

# TASK® Series

## Performance Urethane Casting Resins



www.smooth-on.com

### PRODUCT OVERVIEW

TASK® plastics is a new generation of performance urethane casting resins that offer superior physical properties compared to our popular Smooth-Cast® line of general purpose casting resins.

TASK® plastics feature convenient mix ratios by volume (pbv) or weight (pbw), low viscosities, high tensile and flexural strength, as well as high flexural modulus. These plastics were formulated for a variety of industrial applications including pattern making, making prototype models and making high impact solid or rotational castings (TASK® 15). These resins are designed for casting in thicknesses up to ½" (1.27 cm).

TASK® plastics are moderately priced and are available in trial kits, one-gallon, five-gallon, 55-gallon drum and tote units.

### TECHNICAL OVERVIEW

	TASK® 2	TASK® 3	TASK® 4	TASK® 5	TASK® 6	TASK® 8*	TASK® 9	TASK® 11 (C-1509)	TASK® 12	TASK® 13 (C-1515)	TASK® 14 (C-1520)	TASK® 15	TASK® 18 (C-1508)	TASK® 21
<b>A:B Mix Ratio by Volume</b>	1A:1B	1A:1B	1A:1B	1A:1B	1A:1B	1A:1B	1A:1B	N/A	N/A	N/A	N/A	N/A	N/A	2A:1B pbv
<b>A:B Mix Ratio by Weight</b>	120A:100B	120A:100B	100A:100B	1A:1B	1A:1B	120A:100B	115A:100B	100A:100B	100A:44B	100A:120B	100A:120B	75A:100B	26A:100B	2A:1B
<b>Mixed Viscosity</b> ASTM D-2393	150 cps	150 cps	250 cps	600 cps	800 cps	100 cps	300 cps	2,000 cps	2,400 cps	800 cps	800 cps	600 cps	4,400 cps	500 cps
<b>Pot Life</b> ASTM D-2471	7 min.	20 min.	20 min.	3 min.	7 min.	2.5 min.	7 min.	20 min.	20 min.	3 min.	10 min.	6 min.	20 min.	6 min.
<b>Handling Time @ 73°F/23°C</b>	60 min.	90 min.	16 hrs.	15 min.	75 min.	10-15 min.	60 min.	16 hrs.	16 hrs.	20 min.	45 min.	60 min.	16 hrs.	60 min.
<b>Shore D Hardness</b> ASTM D-2240	80D	80D	83D	77D	75D	80D	85D	60D	60D	95A, 50D	95A, 50D	75D	88D	75D
<b>Specific Gravity (g/cm³)</b> ASTM D-1475	1.12	1.12	1.16	1.10	1.07	1.09	1.14	1.12	1.08	1.15	1.15	1.12	1.57	1.07
<b>Specific Volume (in.³/lb.)</b> ASTM D-792	24.7	24.7	23.9	25.2	25.9	25.4	24.3	24.7	25.6	24.1	24.1	24.7	17.6	25.9
<b>Ultimate Tensile, psi</b> ASTM D-638*	6,650	6,650	6,500	4,530	5,200	5,840	7,800	2,500	2,700	1,800	1,800	2,720	3,250	5,500
<b>Tensile Modulus, psi</b> ASTM D-638*	290,000	290,000	130,000	200,000	146,000	246,000	370,000	N/A	N/A	N/A	N/A	126,000	514,000	270,000
<b>Elong. at Break %</b> ASTM D-638*	6%	6%	4%	5%	4%	4%	6%	N/A	300%	125%	125%	20%	1%	7.5%
<b>Flexural Strength, psi</b> ASTM D-790*	9,500	9,500	9,000	6,480	6,200	8,280	11,850	N/A	N/A	N/A	N/A	5,620	10,700	7,100
<b>Flexural Modulus, psi</b> ASTM D-790*	288,000	288,000	204,000	216,000	182,500	271,000	350,000	N/A	N/A	N/A	N/A	170,000	86,000	250,000
<b>Compressive Strength, psi</b> ASTM D-695*	8,300	8,300	7,400	6,700	5,570	8,760	11,000	N/A	N/A	N/A	N/A	5,450	8,420	7,100
<b>Heat Deflection Temp</b> ASTM D-648*	134°F (57°C)	134°F (57°C)	110°F (45°C)	145°F (63°C)	162°F (72°C)	263°F (129°C)*	131°F (55°C)	N/A	N/A	N/A	N/A	117°F (47°C)	149°F (65°C)	144°F (62°C)
<b>Compressive Modulus, psi</b> ASTM D-695*	78,000	78,000	75,000	83,000	65,000	77,400	98,000	N/A	N/A	N/A	N/A	60,000	97,300	78,500
<b>Shrinkage (in/in)</b> ASTM D-2566*	0.005	0.0025	0.0035	0.007	0.0031	0.01	0.009	0.0024	0.001	0.005	0.0035	0.0042	0.0006	0.0058
<b>Color</b>	White	White	Ivory	Tan	Tan	Off-White	Clear Amber	Milky Amber	Clear Amber	Black	Black	Opaque White	Metal Gray	White

\*Values measured after material has been post cured as directed by technical bulletin

\*See separate technical bulletin for TASK® 8

**IMPORTANT:** Shelf life of product is reduced after opening. Remaining product should be used as soon as possible. Immediately replacing the lids on both containers after dispensing product will help prolong the shelf life of the unused product. XTEND-IT® Dry Gas Blanket (available from Smooth-On) will significantly prolong the shelf life of unused liquid urethane products.

## Safety First!

The Material Safety Data Sheet (MSDS) for this or any Smooth-On product should be read prior to use and is available upon request from Smooth-On. All Smooth-On products are safe to use if directions are read and followed carefully.

### Be careful.

Part A (Yellow Label) contains methylene diphenyl diisocyanate. Vapors, which can be significant if pre-polymer is heated or sprayed, may cause lung damage and sensitization. Use only with adequate ventilation. Contact with skin and eyes may cause severe irritation. Flush eyes with water for 15 minutes and get immediate medical attention. Remove from skin with soap and water. Part B (Blue Label) is irritating to the eyes and skin. Avoid prolonged or repeated skin contact. If contaminated, flush eyes with water for 15 minutes and get immediate medical attention. Remove from skin with soap and water. When mixing with Part A, follow precautions for handling isocyanates. If machining cured TASK™ Plastics, wear dust mask or other apparatus to prevent dust inhalation.

**Important:** The information contained in this bulletin is considered accurate. However, no warranty is expressed or implied regarding the accuracy of the data, the results to be obtained from the use thereof, or that any such use will not infringe upon a patent. User shall determine the suitability of the product for the intended application and assume all risk and liability whatsoever in connection therewith.

## PROCESSING RECOMMENDATIONS

### START BY PREPARING YOUR MODEL...

**Preparation** - Store and use urethanes at room temperature (72°F / 22°C). These products have a limited shelf life and should be used as soon as possible. Mixing should be done in a well-ventilated area. Wear safety glasses, long sleeves and rubber gloves to minimize contamination risk.

**Applying A Release Agent** - Silicone rubber molds do not require a release agent. Applying a release agent, however, will prolong the life of the mold. A release agent is necessary to facilitate demolding when casting into urethane rubber molds. Use a release agent made specifically for mold making (Universal® Mold Release or Mann's Ease Release® 200 available from Smooth-On or your Smooth-On distributor) and follow directions carefully.

**IMPORTANT:** To ensure thorough coverage, lightly brush the release agent with a soft brush over all surfaces of the model. Follow with a light mist coating and let dry for 30 minutes. **Because no two applications are quite the same, a small test application to determine suitability for your project is recommended if performance of this material is in question.**

### MEASURING & MIXING...

Liquid urethanes are **moisture sensitive** and will absorb atmospheric moisture. Mixing tools and containers should be clean and made of metal, glass or plastic. Materials should be stored and used in a warm environment (73°F/23°C).

**Stir or shake both Part A & Part B thoroughly before dispensing.** Stir deliberately making sure that you scrape the sides and bottom of the mixing container several times. Be careful not to splash low viscosity material out of the container.

**Vacuuming** - TASK® products are low in viscosity and do not require vacuum degassing. If you choose to vacuum the material, subject mixture to 29" of mercury in a vacuum chamber until mixture rises, breaks and falls. Allow for 3 to 4 times volume expansion in mixing container. Be aware of pot life so that material does not set up in mixing container.

**Pressure Casting** - Best results are obtained using a pressure casting technique. After pouring the mixed resin into the mold, the entire mold is placed in a pressure chamber and subjected to 60 PSI (4.2 kg/cm<sup>2</sup>) air pressure for 15 minutes.

### POURING, CURING & PERFORMANCE...

**Pouring** - Warning: Fumes, which may be visible as this product starts to "gel" and cure, will dissipate with adequate ventilation. Only use this product with room size ventilation and do not inhale/breathe fumes. Castings will be extremely hot immediately following cure and may burn the skin. Let cool to room temperature before handling. For best results, pour your mixture in a single spot at the lowest point of the mold and let the mixture seek its level. This will help minimize air entrapment. **Casting thickness should not exceed ½" (1.27 cm).**

**Curing** - TASK® products will demold in 60-90 minutes depending on product, mass and mold configuration. Castings will cure faster and achieve maximum physical properties and higher heat resistance if TASK® plastics are post cured. After casting has cured at room temperature for 60 minutes, subject casting to 150°F / 65°C for 4 hours. Let cool to room temperature.

**Performance** - Cured castings are rigid and durable. They resist moisture, moderate heat, solvents, dilute acids and can be machined, primed/painted or bonded to other surfaces (any release agent must be removed). If machining cured TASK® plastics, wear dust mask or other apparatus to prevent inhalation of residual particles. Castings can be displayed outdoors after priming and painting.

**Because no two applications are quite the same, a small test application to determine suitability is recommended if performance of this material is in question.**



Call Us Anytime With Questions About Your Application.

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The new [www.smooth-on.com](http://www.smooth-on.com) is loaded with information about mold making, casting and more.