

SCIGRIP PPX5
Ultimate Plastic Bonder
DESCRIPTION

SCIGRIP® PPX5 Methacrylate Adhesive is a two part acrylic-based adhesive especially formulated for bonding many low surface energy plastics such as polypropylene (PP), polyethylene (PE) and other thermoplastics commonly known as polyolefin. PPX5 is a 10:1 (volume) ratio adhesive offered in 50 ml dual cartridges. PPX5 bonds and cross-bonds these low surface energy substrates without need for surface treatment in many applications.

PERFORMANCE BENEFITS

• Bonds dissimilar substrates	• Solvent free with no volatiles & low odor
• No surface pre-treatment or primer required	• Good chemical resistance
• Low exotherm – less surface distortion	• Room temperature cure
• Convenient and easy to dispense	• Excellent water and humidity resistance

EXCELLENT RESISTANCE TO AUTOMOTIVE FLUIDS

Ethylene Glycol	Brake Fluid	Power Steering Fluid	Iso-Pentane
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TYPICAL ADHESIVE CHARACTERISTICS @ 75°F (24°C)

Characteristics	Part A (Adhesive)	Part B (Activator)	Mix (Part A + B)
Color	Off white	Clear	Off white
Mix ratio by volume	10	1	—
Mix ratio by weight	9.76	1	—
Density, g/cc	1.05	1.03	1.04
Density, lb/gallon	8.75	8.56	8.70
Viscosity, ¹ cps	12,000 – 13,000	4,000 – 7,000	—

TYPICAL PHYSICAL PROPERTIES @ 75°F (24°C)²

Substrates	Lap Shear Strength psi (MPa)	Failure Mode	Substrates	Lap Shear Strength psi (MPa)	Failure Mode
Polypropylene (PP)	665 (5)	Substrate	Polyethylene/Carbon Steel	515 (4)	Adhesive
Polyethylene (PE)	508 (4)	Adhesive	Polyethylene/Aluminum	748 (5)	Adhesive
Polycarbonate	512 (4)	Cohesive	Polyethylene/Stainless Steel	867 (6)	Adhesive
PMMA	887 (6)	Substrate	Stainless Steel	931 (6.5)	Adhesive

TYPICAL REACTIVITY PROPERTIES @ 75°F (24°C)

Product	Working Time (minutes)	Fixture Time ³ (minutes)
PPX5	2 – 4	90

Service Temperatures 32°F to 104°F (0°C to 40°C)
NOTES:

1. Viscosity as measured with Brookfield DVII Viscometer, Spindle #7 at 100 rpm.
2. The data should be considered representative and should not be used for specification.
3. Time to develop sufficient strength to carry a 1 KG load (PP to PP joint).

SAFETY AND HANDLING

Read Material Safety Data Sheet before handling or using this product. Adhesive components contain methyl methacrylate monomer and are flammable. Always use in a well-ventilated area. Floor-level extraction and large quantities of moving air greatly facilitate ventilation. Both materials must be stored in a cool place away from sources of heat and open flames or sparks. Keep containers closed when not in use. Prevent contact with skin and eyes. In case of skin contact, wash with soap and water. In case of eye contact, flush with water for 15 minutes and seek immediate medical attention. Keep out of reach of children.

MIXING AND APPLICATION

EXOTHERM: The chemical curing reaction that occurs when components A and B are mixed generates heat. The amount of heat generated is dependent on the mass and thickness of the mixed product. Large masses over 0.5 inch (12.7 mm) thick can develop heat in excess of 90°F (32°C) and can generate vapors that should be avoided from direct personal contact.

WORKING TIME

The working time information is provided as an estimate of the time between mixing and set up of the adhesive. The working time is affected by the mixing ratio, air temperature, adhesive temperature, and the substrate temperature as well as the shelf life of the adhesive. For best results use the adhesive at temperatures between 65°F and 85°F (15°C and 30°C). High temperatures increase speed of cure whereas lower temperatures retard the cure.

CURING

Open working time is the approximate time after mixing components A and B, depending on bonding conditions, that the adhesive remains fluid and bondable. Fixture time is the approximate time after mixing components A and B required for the adhesive to react the partial state of cure necessary to allow careful movement, unclamping or de-molding of assembled parts. Parts can generally be put in service after 24 to 48 hours. The working and fixture times presented in this bulletin are based on laboratory tests performed at 75°F (24°C). Higher temperatures speed the curing reaction and reduce working time. The reverse is true for lower temperatures. If significant variation in temperatures or use at very high or low temperatures is anticipated, contact your SCIGRIP representative for technical assistance.

DISPENSING EQUIPMENT

Adhesive is available in disposable industry standard 50 ml dual cartridges. Recommended mixing tips include Sulzer's MBQX 05 16L or MBH X05-16T.

APPLICATION

Follow instructions provided or contact your SCIGRIP representative for proper preparation of dispensing equipment and substrates prior to starting the bonding process. Always dispense a quantity of adhesive at start-up to assure that the adhesive exiting the tip of the mixer is the proper color and is uniform, without streaks. If aged material is being used, allow the purged material to cure to assure quality before proceeding. Carefully dispense a sufficient quantity of adhesive on the substrate to assure that the bond gap is completely filled when the parts are mated. Allow for squeeze-out at the edges of the bond to assure filling. Carefully secure or clamp parts to prevent joint movement while the adhesive sets. Do not apply excessive pressure that can cause thin gaps and starve the bond line. A minimum gap of 0.02 inch (0.50 mm) is recommended. If in doubt, use shims or spacers to set the gap. Test the curing adhesive at the edges for fingernail hardness before removing clamps or fixtures. Use a soft faring tool to remove excess adhesive from the bonded assembly. Masking tapes or other protective barriers should be used to prevent contamination on any cosmetically sensitive areas. Partially cured adhesive can be removed with a sharp knife and any cured adhesive may be removed by sanding or scraping.

CLEAN UP

Adhesive components and mixed adhesive should be removed from mixing and application equipment with a suitable industrial solvent or cleaner before the mixed adhesive cures. Once the adhesive cures, soaking in a strong solvent or paint remover will be required to soften the adhesive for removal. If the bonds are exposed to UV rays then use of plasticizers is recommended, or contact your SCIGRIP representative for additional information. Any clean-up of the bonded assembly with industrial solvents is not recommended as it could affect the cure.

STORAGE AND SHELF LIFE

Store product in the unopened cartridge in a dry location out of direct sunlight. Ideal storage temp 59°F and 80°F (15°C and 27°C). Properties are affected outside of this range. Shelf life of product is 6 months from date of manufacture.

Exposure, intermittent or prolonged, above 70°F (21°C) will result in a reduction of the stated shelf life. Exposures above 100°F (38°C) during shipping or storage can quickly degrade component B in cartridges or bulk containers, and must be prevented. KEEP FROM FREEZING.

IMPORTANT NOTES

- SUBSTRATE AND APPLICATION COMPATIBILITY.** The user must determine the suitability of a selected adhesive for a given substrate and application. SCIGRIP strongly recommends laboratory, shop and end-use testing that simulates the actual manufacturing and end-use environment.
- SURFACE PREPARATION:** The need for surface preparation must be determined by comparative testing of prepared and unprepared substrates to assure that unprepared bonding is equivalent to or acceptable for the application relative to prepared bonding. Initial bonding tests must be followed up with simulated or actual durability tests to assure that surface conditions do not lead to degradation of the bond over time under service conditions. Subsequent changes in substrates or bonding conditions will require re-testing.
- TECHNICAL ASSISTANCE:** Contact your SCIGRIP representative for questions or assistance with the selection of adhesives and methods for evaluating adhesives for your intended application.

NOTE: This product is intended for use by skilled individuals at their own risk. Recommendations contained herein are based on information we believe to be reliable. The properties and strength values presented above are typical properties obtained under controlled conditions at the SCIGRIP laboratory. They are intended to be used only as a guide for selection for end-use evaluation. The ultimate suitability for any intended application must be verified by the end user under anticipated test conditions. Since specific use, materials and product handling are not controlled by SCIGRIP, our warranty is limited to the replacement of defective SCIGRIP products.