

- [Home](#)
- [Product Catalog](#)
- [About Us](#)
- [Chemical Resistant](#)
- [Epoxy Coatings](#)
- [Flooring](#)
- [Installation](#)
- [Joints](#)
- [Mortars & Grouts](#)
- [Primers & Sealers](#)
- [Specifier's Info](#)
- [Structural](#)
- [Waterproofing](#)
- [MSDS & Tech Data](#)
- [Ordering Info](#)

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Flexible Polyurethane Methyl Methacrylate

Joints, Membrane, and Flexible Mortar

Epoxy.com Product #6890

DESCRIPTION

Flexible Polyurethane Methyl Methacrylate (PUMMA) Product #6890 is a higher viscosity, 100% reactive, flexible methyl methacrylate polyurethane hybrid resin used as a crack isolation or waterproofing membrane under various Epoxy.com MMA Systems, or as a resilient mortar or joint filler for numerous applications.

Flexible Polyurethane Methyl Methacrylate (PUMMA) Product #6890 resists cracking caused by horizontal substrate movement, providing a crack resistant, resilient surface with superior performance in cold temperature environments. Flexible Polyurethane Methyl Methacrylate (PUMMA) Product #6890 offers stress relieving properties for floor slabs showing movement and/or vibration.

Flexible Polyurethane Methyl Methacrylate (PUMMA) Product #6890 is excellent for use as an intermediate membrane layer or patching mortar in loading docks and ramps, equipment rooms, large animal rooms, activity rooms, automotive and tooling industry, freezers, coolers, bridge decks, roof decks, pedestrian walkways, parking garages, ship decks, pool liners, pool decks, joint repair, food industry, dairies, beverage industry, and numerous other industries and applications. Flexible Polyurethane Methyl Methacrylate (PUMMA) Product #6890

Flexible Polyurethane Methyl Methacrylate (PUMMA) Product #6890 makes an excellent expansion joint.

ADVANTAGES

- Crack Resistant and Waterproofing Flexibility
- Elongation of 300%
- Reduces Noise Created by Mechanical Vibrations
- May be Applied in Thickness of 1/16”-1/4”
- VOC Compliant (100% Solids), Meets USGBC LEED Requirements

CONSIDERATIONS

- For proper performance, follow recommended mixing/application guidelines.
- Concrete must be dry, free of dirt, waxes, curing agents and other foreign materials.
- Do not store outside in direct sunlight, storage temperature must be < 80oF. • On or below grade installation must have an efficient vapor barrier under the slab (minimum 10-15 mil).
- Moisture vapor transmission must be less than 3 lbs per ASTM-F-1869 and less than 80% RH per ASTM F-2170 unless Epoxy.com Resin moisture mitigation system is used.

COMPOSITION

Flexible Polyurethane Methyl Methacrylate (PUMMA) Product #6890 is a 100% reactive methyl methacrylate polyurethane hybrid resin.

COLOR SELECTION

Flexible Polyurethane Methyl Methacrylate (PUMMA) Product #6890 is supplied clear (slight haze). Color packs are available for selected colors. Color pack mix ratio is 1 quart pigment per 5 gallons resin. See Epoxy.com MMA Color Card.

SURFACE PREPARATION

Surface preparation is the most critical portion of any successful resinous flooring system. All substrates must be properly prepared as outlined in [Epoxy.com Surface Preparation Procedures](#). In addition, All Epoxy.com MMA Flooring Systems require a minimum surface profile of CSP 4-5, as outlined in ICRI Guideline 310.2-1997, formerly named G-03732 (available from www.ICRI.org).

MIXING AND INSTALLATION

Flexible Polyurethane Methyl Methacrylate (PUMMA) Product #6890 is typically used in conjunction with fillers and aggregate and requires the addition of MMA Hardener #695 to start the hardening process. The amount of hardener must be adjusted to the respective surface temperature (see table). At temperatures below 40°F, Epoxy.com 9101 MMA COLD TEMPERATURE ACCELERATOR must be used in addition to the amount of hardener used at the 40°F or 30°F level.

Flexible Polyurethane Methyl Methacrylate (PUMMA)
Product #6890 Resin Mix Ratios, Pot Life and Hardening/Temperature

Temp. (°F) of Resin, Air & Floor Surface	Hardener by Volume (oz.) Per Gallon of 9800 Resin	Pot Life (min.)	Hardening Time (min.)
+30°F	10 vol. oz.	Approx. 25	Approx. 75
+40°F	9-10 vol. oz.	Approx. 25	Approx. 70
+50°F	8-9 vol. oz.	Approx. 25	Approx. 65
+60°F	6-7 vol. oz.	Approx. 20	Approx. 60
+70°F	5-6 vol. oz.	Approx. 20	Approx. 50
+80°F - 90°F	5* vol. oz.	Approx. 15	Approx. 45

*Do not use less than 5 oz. MMA Hardener #695 by volume.

Consult with Epoxy.com Resin Technical Services if performing mix ratio by weight instead of by volume.

MMA COLD TEMPERATURE ACCELERATOR Product #696

At temperatures below 40°F, **Cold Temperature Accelerator Product #696** must be used in addition to the amount of hardener used at the 40°F or 30°F level. As a rule of thumb, add about ½ oz by volume per gallon of resin @ 39° to 32°F, up to 2.0 oz by volume per gallon @ -20°F, increasing the quantity gradually in a consistent linear progression as the temperature decreases. **VERY IMPORTANT:** Cold Temperature Accelerator Product #696 **MUST** be added to the MMA resin and thoroughly blended **BEFORE** adding the Epoxy.com #695 MMA HARDENER, or hazardous decomposition may occur (i.e., violent foaming). Epoxy.com 696 MMA COLD TEMPERATURE ACCELERATOR will cause yellowing, it is advised to use pigmented MMA resin versus clear to reduce the appearance of yellowing, darker colors will be less affected than lighter colors.

POLYURETHANE METHYL METHACRYLATE MEMBRANE SYSTEMS

Flexible Polyurethane Methyl Methacrylate (PUMMA) Product #6890 MEMBRANE SYSTEMS are used for elastomeric decking, waterproofing, roof decks, freezer floors, etc. Flexible Polyurethane Methyl Methacrylate (PUMMA) Product #6890 can be mixed in various formulations using Epoxy.com Self-Leveling Filler #78, or Mortar Blend Aggregate #82, depending on the applied thickness and intended use. Refer to Formulas 6890/1-4. Consult with Epoxy.com Resin Technical Service for recommendations on the best formula, thickness and system design to use for any particular project.

FORMULATION GUIDE – MEMBRANE SLURRY

Typical Slurry Formula for 40 mil – 125 mil Basecoat Membrane (Formula 6890/1)

Material	Weight	Volume
Polyurethane MMA #6890	8.4 lbs.	1.0 gallon
Self Leveling Filler #78	4-5 lbs.	0.25-0.33 gallons
Pigment Pack (optional)	N/A	6.4 vol. oz.
MMA Hardener #695	Follow chart	Follow Chart

Add hardener to the clear resin and blend; add dry filler powder and mix thoroughly with jiffy mixer. Blend pigment and mix for 1-2 minutes until no lumps are present. Apply mix to the primed surface using a gauge rake or notched trowel. The above mixture will yield approximately 1.15 gallons of slurry. Coverage per batch is:

Yield*	1.15 gallons slurry
Coverage: 1/16"	28-30 ft ²
1/8"	13-15 ft ²

*Note: Yield of mixed slurry will vary depending on mix design used.

Polyurethane MMA #6890; Typical Slurry Formula for 125-195 mil Basecoat Membrane (Formula 9800/2)

Material	Weight	Volume
Polyurethane MMA #6890	8.4 lbs.	1.0 gallon
Self Leveling Filler Product #78	7-8 lbs.	0.5 gallons
Silica Sand 30-50 mesh	6-7 lbs.	0.5 gallons
Pigment Pack	N/A	6.4 vol. oz.
MMA Hardener #695	Follow chart	Follow Chart

Add hardener to the clear resin and blend; add dry filler powder and filler sand and mix thoroughly with jiffy mixer. Blend pigment and mix for 1-2 minutes until no lumps are present. Apply mix to the primed surface using a gauge rake or notched trowel. The above mixture will yield approximately 1.5 gallons of slurry. Coverage per batch is:

Yield	1.5 Gallon Slurry
Coverage: 1/16"	36-38 ft ²
1/8"	17-18 ft ²
3/16"	13-14 ft ²

*Note: Yield of mixed slurry will vary depending on mix design used.

Formulation Guide - Joint Filler

Typical Formula for Use as Joint Filler (Formula 9800/3)

Material	Weight	Volume
Polyurethane MMA #6890	8.4 lbs.	1.0 gallon
Self Leveling Filler #78	4-5 lbs.	0.25-0.33 gallons
Pigment Pack	N/A	6.4 vol. oz.
MMA Hardener #695	Follow chart	Follow Chart
Yield = 1.15 gallons of mixed slurry		

Add hardener to the clear resin and blend; add pigment pack and filler powder and mix thoroughly with jiffy mixer. Blend for 1-2 minutes until pigment is thoroughly mixed and no lumps from filler are present. For joint filling, transfer mixed resin to a pourable container or caulk gun. One gallon of Polyurethane MMA #6890 slurry will yield 231 cubic inches, or fill an expansion/isolation joint with dimensions of ½ inch x ½ inch x 77 lineal feet. Closed cell backer rod should be used to support bottom of Polyurethane MMA #6890 joint filler.

APPLICATION – MEMBRANE SYSTEMS

The fresh slurry coat or joint filler must be applied over substrate primed with Epoxy.com 9112 MMA. Formulas 9800/1, 9800/2, and 9800/4 are applied with a gauge rake or notched trowel/squeegee. When using formula 9800/1, apply in two layers, the first layer “neat” and the second layer broadcast to excess with a wearing course of 20 mesh silica or colored quartz aggregate. Formula 9800/2 may be installed in a single layer and must be broadcast to excess with a wearing course of 20 mesh silica or colored quartz aggregate.

Formula 9800/4 is applied in two layers, with polyester fleece reinforcement imbedded into the first layer. Aggregate broadcast rates will vary from 0.25-1.25 lbs/ft² depending on type and size of aggregate, mix design, and thickness of slurry. It is recommended to broadcast 20 mesh aggregate or larger. Do not use broadcast aggregate smaller than 20 mesh or the risk of random cure problems increases. Aggregate may be natural or colored quartz, sand, aluminum oxide, emery, etc. Polyurethane MMA #6890 must be top coated or sealed with Epoxy.com 9528 MMA.

TROWELED MORTAR SYSTEM

Polyurethane MMA #6890 MORTAR SYSTEM is used for patching damaged concrete or asphalt in highways, bridge decks, pedestrian decks/walkways, roof decks, freezer floors, etc. Polyurethane MMA #6890 can be mixed in various formulations using blended mortar silica aggregate and pea gravel or other large aggregate for thicker applications. Polyurethane MMA #6890 MORTAR SYSTEM may require a sealer such as Epoxy.com 9528 or Epoxy.com 9526, depending on expected service conditions. Consult with Epoxy.com Resin Technical Service for recommendations on the best formula, thickness and system design to use for any particular project.

FORMULATION GUIDE – TROWELED MORTAR

Typical Batch Formula with Epoxy.com Blended Mortar Aggregate

Material	% Parts by Wt.	Typical Batch Wt.	Volume
Polyurethane MMA #6890	14.0	8.4 lbs.	1 gallon
Blended Mortar Aggregate #82	85.0	50 lbs.	3.25 gallons
Pigment Pack	N/A	N/A	6.4 vol. oz.
Hardener	Varies with temp.	Varies with temp.	Varies with temp.
Yield*: ±3.0 gallons Mortar (0.4 cu. ft.)			

Yield* ± 3.0 gallons Mortar (0.4 cu. ft.)

Coverage 1/8"	35 ft2
3/16"	25 ft2
1/4"	18 ft2
1/2"	9 ft2

*Note: Yield of mixed mortar will vary depending on mix design used.

IMPORTANT: Mortar mix design **MUST** yield a resin-rich mortar with pourable consistency, which has a resin-rich surface after troweling. A mortar with a resin-lean, dry consistency may have cure problems.

The above mix design formulation permits installation up to 2.5 inches in one placement. For thicknesses greater than ½ inch, additional aggregate may be added to reduce the resin content and lower the shrinkage. The addition of up to 75% additional aggregate allows for installation of up to 5 inches in one placement.

Addition of Aggregate for Greater than ½ inch thickness. Additional Aggregate per Gallon of Resin

Thickness of Placement	Aggregate Size	Added Weight %	Weight	Volume	Yield
<1/2 inch	-	-	-	-	0.4 cu. ft.
½ - 1 inch	1/8" x 1/16"	25%	12.0 lb.	0.9 gal.	0.49 cu. ft.
1 – 2 inch	1/16" x 3/8"	50%	24.0 lb.	1.8 gal.	0.57 cu. ft.
>2 inches	3/8" x 5/8"	75%	36.0 lb.	2.7 gal.	0.63 cu. ft.

APPLICATION – TROWELED MORTAR

Polyurethane MMA #6890 and hardener powder are mixed and blended with the blended mortar aggregate for 3 minutes until no lumps are present. Add the additional aggregates to extend the mortar if needed. **IMPORTANT:** Mortar mix design **MUST** yield a resin-rich mortar, pourable consistency, which has a resin-rich Polyurethane MMA #6890; surface after troweling. Apply mortar to the primed surface using a trowel. If excessive resin forms on the surface of the mortar while troweling, it is optional to lightly broadcast 20 mesh silica sand into the resin. A mortar with a resin-lean, dry consistency may have cure problems, resulting in isolated sticky areas that do not cure completely. Any areas that do not cure hard must be removed, spot primed, and replaced with resin-rich mortar before application of sealer (if used). Polyurethane MMA #6890 mortar may require a sealer suitable for the intended application. Consult with Epoxy.com Resin for recommendations.

PHYSICAL PROPERTIES – RESIN/SYSTEM

Percent Reactive	100%, zero VOC
Working Life, 50°F-70°F	15-25 minutes, will vary w/temp. & amount of Hardener
Recoat Time	55-75 minutes
Viscosity, cps	600-800 cps
Weight per Gallon	8.4 lbs.
Tensile Strength	250 psi
Elongation at Break	300%-resin, 100%-filled mortar

CLEAN-UP

Clean tools and equipment with lacquer thinner or MEK. Consult Material Safety Data Sheet for safety and health precautions.

MAINTENANCE

Polyurethane MMA #6890 is a basecoat resin or binder resin used with various Epoxy.com MMA Systems, refer to specific system data sheet or sealer data sheet for recommended maintenance.

STORAGE

Store in a cool and dry place, below 80°F, out of direct sunlight. Do not store near open flame or food. Shelf life is 6 months in the original unopened containers. After extended storage: Additives and fillers can separate with storage, materials should be inspected for any visible signs of settlement, polymerization, or paraffin coagulation (clumps, strands). Thoroughly mix pails or drums (use a drum mixer, do not rely on rolling drum on floor) and pour into new containers to inspect resin before use.

HELPFUL HINTS

Adequate cross ventilation should be provided. Good ventilation during the processing ensures a good cross linking and hardening. Read, understand and follow Material Safety Data Sheets and Application Instructions prior to use. Use only as directed. If substrate and/or material temperature is above 90F, DO NOT apply material.

TECHNICAL SERVICE

Epoxy.com Technical Support Department provide services and consultations on material selection, specification, troubleshooting, and other information on the proper repair and protection of concrete surfaces. Epoxy.com Resin Sales/Technical Representatives are available to assist you. Telephone (352) 533-2167 or visit www.Epoxy.com.

WARRANTY

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Proper mixing and installation is critical to the optimal success of all product. See [Installation Tips](#), [Techdata](#), & [MSDS](#) for more details on our products. Be sure to contact us with any questions and/or concerns that you have.

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