

REPRO FAST-CAST POLYURETHANES

Repro Fast-Cast Polyurethanes are world-renowned as the leading class of quick-curing casting resin systems available today. These products are designed for ease of mixing, quick demolding, and unsurpassed accuracy. Repro is manufactured by Freeman and has become the standard that all fast-setting castable urethanes are measured against.

Choosing a Repro formulation

All Repro formulations offer the below characteristics that make them user-friendly and reliable. To find something suited specifically for your project, consider your specifications and requirements, and then refer to the chart for our recommendations.

All Repro Products feature:

- 1:1 mix ratio by weight or volume
- Very low shrinkage
- Low viscosity ensuring easy pouring characteristics and excellent surface reproduction
- Consistent batch to batch quality



Criteria	Product
Balance of features	Repro 83, Repro NS
Higher temperatures	Repro One, Repro NS, Repro 95
Speed	Repro Fast, Repro 10
Accuracy	Repro Slow, Repro One
Light weight	Repro Light, Repro Ultra Light
Machinability	Repro 95, Repro Light, Repro Ultra Light
Large size	Repro Surface Coat and Laminating Resin
Easy mixing/non-settling	Repro One, Repro NS
Tintable	Repro Fast, Repro 10 Tan, Repro Slow



REPRO FAST-CAST POLYURETHANES

Repro One

Repro One is our newest and most advanced formulation. This castable polyurethane can be used in durable foundry tooling, thermoforming applications, mold making, as well as most general plastic casting applications.

	SKU	Size	Color	Net weight (lb.)
▶ 6-7 min. gel time	053090	Quart Kit	Gray	5
▶ 60-90 min. demold	053093	Gallon Kit	Gray	20
	053095	5 Gallon Kit	Gray	100

Additional advantages of Repro One:

- Higher heat resistance for elevated temperature applications
- Higher Shore D hardness for improved abrasion resistance
- Lower moisture sensitivity for void-free castings
- Improved release characteristics for easier demold
- Non-settling formulation for fast and easy mixing
- Compatible with expanded polystyrene (Styrofoam)

Repro 83

Repro 83 is our most popular tooling urethane with a great balance of speed and accuracy. This castable polyurethane is used extensively in foundry and thermoforming applications, mold making, and in most general plastic casting applications.

	SKU	Size	Color	Net weight (lb.)
▶ 6-7 min. gel time	053150	Quart Kit	White	5
▶ 60-90 min. demold	053156	Gallon Kit	White	20
	053152	Quart Kit	Blue	5
	053158	Gallon Kit	Blue	20
	053164	5 Gallon Kit	Blue	100
	053154	Quart Kit	Gray	5
	053160	Gallon Kit	Gray	20

Repro NS (Non-Settling)

Repro NS features a non-settling additive that eliminates filler “hard-packing” and dramatically reduces the time required to pre-mix the material for use. It is formulated to match the color, mix ratio, work time, low shrinkage, and surface hardness of our most popular fast-cast product, Repro 83.

	SKU	Size	Color	Net weight (lb.)
▶ 6-7 min. gel time	053153	Quart Kit	Blue	5
▶ 60-90 min. demold	053159	Gallon Kit	Blue	20
	053165	5 Gallon Kit	Blue	100

Repro Fast

Formulated to have the shortest demold time of all of the Repro products for maximum part production. Repro Fast is the best choice when time is most important.

	SKU	Size	Color	Net weight (lb.)
▶ 4-5 min. gel time	053181	Quart Kit	Tan	5
▶ 15-30 min. demold	053183	Gallon Kit	Tan	20
	053184	5 Gallon Kit	Tan	100



Repro 10

The original Repro formulation, this product has a slightly longer work time, longer demold time, and less shrinkage than Repro Fast.

	SKU	Size	Color	Net weight (lb.)
▶ 5-6 min. gel time	053060	Quart Kit	Tan	5
▶ 30-60 min. demold	053064	Gallon Kit	Tan	20
	053062	Quart Kit	Black	5
	053066	Gallon Kit	Black	20

Repro Slow

Our most accurate fast-cast polyurethane system, Repro Slow features extremely low shrinkage and an extended work time that allows for the creation of larger tools.

	SKU	Size	Color	Net weight (lb.)
▶ 12-14 min. gel time	053201	Gallon Kit	Tan	20
▶ 3-4 hour demold	053202	5 Gallon Kit	Tan	100

Repro Light

Repro Light is a versatile castable urethane approximately one half the weight of our other Repro products. It can be used for lightweight tools, backfill applications, and as an adhesive for many urethane modeling boards. It offers easy machinability and can be readily worked and carved with hand tools.

	SKU	Size	Color	Net weight (lb.)
▶ 6-8 min. gel time	053197	Quart Kit	Tan	2.5
▶ 90-120 min. demold	053198	Gallon Kit	Tan	10

Repro Ultra Light

Repro Ultra Light is a very low-density, syntactic material designed for weight critical applications and easy machinability. This cream-colored formulation may be worked with hand tools or CNC machining equipment when cured. A long work time allows for large, accurate castings. Repro Ultra Light is also an excellent choice to use as a hardness-matched adhesive for RenShape urethane foam boards.

	SKU	Size	Color	Net weight (lb.)
▶ 10-11 min. gel time	053196	Gallon Kit	Cream	7
▶ 2-3 hour demold				

REPRO FAST-CAST POLYURETHANES CONTINUED

Repro 95

Repro 95 is a unique castable polyurethane featuring a high aluminum content, providing excellent machining and polishing characteristics. Its gray, metal-like appearance is ideal for prototype thermoforming and wax injection mold applications for investment casting.

- ▶ 6-7 min. gel time
- ▶ 60-90 min. demold

SKU	Size	Color	Net weight (lb.)
053051	Quart Kit	Gray	5
053052	Gallon Kit	Gray	20

Additional advantages of Repro 95:

- Dense, non-porous surface even after machining
- The ultra-smooth finish of the material, even after machining, allows for easy sand release in pattern and core box applications



Repro Surface Coat & Laminating Resin System

- ▶ Surface Coat: 13 min. gel time
- ▶ Laminating Resin: 15 min. gel time
- ▶ Demold time: 3-4 hrs.

A Freeman exclusive! The Repro Surface Coat and Laminating Resin System is a low-cost, fast, and very accurate alternative to traditional epoxy fiberglass tooling. Although not designed for high-temperature or high-wear applications, it is the ideal choice for larger moldmaking applications.

SKU	Description	Size	Net weight (lb.)
053189	Repro Surface Coat – White	Gallon Kit	22.5
053194	Repro Laminating Resin – White	Gallon Kit	22
054073	¼" Fiberglass Strand	Box	5
054071	¼" Fiberglass Strand	Box	50

Additional advantages:

- Low exotherm system provides for very low-shrinkage tools – system will not get hot even in thick applications
- Quick 3-4 hour demold time compared to a 24-hour cure time for epoxy systems
- Very easy system to use for first time toolmakers
- Both the surface coat and laminating resin will adhere to material that has previously been cured



THE PROCESS

Upon sealing and applying appropriate release:

1. Brush Repro Surface Coat on model and apply additional coats at 'almost tack-free' stage.
2. Combine Repro Laminating Resin with chopped fiberglass strand.
3. Apply fiberglass strand and resin mixture behind surface coat.

After approximately 3-4 hours, demold tool when cured (shown right)



Repro Fast-Cast Polyurethanes Specifications

	Mix Ratio (by wt. or vol.) R:H	Gel Time (min.) @ 72°F	Demold Time (min.) @ 72°F	Hardness (Shore D)	Specific Gravity	Mixed Viscosity (cps) @ 1 min.	Volumetric Yield (in. ³ /lb.)	Shrink (in./in.)*	Compressive Strength (psi)	Flexural Strength (psi)	Flexural Modulus (psi)	Tensile Strength (psi)	Tensile Modulus (psi)	Izod Impact (ft. lb./in.)	Deflection Temp. (°F)	Coefficient Thermal Expansion (in./in./°F)
Repro One	1:1	6-7	60-90	87	1.75	1,500	15.8	0.0010	7,860	4,290	799,000	2,350	582,000	0.30	156°F/69°C	1.79 x 10 ⁻⁵
Repro 83	1:1	6-7	60-90	84	1.9	1,100	14.5	0.0010	6,470	5,140	939,000	3,130	941,000	0.31	135°F/57°C	—
Repro NS	1:1	6-7	60-90	84	1.9	1,750	14.5	0.0010	5,970	2,990	684,000	1,710	869,000	0.35	142°F/61°C	1.45 x 10 ⁻⁵
Repro Fast	1:1	4-5	15-30	84	1.9	1,100	14.5	0.0015	6,470	5,140	939,000	3,130	941,000	0.31	135°F/57°C	—
Repro 10	1:1	5-6	30-60	84	1.9	1,100	14.5	0.0012	6,470	5,140	939,000	3,130	941,000	0.31	135°F/57°C	—
Repro Slow	1:1	12-14	3-4 hr	84	1.9	1,100	14.5	0.0009	6,470	5,140	939,000	3,130	941,000	0.31	135°F/57°C	—
Repro Light	1:1	6-8	90-120	68	0.9	1,500	30.0	0.0014	3,980	2,620	347,000	1,530	350,000	0.15	132°F/56°C	3.50 x 10 ⁻⁵
Repro Ultra Light	1:1	10-11	2-3 hr	55	0.59	1,200	47.0	0.0014	2,700	1,840	160,000	1,490	72,400	0.12	128°F/53°C	4.18 x 10 ⁻⁵
Repro 95	1:1	6-7	60-90	84	1.9	1,450	14.5	0.0012	7,140	3,070	505,000	1,770	561,000	0.29	131°F/55°C	3.13 x 10 ⁻⁵
Surface Coat	1:1	13	3-4 hr	84	1.9	6,000	14.5	—	—	—	—	—	—	—	—	—
Laminating Resin	1:1	15	3-4 hr	84	1.9	3,500	14.5	—	—	—	—	—	—	—	—	—
ASTM Tests	—	—	—	D-2240	D-792	—	—	D-2566	D-695	D-790	D-790	D-638	D-638	D-256	D-648	D-696-88

*Dependent upon mass.

LOCATIONS

OHIO (HEADQUARTERS)

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FAX 440-934-7200

MICHIGAN

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Roseville, MI 48066
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TEL 586-774-1210
FAX 586-774-1019

CALIFORNIA

5525 S. Soto Drive
Vernon, CA 90058
TEL 800-325-2100
FAX 440-934-7200

NORTH CAROLINA

101 Bailey Street
Mocksville, NC 27028
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FAX 440-934-7200

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Tucker, GA 30084
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FAX 440-934-7200

ONTARIO

3600B Laird Road Unit 8
Mississauga, ON L5L 6A7
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FAX 586-774-1019

KANSAS

5755 S. Hoover Road Bldg. #5
Wichita, KS 67215
TEL 800-792-1047
FAX 817-568-0908

OREGON

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Portland, OR 97203
TEL 800-558-0866
FAX 262-789-5407

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Lititz, PA 17543
TEL 800-631-4230
TEL 717-653-5300
FAX 717-653-7372

TEXAS

3152 S.E. Loop 820
Fort Worth, TX 76140
TEL 800-792-1047
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FAX 817-568-0908



TERMS & CONDITIONS

Returned Goods

To save transportation charges, and facilitate handling of merchandise upon our receipt, we request that no merchandise be returned without prior written authorization.

Damaged Goods

Merchandise given to a transportation firm is their responsibility to deliver in satisfactory condition. If merchandise is delivered damaged, the customer should note as such on freight bill and file a claim with the delivering carrier. Regulations require that hidden damage, identified upon unpacking, must be reported within ten (10) days of delivery in order to file a proper claim.

Liability/Warranty Statement

Our products are intended for sale to industrial and commercial customers. We request that customers inspect and test our products before use and satisfy themselves as to contents and suitability. Nothing herein shall constitute a warranty, expressed or implied, including any warranty or merchantability or fitness, nor is protection from any law of patent to be inferred. All patent rights are reserved. The exclusive remedy for all proven claims is replacement of our materials and in no event shall we be liable for special, incidental, or consequential damages.

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