

ADHESIVES & REPAIR MATERIALS



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POLYESTER REPAIR & BUILD-UP MATERIALS

Specifications

	Mix Ratio (by wt.) R:H	Gel Time (min.)	Hardness (Shore D) @ 24 hr.	Viscosity (cps)	Density (g/cc)	Color
TUF-Fil	100:1.5	11	81	912,000	1.74	Mahogany, Pine, Gray
TUF-Fil White	100:1.5	9	95	400,000	2.50	White
Hi-Temp TUF-Fil	100:2.0	9	82	830,000	1.68	Dark Gray
TUF-Carv	100:1.5	10	71	581,000	1.14	Mahogany and Pine
3M Body Filler	100:1.5	3-5	70	192,000- 244,000	1.20	Gray
Quick-Bild II	100:1.5	9	85	1,380,000	1.65	Mahogany, Black, White
ASTM	-	D-2471	D-2240	D-2393	D-792	-



TUF Features

TUF is a complete line of quality polyester repair and build-up materials, formulated and manufactured by Freeman, and offers the following features:

Fast

Fast setting - sandable in 15 min.

Strong

Good wear resistance
Good chemical resistance

Accurate

Low shrinkage
"No-sag" properties

Versatile

Bonds to most surfaces

Availability: quart or gallon cans. 1 oz. or 4 oz. white cream hardener included. Extra hardeners available separately.

TUF-Fil®

Freeman TUF-Fil closely matches mahogany and other hardwoods in hardness. Suitable for high-wear applications, it may be scraped, filed, tapped and sanded when fully cured. While it is still rubbery, it is carvable using woodworking tools. TUF-Fil Gray (Aluminum) makes a great repair material for gray fixture boards.

TUF-Fil® White

TUF-Fil White is the hardest, strongest and most dense of the TUF line of products. It is excellent for repairing composite laminate tooling.

Hi-Temp TUF-Fil®

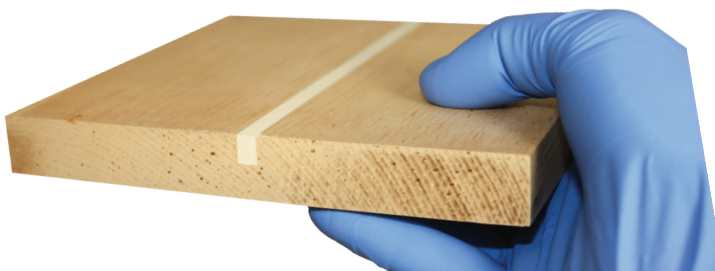
Hi-Temp TUF-Fil is ideal for the repair, build-up or alteration of tooling that will be subjected to operating temperatures up to 350°F. It features very good adhesion when used on composite tooling, metal, modeling & styling boards, and wood materials.

TUF-Carv®

Freeman TUF-Carv Repair & Build-Up Material is a less dense material than TUF-Fil, closely matching the hardness of pine and jelutong. It is ideal for any job that requires a durable, yet carvable finish. TUF-Carv, when cured, can be carved, sawed, sanded, filed, tapped and machined easily with woodworking tools.

Cream Hardener

This premium quality white catalyst is designed for use with all of the TUF Products. It can also catalyze other manufacturers' polyester filler products. The bright white color does not significantly change the color of the basic resin.



POLYESTER REPAIR & BUILD-UP MATERIALS CONTINUED



Master® Quick-Bild II

Our most popular Master repair formulation offers a thick viscosity for excellent sag resistance on vertical walls, 85 Shore D hardness for superior wear resistance, and different-colored hardeners. This two-component, quick setting material hardens in 15 minutes, creating a durable repair to metal, plastic, and wood.

Availability: quart and gallon off-white resin cans. 1 oz. or 4 oz. cream hardener sold separately in a variety of colors.

3M™ Light Weight Body Filler

This two-component material is vacuum processed to create a smooth texture. It is ideal for filling dents, dings, gouges and other cosmetic imperfections on bare steel, aluminum, and fiberglass reinforced polyester (FRP). It may also be used on many industrial and architectural surfaces needing minor repairs. 3M™ Light Weight Body Filler cures tack free in 20 minutes with good sanding and handling characteristics.

Availability: each package includes a 2.75 oz. blue cream hardener. Extra hardeners can be purchased separately.

Fillet Shapers

Made of high quality spring steel, this set of four fillet tools is ideal for creating fillets from any TUF product or any paste repair material.

Availability: 5³/₄" long tools ground to smooth radius sizes of 1/16", 1/8", 3/16", 1/4", 5/16", 3/8", and 1/2".



EPOXY-BASED REPAIR MATERIALS

Freeman 1280 Epoxy Paste

This aluminum-filled paste offers a 150 min. gel time, 80D hardness, and good resistance to moisture, shock, and most chemicals.

It is ideal for repairing tools, dies, jigs, and fixtures, as well as applications such as potting, drill bushings, and creating fillets on metal patterns.

Availability: quart kits.



Devcon Aluminum Putty

This 85D hardness aluminum-filled epoxy bonds to aluminum and many other metals for dependable non-rusting repairs to castings, machinery and equipment. It fills porosity in aluminum castings and can be machined, drilled, or tapped using conventional metalworking tools.

Availability: 1 lb. or 3 lb. containers. Also available in a liquid for pouring casting models and foundry patterns (page 29).

Devcon Fasmetal™ Putty

Fasmetal is a high-performance, alumina-filled epoxy for making fast and dependable emergency repairs to leaks in pipes carrying ores, coal, cement, sand, and gravel. It is 90D hardness, hardens in 5 minutes and can be applied in temperatures as low as 40°F.

Availability: 0.75 lb. containers.

Devcon Plastic Steel® Putty

This 85D hardness putty with a 5 min. gel time is for routine maintenance, production, and tooling applications and bonds to most metals, concrete, and some plastics. It can be drilled, tapped, machined, or painted.

Availability: 1 lb. containers.

Devcon Titanium Putty

This titanium-reinforced epoxy is for repairs to machinery and equipment that can be precision machined. It features 87D hardness, excellent temperature resistance (350°F), high compressive strength, and resistance to many chemicals and most acids, bases, solvents, and alkalis.

Availability: 1 lb. containers.



Lab-Metal & Lab Solvent

Lab-Metal is an 81D hardness, aluminum-filled, ready-to-use repair paste for metal and non-metal applications. This air-hardening, extremely durable formulation may be milled, drilled, tapped, and sanded smooth for a long-lasting repair. Both the standard (350°F) and Hi-Temp (1,000°F) formulations work well for powder coating applications. Lab Solvent thins the material for spray and brush applications.

Availability: individually or in cases of 12.

Lab-Metal - 3 lb. quart cans, Hi-Temp Lab-Metal - 1.5 lb. cans, Lab Solvent - 1 lb. pint cans.

EPOXY ADHESIVES



Freeman's broad line of two-component epoxy adhesives form extremely strong durable bonds with most materials, especially metals. They allow great versatility in formulation because there are many resins and many different hardeners.

Specifications

	Mix ratio (by wt.) Resin:Hardener	Mix ratio (by vol.) Resin:Hardener	Gel Time (min.) @ 72°F	Light Handling Time	Cure Time (hr.) @ 72°F	Mixed Viscosity (cps)	Hardness (Shore D)	Lap Shear Strength (psi)	Peel Strength (pli)	Tensile Strength (psi)	Service Temp./ Max (°F)	Color
Fast Set 505	1:1	1:1	5	20 min.	4	10,400	85	2,550	-	2,500	200	Clear
Fast Set 517	1:1	1:1	15-20	3-4 hr.	4	14,000	80	2,550	-	2,500	200	Clear
Fastweld 10	1:1	1:1	4	30 min.	4	250,000	85	2,840	-	3,850	-	Gray
MP 5405	1:1	1:1	3-5	15 min.	24	12,500	80	2,300	-	7,000	265	Clear, Black
Devcon 5-Minute	1:1	1:1	4	45 min.	16	8,000-10,000	85	1,400	-	1,400	200	Clear
Fre-Weld 8103	1:1	1:1	20-30	60-90 min.	24-48	7,000/5,000	70	2,300	-	6,500	302	Clear, Orange, Red
Freeman EP 8010	1:1	1:1	3-5	20-30 min.	24	Thixotropic	80	2,900	-	7,000	266	Clear
Freeman EP 8211	1:1	1:1	120	4 hr.	48	12,000	82	-	-	7,500	302	Amber
Freeman EP 8212	1:1	1:1	8-12	30-60 min.	24	16,000	80	-	-	2,300	266	Clear
Freeman EP 8214	1:1	1:1	60	10 hr.	24	80,000	70	-	-	3,000	266	Gray
Freeman EP 8215-1	2:1	2:1	40-60	2-4 hr.	24	50,000	80	3,700	-	6,600	302	Off-White
Freeman EP 8258	2:1	2:1	50-60	2-4 hr.	24	30,000	80	4,000	-	6,600	302	Off-White
Araldite 2011	100:80	1:1	100	7 hr.	10	45,000	80	3,480	29	3,480	194	Yellow
Araldite 2012	1:1	1:1	5-8	20 min.	1	30,000	82	2,769	31	6,381	175	Yellow
Araldite 2014	2:1	2:1	80	3 hr.	5	Thixotropic	84	2,764	17	3,773	158	Gray
Araldite 2015-1	1:1	1:1	45-55	4 hr.	6.5	Thixotropic	75	2,640	29	4,496	212	Gray
Araldite 2019	100:43	100:50	100-120	4.5 hr.	6	Thixotropic	75	3,625	46	5,800	284	Black
Araldite 2031-1	100:120	1:1	60-70	3 hr.	15	Thixotropic	-	2,900	29	3,335	212	Black
AY557/HY557	1:1	1:1	5-6	10 min.	24	14,000	83	2,560	-	-	-	Clear Amber
AW8595/HW8595	100:77	1:1	60	4 hr.	16	21,000	70	2,300	-	2,200	120	Cream
Araldite 8579	100:40	100:40	60	8 hr.	24	125,000	-	2,350	-	-	248	Gray
TDR-1100-11	100:42	2:1	95	8 hr.	24	13,000	85	4,100	-	9,100	192	Clear
Araldite 9102	100:40	100:47	80	-	2	8,000-20,000	-	2,900	45	507	-	Yellow
ASTM	-	-	D-2471	-	-	D-2393	D-2240	D-5868	-	D-1002	-	-



Fast Set 505 and Fast Set 517 offer a darker color indicator for proper mixing. The material changes from blue to clear to indicate a complete mix.

Freeman Fast Set 505 Epoxy Adhesive

- ▶ 85 Shore D hardness
- ▶ 5 min. gel time
- ▶ 20 min. handling time
- ▶ 10,400 cps viscosity

This two-component, rapid-curing epoxy offers a 5 min. gel time, and parts glued can be handled in 20 min. The 1:1 ratio, darker color indicator, and available nozzles and pumps ensure complete and easy mixing. It is excellent for bonding metal, wood, ceramic, fiberglass, and most Freeman modeling and styling boards.

complete and easy mixing. It is excellent for bonding metal, wood, ceramic, fiberglass, and most Freeman modeling and styling boards.

Availability: 50 ml cartridges with one static mix nozzle, pint kits, gallon kits, or 5-gallon kits. Hand pumps and additional nozzles also available separately.

Freeman Fast Set 517 Epoxy Adhesive

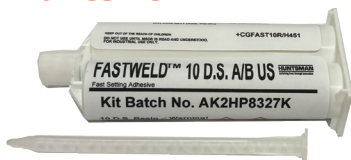
Freeman Fast Set 517 is similar to Fast Set 505 yet has a 15-20 minute gel time and 3-4 hour handling time.

Availability: pint kits, gallon kits, or 5-gallon kits. Hand pumps sold separately.

EPOXY ADHESIVES CONTINUED

Fastweld 10 Epoxy Adhesive

- ▶ 85 Shore D hardness
- ▶ 4 min. gel time
- ▶ 30 min. handling time
- ▶ 250,000 cps viscosity



This fast-setting epoxy adhesive is ideal for bonding small parts for repair work. Fastweld 10 will cure at temperatures as low as 5°C (41°F).

Availability: 50 ml dual syringes. Static mix nozzle sold separately (page 59).

H.B. Fuller MP 5405 Epoxy Adhesive

- ▶ 80 Shore D hardness
- ▶ 3-5 min. gel time
- ▶ 15 min. handling time
- ▶ 12,500 cps viscosity

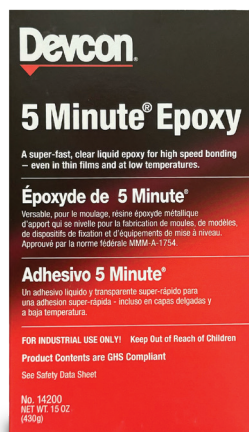
H.B. Fuller (formerly ASI) MP 5405 is a two-part adhesive designed for ceramics and most plastics. It cures to a tough, semi-rigid material and is free flowing in viscosity. It

features good resistance to water, salt spray, inorganic acids and bases, and most organic solvents. It was specially formulated to a 1:1 mix ratio for use in either dispensing equipment or side-by-side dual cartridges.

Availability: 50 ml cartridges. Mix nozzles sold separately.

Devcon 5-Minute Epoxy

- ▶ 85 Shore D hardness
- ▶ 4 min. gel time
- ▶ 45 min. handling time
- ▶ 8,000-10,000 cps viscosity



This widely popular, rapid-curing, low viscosity, general-purpose adhesive and/or encapsulant easily dispenses, mixes in seconds, and dries in 15 minutes with full strength in 1 hour. It bonds rigid durable substrates such as metals, glass, ceramics, concrete, and wood in all combinations, forming a clear hard rigid bond that self-levels in minutes.

Availability: 50ml cartridges, 2.5oz tubes, 15 oz. tubes, and 9 lb. containers. Mix nozzles sold separately.

Fre-Weld 8103 Epoxy Adhesive

- ▶ 70 Shore D hardness
- ▶ 20-30 min. gel time
- ▶ 60-90 min. handling time
- ▶ 7,000/5,000 cps R/H viscosity



Fre-Weld 8103 is formulated for the effective bonding of Modeling, Styling, and Tooling Boards as well as most metals and plastics. It cures at room temperature and features excellent vibration and impact resistance with high peel and shear strength.

Availability: 200 ml, quarts, gallons, and 5-gallons in orange, red, or clear. One static mixer included. Additional mixers available separately.

Freeman EP 8010

- ▶ 80 Shore D hardness
- ▶ 3-5 min. gel time
- ▶ 20-30 min. handling time
- ▶ Thixotropic

Freeman EP 8010 is designed for the quick bonding of metals, ceramics, and most plastics. Its thixotropic paste consistency

prevents runout and sagging. It also features good resistance to water, salt spray, inorganic acids and bases, and most organic solvents.

Availability: 50 ml cartridges. One static mixer included. Additional mixers available separately.

Freeman EP 8211

- ▶ 82 Shore D hardness
- ▶ 120 min. gel time
- ▶ 4 hr. handling time
- ▶ 12,000 cps viscosity



Freeman EP 8211 is a low-viscosity, polyamine adhesive designed for the bonding of metals and plastics. It features an extended working time of 2 hours and good chemical, corrosion, and water resistance.

Availability: 50 ml or 200 ml cartridges, quarts, and gallons. One static mixer included. Additional mixers available separately.

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EPOXY ADHESIVES CONTINUED

Freeman EP 8212

- ▶ 80 Shore D hardness
- ▶ 8-12 min. gel time
- ▶ 30-60 min. handling time
- ▶ 16,000 cps viscosity

Freeman EP 8212 is designed for quickly bonding metals, ceramics, and most plastics, with a service temperature up to 266°F. It features good

resistance to water, salt spray, inorganic acids and bases, and most organic solvents.

Availability: 50 ml cartridges. One static mixer included. Additional mixers available separately.

Freeman EP 8214

- ▶ 70 Shore D hardness
- ▶ 1 hr. gel time
- ▶ 10 hr. handling time
- ▶ 80,000 cps viscosity

This is designed for bonding metals, ceramics, and many plastics. Its mineral filling offers great vibration and

impact resistance. It is free flowing which allows air to naturally release and promotes self-leveling. EP 8214 also features good resistance to water, salt spray, inorganic acids and bases and most organic solvents.

Availability: 50 ml or 200 ml cartridges, and quarts. One static mixer included. Additional mixers available separately.



Freeman EP 8215-1

- ▶ 80 Shore D hardness
- ▶ 40-60 min. gel time
- ▶ 2-4 hr. handling time
- ▶ 50,000 cps viscosity

Freeman EP 8215-1 is designed for structural bonding and laminating where high strength, mechanical and electrical properties are required.

This adhesive offers great dimensional stability over a wide range of temperatures. It bonds to most materials, including fiberglass, ceramics, metal, and many plastics. It is also resistant to water, weather, oxygen, solvents, other organic compounds, including diesel fuel and gasoline.

Availability: 200 ml cartridges. One static mixer included. Additional mixers available separately.

Freeman EP 8258

- ▶ 80 Shore D hardness
- ▶ 60-60 min. gel time
- ▶ 2-4 hr. handling time
- ▶ 30,000 cps viscosity

Freeman EP 8258 is similar to EP 8215 in design but with lower viscosity, slightly longer gel time, and improved lap shear strength.

Availability: 50 ml cartridges. One static mixer included. Additional mixers available separately.

ARALDITE EPOXY ADHESIVES

Araldite 2019

- ▶ 100-120 min. gel time
- ▶ 4.5 hr. handling time
- ▶ Thixotropic
- ▶ 284° temp. resistance

This structural thixotropic paste adhesive offers superior strength and excellent temperature resistance. It is suitable for bonding a wide variety of metals, ceramics,

and glass, but has been designed to perfectly bond onto thermoset composites, especially CFRP. It contains spacers to ensure a minimum bond line thickness of 0.05mm. Elevated temperature post cure recommended for optimal performance properties.

Availability: 50 ml cartridges. One static mixer included. Additional mixers available separately.

Araldite 2031-1

- ▶ 60-70 min. gel time
- ▶ 3 hr. handling time
- ▶ Thixotropic
- ▶ Room temperature

This structural adhesive offers a highly resilient bond for metals and thermoset composites. It offers high weathering resistance, and its thixotropic viscosity allows for no sagging up

to a 10mm thickness. Araldite 2031-1 contains spacers to ensure a minimum bond line thickness of 0.05mm.

Availability: 50 ml cartridges. One static mixer included. Additional mixers available separately.

Araldite 8579

- ▶ 60 min. gel time
- ▶ 8 hr. handling time
- ▶ 125,000 cps viscosity
- ▶ 284° temp. resistance

Araldite 8579 is a two-component, easily-spread paste with good gap-filling characteristics. It is heat resistant to 248°F and offers good chemical resistance.

Availability: 5 gallon containers.

Araldite AW 8595 / HW 8595

- ▶ 60 min. gel time
- ▶ 4 hr. handling time
- ▶ 21,000 cps viscosity
- ▶ Room temperature

This epoxy adhesive offers a medium viscosity of 21,000 cps for good gap filling properties. It has excellent flexibility and bonds to a variety of substrates.

Availability: 50 ml cartridges. One static mixer included. Additional mixers available separately.



Araldite TDR 1100-11

- ▶ 95 min. gel time
- ▶ 8 hr. handling time
- ▶ 13,000 cps viscosity
- ▶ Heat cure

This tough adhesive is perfect for bonding fiberglass, plastics, and wood. It displays excellent results when heat cured above 170°F. It is an ideal adhesive for archery bow construction.

Availability: 5-gallon containers.

Araldite 9102

- ▶ 80 min. gel time
- ▶ 2 hr. cure time
- ▶ 8,000-20,000 cps viscosity
- ▶ 200°F maximum operating temp.

Easily improve the speed of your assembly production by using this high-performance adhesive. Simply mix, pour, and spread on a wide variety of substrates, including honeycomb panels for mass transportation applications. It also offers meter mix

capabilities and can withstand exposure to temperature, weather extremes, and UV light. Araldite 9102 complies with Flame, Smoke, and Toxicity (FST) requirements for passenger rail cars.

Availability: 5-gallon containers.

Araldite 2011

- ▶ 2 hr. gel time
- ▶ 7 hr. handling time
- ▶ 45,000 cps viscosity
- ▶ Room temperature

This two-component adhesive has a high shear strength and good resistance to dynamic loading. It features room temperature cure and long 120 min. work life. It bonds

strongly to metals, ceramics, rubbers and rigid plastics.

Availability: 50 ml or 200 ml cartridges. One static mixer included. Additional mixers available separately.

Araldite 2012

- ▶ 5-8 min. gel time
- ▶ 20 min. handling time
- ▶ 30,000 cps viscosity
- ▶ Room temperature

This tough adhesive features high shear strength and a 5-8 min. work life. It cures at room temperature and offers a strong bond to metals, ceramics and rubbers.

Availability: 50 ml or 200 ml cartridges. One static mixer included. Additional mixers available separately.

Araldite 2014

- ▶ 80 min. gel time
- ▶ 3 hr. handling time
- ▶ Thixotropic
- ▶ High temperature

This gap-filling, no-sag adhesive features excellent resistance to water, chemicals, and 250°F heat. It cures at room temperature and is ideal for use on metals and electronic components.

Availability: 50 ml or 200 ml cartridges. One static mixer included. Additional mixers available separately.

Araldite 2015-1

- ▶ 45-55 min. gel time
- ▶ 4 hr. handling time
- ▶ Thixotropic
- ▶ Room temperature

This tough, sag-resistant, adhesive with good shear strength is ideal for metals, sheet molding compounds and fiberglass reinforced parts.

Availability: 50 ml cartridges, 200 ml cartridges, or quarts. One static mixer included. Additional mixers available separately.

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METHACRYLATE ADHESIVES

These Freeman, Araldite, H.B. Fuller (formerly ASI), and Plexus two-component methacrylate adhesives are formulated for easy handling and are generally excellent for bonding thermoplastics, composites, and some metals. Methacrylates are usually the best choice for bonding dissimilar substrates.

Specifications

	Mix ratio (by wt.) Resin:Hardener	Mix ratio (by vol.) Resin:Hardener	Gel Time (min.) @ 72°F	Light Handling Time (min.)	Cure Time (hr.) @ 73°F	Mixed Viscosity (cps)	Lap Shear Strength (psi)	Peel Strength (pli)	Tensile Strength (pli)	Serviceable Temp./ Max (°F)	Color
Freeman MA 8221	1:1	1:1	3-6	18-24	24	70,000-120,000	-	-	3,000-3,500	250	Amber
Freeman MA 8305	1:1	1:1	2-4	8-10	24	70,000-120,000	-	-	3,000-3,500	250	Amber
Freeman MA 8310	1:1	1:1	8-12	30-45	24	70,000-120,000	-	-	3,200-3,500	250	Amber
Freeman MA 8420	10:1	10:1	3-7	15-20	24	95,000-115,000	-	-	3,000-3,500	250	Amber
Araldite 2022-1	100:95	1:1	10-12	28	30 min.	Thixotropic	3,680	42	-	212	Yellow
Araldite 2051	1:1	1:1	4-6	15	25 min.	Thixotropic	-	-	5,800	250	Pale Yellow
Araldite 2053-05	100:13	100:10	6-10	20	30 min.	Thixotropic	2,600	49	2,900	212	Dark Gray
Araldite 2053-15	100:13	100:10	15-20	40	50 min.	Thixotropic	2,175	55	2,750	212	Dark Gray
MP 55300	1:1	1:1	3-6	9-13	24	72,000	3,100	-	3,625-5,075	250	Off-White, Amber
MP 55305	1:1	1:1	2-3	5-8	24	72,000	3,300	-	3,625-5,075	250	Amber, Green
MP 55310	1:1	1:1	7-9	19-23	24	72,000	3,300	-	4,350-5,800	250	Amber, Gray, Black, White
MP 55420	10:1	10:1	4-6	9-16	24	132,000	3,000	-	3,190-4,640	250	Off-White, Amber
Plexus MA 300	1:1	1:1	3-6	12-15	60	40,000	3,000-3,800	-	3,000-4,000	250	White, Black
ASTM	-	-	D-2471	-	-	D-2393	-	-	-	-	-

Freeman MA Adhesives

Freeman's methacrylates are designed for structural bonding of various substrates, including fiberglass, steel, aluminum and various plastics with good chemical resistance. These adhesives offer a variety of working times and achieve nearly 90% of their ultimate strength in as little as 8 minutes, plus gap filling from 0.25"-0.50".

Availability: 50 ml, 380 ml, or 400 ml cartridges. Mix nozzles sold separately.

Araldite 2022-1 Methacrylate Adhesive

- ▶ Yellow
- ▶ 10-12 min. gel time
- ▶ 28 min. handling time

This multi-purpose adhesive offers a slightly longer gel and handling time than Araldite 2021-1 but still provides fast, effective bonding of ABS, PVC,

acrylic, polycarbonate, as well as most metals.

Availability: 50 ml cartridges (case of 36) and 380 ml cartridges (case of 6). Mix nozzles sold separately.

Araldite 2051 Methacrylate Adhesive

- ▶ Pale Yellow
- ▶ 4-6 min. gel time
- ▶ 15 min. handling time

Araldite 2051 is a quick-setting, general purpose methacrylate adhesive that is suitable to a wide variety of applications. Compatible

with a range of plastics, composites, and metals, this material sets up successfully when exposed to a wide temperature range, high moisture levels, and minimum substrate preparation. Once cured, this material can handle up to 250°F.

Availability: 50 ml cartridges, 400 ml cartridges, and 10 gallon kits. Mix nozzles sold separately.

Araldite 2053-05 Methacrylate Adhesive

- ▶ Dark Gray
- ▶ 6-10 min. gel time
- ▶ 20 min. handling time

Araldite 2053-05 is fast-setting structural methacrylate that is flexible, offering >50% elongation at break. It adheres

exceptionally to a variety of substrates with minimal surface preparation. When cured, 2053-05 is resistant to temperatures up to 212°F, but will handle E-Coat Post-Cure up to 392°F. It is an excellent choice for the transportation industry.

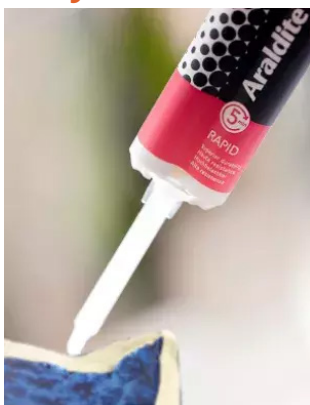
Availability: 50 ml cartridges. Mix nozzles sold separately

METHACRYLATE ADHESIVES CONTINUED

Araldite 2053-15 Methacrylate Adhesive

- ▶ Dark Gray
- ▶ 15-20 min. gel time
- ▶ 40 min. handling time

This two-part structural methacrylate offers 60% elongation at break. It needs minimal substrate pre-treatment, has excellent aging and weathering resistance, and offers excellent adhesion to a variety of metals, composites, and plastics. When cured, it can withstand temperatures up to 212°F and E-coat processes up to 392°F.



Availability: 50 ml cartridges. Mix nozzles sold separately.

H.B. Fuller MP 55300 Methacrylate Adhesive

- ▶ Off-white or Amber
- ▶ 3-6 min. gel time
- ▶ 9-13 min. handling time

MP 55300 forms tough, durable bonds to many substrates including plastic, composites and metal. In most cases, using

this product eliminates the need for surface cleaning or preparation, primers, and/or chemical wipes.

Availability: 50 ml cartridges, 400 ml cartridges, and 10 gallon kits. Mix nozzles sold separately.

H.B. Fuller MP 55305 Methacrylate Adhesive

- ▶ Amber or Green
- ▶ 2-3 min. gel time
- ▶ 5-8 min. handling time

MP 55305 is a 1:1 mix ratio adhesive designed for bonding a wide range of thermoplastics, composites, and metals. It has excellent

impact resistance and offers the ability to handle extreme temperature fluctuation.

Availability: 50 ml and 400 ml cartridges. Mix nozzles sold separately.

H.B. Fuller MP 55310 Methacrylate Adhesive

- ▶ Amber, Gray, Black, or White
- ▶ 7-9 min. gel time
- ▶ 19-23 min. handling time

This 1:1 mix ratio adhesive features a long work time for bonding larger parts. It is excellent for gluing composites, thermoplastics, and metals. It also has good chemical and impact resistance as well as exceptional flexibility.

Availability: 50 ml cartridges, 400 ml cartridges, and 10 gallon kits. Mix nozzles sold separately.



H.B. Fuller MP 55420 Methacrylate Adhesive

- ▶ Off-White or Amber
- ▶ 4-6 min. gel time
- ▶ 9-16 min. handling time

55420 is a 10:1 mix ratio adhesive that features a 4-6 minute working time for fast assembly of plastic, metal, or composite

parts. Parts may be handled in 9-13 minutes. Fully cured parts bonded with MP 55420 have excellent resistance to thermal cycling and resistance to a wide range of chemicals.

Availability: 380 ml cartridges. Mix nozzles sold separately.

Plexus MA 300 Methacrylate Adhesive

- ▶ White or Black
- ▶ 3-6 min. gel time
- ▶ 12-15 min. handling time

This toughened structural adhesive is formulated for bonding difficult-to-bond substrates such as nylon containing alloys, modified

polyesters, epoxy composites and standard plastics. This 1:1 mix ratio methacrylate features superior bond strength, durability, and impact resistance. It has a creamy consistency with excellent gap-filling capabilities and good peel strength in all environments.

Availability: 50 ml cartridges in black or white. Mix nozzles sold separately.

SEE ALSO

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POLYURETHANE ADHESIVES

Specifications

	Mix ratio (by wt.) Resin:Hardener	Mix ratio (by vol.) Resin:Hardener	Gel Time (min.) @ 77°F	Light Handling Time (hr.)	Cure Time (hr.) @ 73°F	Mixed Viscosity (cps)	Hardness (Shore A)	Lap Shear Strength (psi)	Peel Strength (pli)	Tensile Strength (psi)	Color
Araldite 2028-1	1:1	1:1	6-8 @ 77°F	8	16	7,750	-	1,160	37	1,595	Clear
Araldite 2040	92:100	1:1	15 @ 77°F	6	24	50,000	30D	1,247	23	1,305	Gray
SEM Quick Set 180	-	1:1	3 @ 70°F	1	24	-	70	2,400+	-	-	Black
ASTM	-	-	D-2471	-	-	D-2393	D-2240	D-1002	-	D-638	-

Araldite 2028-1

- ▶ 6-8 min. gel time
- ▶ 8 hr. handling time
- ▶ UV stable

This two-part, clear, structural adhesive provides a low viscosity and quick set up time. It is UV stable and bonds a variety of plastics and metals.

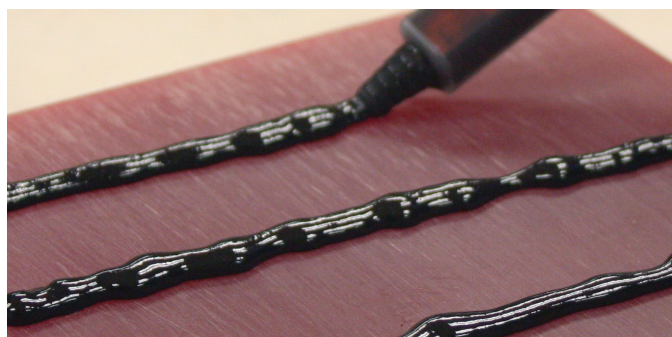
Availability: 50 ml cartridges.

Araldite 2040

- ▶ 15 min. gel time
- ▶ 10 hr. handling time
- ▶ 30 Shore D Hardness

This flexible, general-purpose adhesive offers a 15 min. work time and a light handling time of 10 hr. Best used with plastic, polycarbonate and nylon.

Availability: 50 ml cartridges.



SEM Quick Set 180 Polyurethane Adhesive

- ▶ 3 min. gel time
- ▶ 60 min. handling time
- ▶ 70 Shore D Hardness

SEM Quick Set 180 is a black, rapid-curing, 2-part polyurethane adhesive suitable for plastic, steel, aluminum, glass, SMC, and fiberglass.

Most 5-minute adhesives form a weaker bond on dense, difficult-to-bond foundry boards, but Quick Set 180 allows you to machine same day with a solid, secure bond! It offers an ideal combination of strength and speed, featuring a 3-minute gel time and can be machined in 1-2 hours with an incredibly strong bond.

Availability: dual mix cartridges with two nozzles. Applicator gun and mixing tips are also available separately.

HOT MELT FOUNDRY ADHESIVES

Tec® 3500 Hot Melt Glue Applicator

Manufactured by Power Adhesives Ltd., this lightweight applicator is designed for applying 1¾" diameter hot melt adhesives with a 400 watt stainless steel heater cartridge, 4-minute warm up, and a precision controller that detects various fault conditions to protect the tool. It operates on standard 110 voltage and includes a one-year warranty.



Tecbond® 501 Foundry Adhesive

This Power Adhesives Ltd. product instantly bonds foundry cores. It is comprised of 100% solids, containing no solvents or water. This material has a low viscosity for easy, yet maximum flow. It can be applied at 380°F and has a heat resistance of up to 158°F.

Availability: 22 lb. boxes of 1¾" dia. x 1½" long sticks.

Superbond Special Adhesive

This high-strength hot melt instantly and firmly joins waxes in the lost wax casting process with clean burn-out.

Availability: 1 lb. (0.45 kg) aluminum trays.

CYANOACRYLATE ADHESIVES

Freeman F-Bond Adhesives

F-Bond is a complete line of inexpensive cyanoacrylate adhesives designed for metal, wood, plastic, and tooling board adhesive requirements. Viscosity ranges from 3 cps to thixotropic.

Availability: 2 oz., 8 oz., and 1 lb. bottles. Accompanying accessories are available.



F-Bond Thin



General purpose
and extremely
fast setting

F-Bond Medium



Rapid-setting,
medium viscosity,
excellent flexibility

F-Bond Thick



Rapid-setting, high
viscosity, ideal
for gap-filling

F-Bond Gel



Thixotropic
formulation for
vertical applications

Accessories include:

F-Bond Accelerator - accelerates cure time and increases gap-filling capabilities. Also available in an aerosol form.

F-Bond Dosing Tips - high-quality precision application replacement tips for our 2 oz. bottles.

F-Bond Piercing Cap - a needle point cap to prevent dispenser clogging.

ADHESIVES & REPAIR

SEE ONLINE FOR OUR FULL OFFERING OF CYANOACRYLATES



Scan for webpage

TOOLING BOARD ADHESIVES & REPAIR MATERIALS

Specifications

	Mix ratio (by wt.) Resin:Hardener	Viscosity (cps)	Gel Time (min.) @ 77°F	Light Handling Time (hr.)	Hardness (Shore D)	Density (g/cc)	Service Temp. (°F)	Color
Dunapol 3153	–	3,000	30-35	2-3	–	1.1	176	Tan
Fre-Weld 5060	100:15	Thixotropic	90	24	75	0.95	285	Lt. Blue
Freeman 5070	1:1	1,600	1.5	0.5	–	–	–	Red
Freeman 5075	100:20	3,500	15	3-4	85	1.14	200	Red
ASTM	–	–	D-2471		D-2240	D-2393	D-2240	D-1002



Dunapol 3153 Polyurethane Adhesive

This single-component, non-filled polyurethane adhesive for foam, modeling, and tooling boards may also be used on metals (steel, aluminum), expanded materials (polyurethane, polystyrene, phenolic, etc.), plastic laminates (fiberglass, PVC), wood, concrete, and stone.

Availability: 35 oz. bottles.

Fre-Weld 5060 Epoxy Adhesive

This high-temperature epoxy adhesive is formulated for use with the Freeman T-5060 Epoxy Tooling Board. Fre-Weld 5060 is blue in color and offers a heat resistance of 284°F.

Availability: gallon kits.

Freeman 5075 Epoxy Adhesive

This epoxy adhesive is designed specifically for gluing red foundry boards. Freeman 5075 features a 15 minute working time and a quick 3-4 hour light handling time.

Availability: quart kits.

Freeman 5070 Repair Material

This red polyurethane patch material is designed specifically for the repair or buildup of the red foundry boards. It features a 1:1 mix ratio by volume, working time of 90 seconds, and a quick 20-30 minute cure time. Once cured, it can be machined and will exhibit properties similar to red foundry boards.

Availability: 50 ml dual syringe with nozzle.



OTHER SPECIALTY ADHESIVES

3M™ Hi-Strength 90 Spray Adhesive



This extreme high-strength and fast-tack adhesive provides a strong permanent bond. It is ideal for a wide range of materials, including decorative laminates, particleboard, polyethylene, polypropylene, SBR rubber, concrete, wood, MDF, and more. Its 1 min. dry time allows for fast, extremely strong permanent results and high productivity.

This is the recommended adhesive for Freeman Machinable Wax (page 44).

Availability: 24 oz. spray cans.

3M™ Super 77™ Multipurpose Adhesive

Super 77 Spray Adhesive is a fast-drying, general-purpose adhesive designed for permanently attaching fabric, paper, plastics, and light-weight foams to rigid-base materials. Its fast, aggressive tack and low soak-in make it ideal for a wide variety of applications.

Availability: 24 oz. spray cans

Sprayway SW382 Fast Tack Adhesive

This spray adhesive can be used to coat plain sheet wax for fabrication. This adhesive also bonds to cloth, paper, cardboard, acetate, foil, plastic film, cork, foam rubber and leather.

Availability: 13 oz. spray cans.



WOOD GLUE

Freeman Medium Viscosity White Wood Glue

This polyvinyl acetate adhesive offers a great balance of set time, viscosity, and holding strength. It is extremely effective for gluing most all species of hardwood and softwood.

Availability: 1-gallon and 5-gallon containers.

Freeman High Viscosity White Wood Glue

This is a thicker version of our Medium White Wood Glue for vertical applications or where a higher viscosity adhesive is preferred. It is extremely effective for gluing most all types of wood and is excellent for installing leather fillets due to the increased viscosity.

Availability: 1-gallon and 5-gallon containers.

Freeman Fast Set White Wood Glue

The fastest-setting wood glue we offer, it is used for assembly work where rapid hardening is required. It works well with all types of hardwood and softwood.

Availability: 1-gallon and 5-gallon containers.

Freeman Gold Wood Glue

This glue is formulated to be extra tacky, and with its high viscosity and fast set time, it is ideal for assembly and fillet work.

Availability: 1-gallon and 5-gallon containers.



Master White Wood Glue

Master White Wood Glue has a high built-in wet tack that helps prevent board movement during clamping. It is ready for use requiring no mixing, blending or heating and can be used at temperatures as low as 60°F. Easily and quickly applied with a brush or roller, it can bond dissimilar materials such as wood, cork, oil-free leather, plastics and metals.

Availability: 1-gallon and 5-gallon containers.

Wood Glue Applicator Bottles

These non-stick, empty plastic glue bottles in popular and convenient sizes are available for pattern shop use. The screw-on plastic spout, which can be cut to desired opening size, gets the glue into the tight places.

Availability: 2 oz., 8 oz., 16 oz., or 32 oz. bottles with spouts. Additional spouts for all sizes available separately.

DISPENSING GUNS & STATIC MIX NOZZLES

50 ml Conversion Kit

This conversion kit is an economical alternative to a dedicated dispensing gun when you do not require a high volume of 50 ml cartridges. It is suggested for use with a standard 9" caulking gun.

Adhesive Dispensing Guns

These dispensing guns are designed for a variety of materials and are available in a wide range of sizes.

EP & MA Adhesive Dispensing Gun and Mix Nozzle

These 50 ml static mix nozzles are specific to the Freeman line of EP (epoxy) and MA (methacrylate) adhesives. They are used for effective and complete mixing of the Freeman 50 ml adhesive cartridges.

50 ml Static Mix Nozzles

These 50 ml static mix nozzles are available in various shapes, lengths, and with a range of features to suit your adhesive dispensing needs.

200/380/400 ml Static Mix Nozzle

These static mix nozzles effectively and completely mix adhesives for a variety of gun sizes. 415800 can be used with the 200, 380, and 400 ml dispensing cartridges.

