



DESCRIPTION

The **TECHNO CAST™** series is a collection of rigid two-component polyurethane casting systems, formulated with 100% reactive materials, primarily designed for the production of technical parts such as small, medium, and large climbing holds, rigid molds, templates, and prototypes. It is ideal for special effects, sculpture casting, jewelry, and industrial parts.

Its easy 1A/1B volume ratio and low viscosity allow for quick and efficient casting with high-quality reproduction of fine model details. Its low exothermic level enables castings up to approximately 4-6 inches thick, depending on the piece design and selected system, with negligible shrinkage. The 4 available versions of **TECHNO CAST™** offer pot lives of 10, 20, 30, and 60 minutes at 22°C/72°F.

Its fast demolding time allows for efficient mold turnover and a very high production rate.

PRODUCTS	CASTING THICKNESS	MAXIMUM VOLUME (Depending on the volume and design of the piece)
TECHNO CAST 10	Maximum of 0.500 inches (~12.70mm)	Less than 1.0L
TECHNO CAST 20	Maximum of 1.0 inches (~25.4mm)	~1.0L at 2.0L
TECHNO CAST 30	Maximum of 2 inches (~50mm)	~2.0L at 3.0L
TECHNO CAST 60	Maximum of 3 inches (~75mm)	~3.0L at 4.0L

Given that every project is different, it is essential that the user validates all steps and ensures that the product meets their expectations before proceeding on a large scale. Do not test in production.

Please note that this system is not formulated for exposure to high temperatures. Consult our technical department for further information.

CHARACTERISTICS

- Low viscosities that flow easily and allow excellent reproduction of details
- Low exothermic temperature
- Very low linear shrinkage
- Can be pigmented with our CHILL DROPS™ PU pigments
- Demolding time of 2-8 hours at 22°C/72°
- Can be used with several dry filler to reduce costs
- Can be pigmented with our metallic pigments

APPLICATIONS INSTRUCTIONS

The product should be stored in an environment at 22°C/72°F with less than 60% relative humidity. This polyurethane-based product has a shelf life of 6 months and must be used promptly. Polyurethane systems are sensitive to ambient humidity.

Prepare the mold well before casting. If the mold used is made of silicone (TECHNO SIL™ 5400 Series) or polypropylene, no release agent is required. If using a polyurethane or epoxy mold, our release agent TECHNO RELEASE™ 113 will be necessary. Depending on the porosity of the mold, apply 2-3 coats using a clean cloth, allowing a resting period of 10-15 minutes at 22°C/72°F between coats.

Mix parts **A** and **B** in their original containers to eliminate any sedimentation that may have formed during storage. Be sure to scrape the bottom and sides of the containers to ensure fully homogeneous parts.

IMPORTANT: Always use clean metal containers and spatulas to avoid contamination.

Add **1** part **A** to **1** part **B** by **volume** and mix well to achieve a uniform color. Minimize the introduction of air into the material during mixing.

COLORING TECHNO CAST™

CHILL DROPS™ PU pigments (highly concentrated and solvent- or VOC-free) are the only pigments recommended and fully compatible with the **TECHNO CAST™** series. Depending on the desired color, gradually add small amounts to part A until the desired color is achieved. Do not exceed 3.00% by weight. Keep in mind that **CHILL DROPS™ PU** pigments are of professional quality and highly effective.

CURE OF THE PRODUCT

Depending on the mass of the product, the system will generate an exotherm (heat) that can vary in temperature. Do not touch or inhale vapors emitted from the resin casting. Allow it to cool before demolding. Thinner parts of the cast piece will take longer to cure than more massive parts.

It is possible to accelerate the final cure of the product by exposing it to heat treatment for 4 hours at 50°C/122°F in an industrial oven. Allow it to return to 22°C/72°F before removing from the oven, as this will minimize the percentage of shrinkage, if any.

USING AN AUTOCLAVE OR VACUUM CHAMBER

Please note that polyurethanes in general are highly sensitive to moisture. Therefore, for the **TECHNO CAST™** 10-20-30-60 series, we strongly recommend using an autoclave or vacuum chamber to prevent the mixture from being contaminated by ambient humidity during its curing process.

The use of this equipment will also help remove any bubbles that may have formed during the mixing of parts A and B. Note that microscopic bubbles may be present in the mixture and can react with ambient humidity.

Avoid mechanical mixing with a drill-mounted mixer, as this method can contaminate the mixture and result in an imperfect surface finish. We recommend manual mixing with a spatula at least 1 inch wide for a minimum of 5 minutes, ensuring to scrape the walls and bottom of the container thoroughly. For more information, please contact our technical service at sales@polymerestechologies.com.

See the following example (samples of **TECHNO CAST™ 20**):



CURE RESULTS WITH AND WITHOUT USING AN AUTOCLAVE / VACUUM CHAMBER



WITHOUT
AUTOCLAVE / VACUUM CHAMBER



WITH
AUTOCLAVE / VACUUM CHAMBER

Contact with ambient moisture, even in small amounts, will cause a reaction with the isocyanate in part B, leading to a reaction with water that forms carbon dioxide (CO₂) (gas bubbles). These bubbles become trapped in the material, resulting in the formation of pores and cavities on surfaces exposed to air.

CLEANING PROCEDURE

Uncured material and equipment can be cleaned with our solvent-free cleaner **POLY CLEANER™**. Contact **POLYMÈRES TECHNOLOGIES** for more information.

TYPICAL PROPERTIES (at 22°C)

		PART A	PART B	MIXED
Viscosity (cps)	Brookfield ASTM D 2196	1,200	850	925
Consistency		Liquid	Liquid	Liquid
Specific weight (g/cm ³)	ASTM D 1475	1.05	1.19	1.10
Mixing ratio	Volume	1	1	1/1
	Weight	100	114	100/114
Color	Visual	Neutral or colored	Ivory	Neutral or colored
Pot life 200 cc	ASTM D 2471	10-20-30 or 60 min at 22°C/72°F		
Exothermic temperature 200 cc	ASTM D 2471	70 - 85°C depending on version		
Curing time for handling	(Depending on density and design of the parts)	1 - 6 hours at 22° C depending on the version used and the density		
Cure at 90%		1 day at 22°C/72°F		
Full cure		2 days at 22°C/72°F		

PHYSICAL PROPERTIES (solid state) after 7 days at 22°C

TESTS		METHOD	RESULTS	
Hardnesses after hardening of:	1 day	ASTM D 2240	Shore D	81
	7 days			82
Compressive strength		ASTM D 695	MPa*	46.8
Modulus of elasticity in compression		ASTM D 695	MPa	1 336
Tensile strength		ASTM D 638 Type IV	MPa	24.4
Modulus of elasticity in tension		ASTM D 638 Type IV	MPa	889
Elongation		ASTM D 638 Type IV	%	3.1
Flexural strength		ASTM D 790	MPa	31.3
Flexural modulus		ASTM D 790	MPa	1 474
Abrasion resistance (loss in grams)		ASTM D 4060 (Taber CS-17 - 1000 gr 1000 tours)		0.092
Linear shrinkage	7 days	ASTM D 2566	mm/mm	0.0
	14 days			0.00039

PRECAUTIONS

- Consult material safety data sheet prior to use.
- During handling, it is essential to strictly observe appropriate work hygiene measures:
 - Ensure good ventilation.
 - Wear gloves, safety goggles, and protective clothing.
- Do not use at temperatures below 5°C (40°F). System cure will vary depending on ambient temperature.
- Sealing the cover: Several resins are sensitive to ambient humidity. In order to preserve the product, make sure to cover the product under a nitrogen atmosphere **TECHNO DRY 7477**.
- Shelf life: Once the container is opened, **POLYMÈRES TECHNOLOGIES** is no longer responsible for this product.
- Shelf life of this material in original unopened containers is 6 months.
- Provincial and Federal safety regulations should be observed. In case of contact with eyes, rinse thoroughly with water and seek medical attention immediately. In case of contact with skin, rinse thoroughly with soap and water. Keep out of reach of children.

ASSUMPTION OF RISK

Customer assumes all risk and liability for the results obtained by the use of any POLYMÈRES TECHNOLOGIES products, including, without limiting the generality of the foregoing, the use of the CHILL EPOXY™ line of products, and the use of any process, whether in terms of general effectiveness, success or failure, and regardless of any oral or written statements made by way of technical advice or otherwise, related to the use of any POLYMÈRES TECHNOLOGIES product.

* 1 MPa = 145 psi