



# 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 other 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
Easy mixing/non-settling	Repro One, Repro NS
Tintable	Repro Fast, Repro 10 Tan, Repro Slow

## Specifications

	Mix Ratio R:H (by wt. or vol.)	Gel Time (min.) @ 72°F	Demold Time (min.) @ 72°F	Hardness (Shore D)	Specific Gravity	Mixed Viscosity (cps) @ 1 min.	Volumetric Yield (in. <sup>3</sup> /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)	C.T.E. (in./in./°F)
<b>Repro One</b>	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 <sup>-5</sup>
<b>Repro 83</b>	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	-
<b>Repro NS</b>	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 <sup>-5</sup>
<b>Repro Fast</b>	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	-
<b>Repro 10</b>	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	-
<b>Repro Slow</b>	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	-
<b>Repro Light</b>	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 <sup>-5</sup>
<b>Repro Ultra Light</b>	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 <sup>-5</sup>
<b>Repro 95</b>	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 <sup>-5</sup>
<b>ASTM Tests</b>	-	-	-	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.



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Your Freeman Customer Number can be found on any invoice.



## Repro One

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

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.

### Additional advantages of Repro One:

- Higher heat resistance for elevated temp. 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

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

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.

### Additional advantages of Repro 83:

- One of our original formulations offering balance of features
- Low viscosity ensures easy pouring characteristics and excellent surface reproduction

## Repro NS (Non-Settling)

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

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.

## Repro Fast

- ▶ 4-5 min. gel time
- ▶ 15-30 min. demold

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.

### Additional Advantages of Repro Fast:

- Low viscosity ensures easy pouring characteristics and excellent surface reproduction
- Tintable

## Repro 10

- ▶ 5-6 min. gel time
- ▶ 30-60 min. demold

This original Repro formulation has a slightly longer work time, longer demold time, and less shrinkage than Repro Fast. Repro 10 Tan is tintable.

## Repro Slow

- ▶ 12-14 min. gel time
- ▶ 3-4 hour demold

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.

### Additional Advantages of Repro Slow:

- Low viscosity ensures easy pouring characteristics and excellent surface reproduction
- Highest level of accuracy available
- Tintable

## Repro Light

- ▶ 6-8 min. gel time
- ▶ 90-120 min. demold

The versatile Repro Light is approximately 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.

### Additional Advantages of Repro Light:

- Lightweight with a density of 0.9 g/cc
- Low viscosity ensures easy pouring characteristics and excellent surface reproduction
- Easy machinability – workable and carvable with hand tools

## Repro Ultra Light

- ▶ 10-11 min. gel time
- ▶ 2-3 hour demold

Repro Ultra Light is a very low-density, syntactic polyurethane casting resin designed for weight critical applications and easy machinability. 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.

### Additional Advantages of Repro Ultra Light:

- Lightweight with a density of 0.59 g/cc
- Low viscosity ensures easy pouring characteristics and excellent surface reproduction
- Easy machinability – workable and carvable with hand tools
- Tintable

## Repro 95

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

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.

### 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