



Freeman

Polyurethane Elastomers



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A complete line of easy to use, economical tooling and prototyping resins, these materials are widely used in many applications that demand the ideal balance between price and performance.

Our flexible urethanes are generally more abrasion resistant than silicone rubber, making them preferred materials for concrete and architectural castings. Our semi-rigid urethanes are known for their excellent impact strength and abrasion resistance, making them ideal for foundry tooling as well as semi-rigid part production. Our rigid urethanes are designed to simulate injection molded plastic parts.



Flexible Polyurethane Elastomers

Freeman 1035 – Beige

- Castable to 2" in Thickness
- 30 Min. Gel Time
- 40A Shore Hardness

This flexible material is excellent for making molds with deep undercuts or where a flexible mold makes demolding easier. This economical urethane features one to one mix ratio by weight or volume, making mixing easy and convenient.

Catalog Number	Description	Availability	Net Wt Lbs. (Kg)
055401	Freeman 1035	Gallon Unit	16 (7.3)

Freeman 1035T – Beige

- Brushable for creating glove molds
- 20 Min. Gel Time
- 40A Shore Hardness

This flexible urethane features a thick viscosity which enables it to be brushed over the surface of larger models or patterns without sagging or flowing from vertical surfaces. By applying several coats, a flexible "skin" may be created and subsequently reinforced with a low cost, low shrink, and lightweight back-up structure to offer support during use.

Catalog Number	Description	Availability	Net Wt Lbs. (Kg)
055404	Freeman 1035T	Gallon Unit	18 (8.2)

Freeman 1040 – Off-White

- Castable to 2" in Thickness
- 28 Min. Gel Time
- 52A Shore Hardness

This flexible urethane is an excellent low-cost alternative to RTV silicone rubber mold making materials. Like most castable urethane rubber systems, it is ideal for general flexible mold construction, flexible parts and gaskets, plaster casting, and prototypes. Freeman 1040 features a low viscosity, high tear strength, and off-white color.

Catalog Number	Description	Availability	Net Wt Lbs. (Kg)
055130	Freeman 1040	Gallon Unit	8.8 (4)
055131	Freeman 1040 Resin Only	2 Quarts	4 (1.8)
055132	Freeman 1040 Hardener Only	5 Gallon	40 (18.2)



Semi-Rigid Polyurethane Elastomers

Freeman 1050 – Amber

- Castable to 4" in Thickness
- 26 Min. Gel Time
- 85A Shore Hardness

Freeman 1050 is a tough, semi-flexible urethane that is ideal for creating molds requiring some degree of flexibility, as well as for producing semi-rigid prototypes and finished parts. A one to one mix ratio by weight and a 26 minute gel time provides ample time to vacuum degas prior to pouring. Overnight demold time is required.

Catalog Number	Description	Availability	Net Wt Lbs. (Kg)
055142	Freeman 1050	Quart Unit	2.5 (1.1)
055141	Freeman 1050	Gallon Unit	10 (4.4)
055139	Freeman 1050 Resin Only	5 Gallon	25 (11.4)
055140	Freeman 1050 Hardener Only	5 Gallon	25 (11.4)

Freeman 1060 – Red, Black

- Castable to 2" in Thickness
- 28 Min. Gel Time
- 60D Shore Hardness

This semi-rigid polyurethane casting resin is renowned throughout the industry for its excellent impact strength and abrasion resistance, particularly in foundry tooling and other modeling and prototyping applications requiring strength and durability. Freeman 1060 is available in either red or black. Overnight demold time is required.

Catalog Number	Description	Availability	Net Wt Lbs. (Kg)
055108	Freeman 1060 Black	Quart Unit	2.5 (1.1)
055109	Freeman 1060 Red	Quart Unit	2.5 (1.1)
055106	Freeman 1060 Black	Gallon Unit	10 (11.4)
055110	Freeman 1060 Red	Gallon Unit	10 (11.4)
055107A	Freeman 1060 Resin Only	5 Gallon	31.25 (14.2)
055107B	Freeman 1060 Black Hardener Only	5 Gallon	18.75 (8.5)
055111B	Freeman 1060 Red Hardener Only	5 Gallon	18.75 (8.5)
055116	Freeman 1060 Resin Only	55 Gallon	460 (209.1)
055117	Freeman 1060 Black Hardener Only	55 Gallon	280 (127.3)

Freeman 1066 – Red, Black

- Castable to 2" in Thickness
- 15-17 Min. Gel Time
- 65D Shore Hardness

Freeman 1066 is a 65 Shore D polyurethane elastomer specifically designed for highly abrasive resistant foundry tooling. Harder than our Freeman 1060, this product will not deflect as much under high pressure molding processes. Plus, it has increased rigidity in thin wall sections and is able to be machined or sanded without softening.

Freeman 1066 also features a fast demold time of two to four hours and a heat deflection temperature of 181°F.

Catalog Number	Description	Availability	Net Wt Lbs. (Kg)
055120	Freeman 1066 Black	Gallon Unit	9.75 (4.4)
055119	Freeman 1066 Red	Gallon Unit	9.75 (4.4)
055121	Freeman 1066 Resin Only	5 Gallon	32.5 (14.8)
055122	Freeman 1066 Black Hardener Only	5 Gallon	16.25 (7.4)
055118	Freeman 1066 Red Hardener Only	5 Gallon	16.25 (7.4)
055123	Freeman 1066 Resin Only	55 Gallon	420 (190.9)
055124	Freeman 1066 Black Hardener Only	55 Gallon	210 (95.5)
055112	Freeman 1066 Red Hardener Only	55 Gallon	210 (95.5)

Rigid Polyurethane Elastomers

Freeman 1070 – Off-White

- Castable to ½" in Thickness
- 3 Min. Gel Time
- 15-30 Min. Demold
- 70D Shore Hardness

This urethane elastomer is able to be hand mixed and poured to create parts that simulate injection molded plastic. Freeman 1070 is economical and features very low viscosity and low moisture sensitivity. A demold time of 15 to 30 minutes enables many parts to be poured in one day without the expenditure for a meter-mix machine.

Catalog Number	Description	Availability	Net Wt Lbs. (Kg)
055407	Freeman 1070	Quart Unit	3.85 (1.8)
055406	Freeman 1070	Gallon Unit	15.4 (7)

Freeman 1080 – White

- Castable to ½" in Thickness
- 7 Min. or 20 Min. Gel Time
- 1-3 Hr. or 2-4 Hr. Demold
- 80D Shore Hardness

This brilliant white, 80 shore D urethane elastomer offers two gel times, 7 minutes with a fast hardener and 20 minutes with the slow hardener. Both materials feature a one to one mix ratio by volume, a low viscosity for pouring thin wall parts, and sufficient time to degas. The Freeman 1080 Fast can be demolded within one to three hours and the Slow can be demolded within two to four hours.

Catalog Number	Description	Availability	Net Wt Lbs. (Kg)
055413	Freeman 1080 Slow	Quart Unit	4 (1.8)
055412	Freeman 1080 Slow	Gallon Unit	16 (35.2)
055409	Freeman 1080 Fast	Gallon Unit	16 (35.2)

Freeman 1085 – Tan

- Castable to 1½" in Thickness
- 6 Min. Gel Time
- 30-120 Min. Demold
- 70D Shore Hardness

Freeman 1085 is an economical, tan colored urethane elastomer that is suitable for creating prototype injection molded parts. This product is

easy to use because of it's one to one mix ratio by weight or volume and low moisture sensitivity. It does not require degassing, possesses a low viscosity for easy pouring, and can be cast to 1½" thick.

Catalog Number	Description	Availability	Net Wt Lbs. (Kg)
055128	Freeman 1085	Quart Unit	4 (1.8)
055127	Freeman 1085	Gallon Unit	15.2 (33.4)
055125	Freeman 1085 Resin Only	5 Gallon	38 (83.6)
055126	Freeman 1085 Hardener Only	5 Gallon	38 (83.6)

Freeman 1090 – Clear

- Castable to 3" in Thickness
- 9 Min. or 20 Min. Gel Time
- ½-4 Hr. or 16 Hr. Demold
- 80D Shore Hardness

Freeman 1090 is a water clear urethane elastomer that is ideal for creating parts which require near-perfect clarity.

This product is available in both a fast formulation which has a demold time of half to four hours, as well as a slow formulation (for pouring larger parts) which requires a 16 hour cure before demolding. Both feature a one to one mix ratio (by volume) and low mixed viscosity which makes it excellent for pouring thin-walled parts.

Freeman 1090 Fast may be cast up to ½" thick and the Freeman 1090 Slow may be cast up to 3" thick.

Note: Part thickness greatly affects the curing rate of Freeman 1090. Thin-walled parts may require a post cure. Permit the material to solidify at room temperature and then heat cure the part in the mold at 110 to 150F for two to six hours. After cooling, the part is ready to demold.

Catalog Number	Description	Availability	Net Wt Lbs. (Kg)
055416	Freeman 1090 Slow	Quart Unit	3.8 (8.4)
055415	Freeman 1090 Slow	Gallon Unit	15.2 (33.4)
055440	Freeman 1090 Fast	Gallon Unit	15.2 (33.4)

Freeman Color Tints

A highly concentrated coloring tint for urethane and epoxy resin systems. For urethanes, mix thoroughly into the part B or Polyol side before combining with part A. For epoxies, add to the resin side before combining with the hardener. 0.2% to 0.5% by weight can produce deep colors. May be used with clear epoxies and urethanes to obtain a transparent color.

Catalog Number	Description	Color	Availability
055420	Freeman Color Tints	Yellow	2 oz. (56.7 g)
055421	Freeman Color Tints	Green	2 oz. (56.7 g)
055422	Freeman Color Tints	Blue	2 oz. (56.7 g)
055423	Freeman Color Tints	Red	2 oz. (56.7 g)
055424	Freeman Color Tints	White	2 oz. (56.7 g)
055425	Freeman Color Tints	Black	2 oz. (56.7 g)
055426	Freeman Color Tints	Orange	2 oz. (56.7 g)
055427	Freeman Color Tints	Violet	2 oz. (56.7 g)
055428	Freeman Color Tints	Brown	2 oz. (56.7 g)



Freeman Polyurethane Elastomers Specifications

	Mix Ratio (by wt.) Resin:Hardener	Mix Ratio (by vol.) Resin:Hardener	Gel Time (min.) @ 72°F	Demold Time (hrs.) @ 72°F	Specific Gravity (mixed)	Hardness (Shore D)	Shrink (in/in)*	Compressive Strength (psi)	Deflection Temp. (°F)**	Flexural Strength (psi)	Tensile Strength (psi)	Flexural Modulus (psi)	Mixed Viscosity (cps)	Volumetric Yield (cu. in./lb.)
Flexible Urethanes														
Freeman 1035	1:1	1:1	30	16	1.02	40A	-	-	-	-	450	-	1,500	27.2
Freeman 1035T	80:100	1:1	20	16	1.17	40A	-	-	-	-	-	-	Thixotropic	23.6
Freeman 1040	10:100	9:100	28	24	1.04	52A	0.001	-	-	-	1,190	-	1,350	26.6
Semi-Rigid Urethanes														
Freeman 1050	1:1	100:94	26	24	1.10	85A	0.001	-	-	-	2,050	-	1,650	25.2
Freeman 1060	100:60	100:60	28	24	1.05	60	0.001	-	-	-	3,200	-	2,600	26.36
Freeman 1066	100:50	100:50	15-17	2-4	1.03	65	0.0025	1,800	181°	3,700	3,100	74,000	3,200	26.9
Rigid Urethanes														
Freeman 1070	100:92	1:1	3	1/4-1/2	1.05	70	0.004	-	-	-	3,000	-	80	26.6
Freeman 1080 Fast	117:100	1:1	7	1-3	1.12	80	0.001	8,300	134°	9,500	6,650	288,000	150	24.7
Freeman 1080 Slow	117:100	1:1	20	2-4	1.12	80	0.001	8,300	134°	9,500	6,650	288,000	150	24.7
Freeman 1085	1:1	1:1	6	1/2-2	1.12	70	0.002	4,880	137°	5,600	3,300	170,000	80	24.7
Freeman 1090 Fast	100:90	1:1	9	1/2-4	1.04	80	0.001	-	-	11,000	2,500	-	600	26.7
Freeman 1090 Slow	100:90	1:1	20	16	1.04	80	0.001	-	-	11,000	2,500	-	600	26.7
ASTM				D-2471		D-2240	D-2566	D-695	D-648	D-790	D-638	D-790	D-2393	

*Dependent upon mass.

**The maximum service temperature may be far above Deflection Temperature depending on the application and the stress of the plastic at high temperature.



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