi)</b>	ASTM D-648	83°C / 181°F	97°C / 207°F
<b>Specific Gravity (g/cc)</b>		1.17	1.17

**Processing Notes**

TP 4004 can be hand-cast, Vacuum-assisted cast, or meter-mix dispensed. TP 4004 can be easily colored with a wide range of colors using Innovative Polymers, Inc. pigments.

**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.  
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