



Material/Application Specification

Pathway Perceptions is a Methyl Methacrylate (MMA) resin system used for pavement area markings and anti-skid surfacing. It is a plural component, liquid applied MMA and catalyst, capable of full cure in a wide range of temperatures without requiring external heat sources. MMA is typically used for demarcation of crosswalks, bicycle paths, bus lanes and other specially designated areas. It can also be used as a surface to enhance skid resistance on hazardous turns and other areas prone to accidents. It can be applied to either concrete or asphalt using **spray equipment and a pressurized broadcast aggregate method. Resin and hardener formulations are to be systematically mixed, via continuous agitation, at a 98:2 ratio to ensure proper cure times and performance.** If using glass beads, they must be coated for use with MMA materials.

Application Procedure

Surface Preparation: All surfaces that are to receive MMA must be thoroughly clean, dry, and free of all dirt, grease, and other contaminants that might interfere with proper adhesion. All damaged or deteriorated surfaces must be repaired before applying MMA. The surface should be visibly dry and the moisture content should be tested according to ASTM D4263 (modified to 2 hours). New asphalt shall have been placed for a minimum of 15 days prior to installation of MMA and surface oils should not be present.

Mixed Resin and Aggregate Application Method

Mixing and Application

Mixing: MMA comes in three components (pigmented resin, liquid hardener, and aggregate). Thorough and complete mixing of these components, **with automatic agitation in the supply tank**, is vital for uniform curing and performance. Air/substrate temperature determines the amount of hardener used; refer to Table 1 for the appropriate amount of hardener to be added to the MMA resin. After automatic mixing of the resin and the hardener at the gun tip, the MMA must be applied to the pavement immediately.

Table 1: Hardener per 2 Gallons of MMA Primer or Resin

Temp °F(°C)	Weight %	Grams	Packets (120 g each)
40-59 (0-15)	3	360	3
60-89 (15-32)	2	240	2
90-100 (32-38)	1	120	1

Spray/Broadcast Aggregate Application Method

Mixing and Application

It is important to use the resin formulation that matches the mixing ratio of the equipment that will be used for the application. Spray applications using a 98:2 formulation with equipment that automatically proportions volumes of resin and hardener, does not require the resin and hardener to be premixed prior to application. The MMA resin should be agitated prior to mixing with the liquid hardener at the gun tip. Refer to Table 2 for hardener mixing ratios. If there is an interruption in the spray application the equipment should be cleaned with solvent to prevent material from curing and creating clogging.

It is important to use the resin formulation that matches the mixing ratio of the equipment that will be used for the application. Spray applications using a 98:2 formulation with equipment that automatically proportions volumes of resin and hardener, does not require the resin and hardener to be premixed prior to application. The MMA resin should be agitated prior to mixing with the liquid hardener at the gun tip. Refer to Table 2 for hardener mixing ratios. If there is an interruption in the spray application the equipment should be cleaned with solvent to prevent material from curing and creating clogging.

Application: Before applying the MMA, remove all debris from the primed surface using brooms or blowers. Make sure that all of the broadcast aggregate is covered with the third coat of MMA resin; the application rate should be approximately 50 square feet per gallon. After the MMA is applied, and before it cures, remove all masking (tape). At the onset of rain, installation shall cease until the substrate is sufficiently dry to the satisfaction of the engineer. The installer must be able to show prior installations that amount to not less than 50,000 square feet and the manufacturer must have material that has been applied, in the field for not less than seven years.

**Table 2: Hardener per Gallon of MMA Primer and Resin (98:2)
spray equipment without automatic proportioning)**

Temp °F(°C)	Weight %	Grams	30 g Packets
40-59 (4-15)	4-3	240-180	8-6
60-89 (15-32)	2-1	120-60	4-2
90-100 (32-38)	1-.5	60-30	2-1

Table 3: Physical Properties* of MMA

Property	Unit of Measure	Test
Resin		
Elongation	30% min	ASTM D638 Type I
Hardness	55-60 Shore D	ASTM D2240
Water Absorption	0.25% max	ASTM D570
Pot Life	15 minutes @ 72°F (22°C)	AASHTO T237
Flash Point	50°F (10°C)	ASTM D1310
Solids Content	99%	ASTM D1644
Aggregate		
Specific Gravity	2.65	ASTM C128
Hardness	7.0	Mohs Scale

*To be used as general guidelines only

Storage

Materials shall be kept in dry protected areas between 40°F – 80°F out of direct sunlight, protected from open flame. Hardener component shall be stored separately from other materials. Manufacturer's specific label instructions and prudent safety practices for storage and handling shall be followed at all times. Materials shall be suitable for use for six months after the date of receipt when stored in accordance with the manufacturer's instructions.

Caution

The binder shall be 100% reactive, solvent-free, acrylic vehicle. Blends with other resins or liquid vehicles shall not be permitted. Coarse aggregate shall be part of the formulation to provide for skid resistance.