

3M

Scotch-Weld™

Urethane Adhesive

DP-601, Self-Leveling, Gray

Technical Data

June, 2003

Product Description

3M™ Scotch-Weld™ Urethane Adhesive DP-601 is a self-leveling, gray, rapid setting, two-component polyurethane. It is packaged as 1:1 ratio liquids in a duo-pak cartridge. With the squeeze of the trigger, the components are automatically mixed and easily dispensed as a bubble-free self-leveling liquid.

Suggested Applications:

Building & Construction Maintenance & Repair

Pool Maintenance & Repair

- Rapid repair of spalled or cracked concrete floors or pool decks in high traffic areas
- Re-installing posts and rails
- Custom tapping of bolts and screws into wood, concrete and masonry
- Tough, non-brittle bonding of wood, metal, glass and plastic
- Fixturing of hand/grabrails into pool decks
- Rapid repair of pool decks prior to being coated

Typical Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Test	Conditions	Test Method	Properties
Appearance	Cured	PEC	Gray mass
Viscosity Part A	77°F (25°C)	HBDVI+CP	4050 cps
Viscosity Part B	77°F (25°C)	HBDVI+CP	2500 cps
Work Life	10 g, 1/4" thick @ 77°F (25°C)	PEC	70 seconds
Tack-free Time	10 g, 1/4" thick @ 77°F (25°C)	PEC	4 minutes
Full Cure Time	10 g, 1/4" thick @ 77°F (25°C)	PEC	1 hour
Hardness After Full Cure	1 hour at 77°F (25°C)	ASTM D2240-91	70 Shore D
Lap Shear Strength	7 days at 77°F (25°C)	ASTM D1002-72	2,300 psi
Temperature Range	Continuous	PEC	-60°F (-51°C) to 250°F (121°C)

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Prepare the Cartridge for Dispensing:

1. Select the desired dispenser (manual or pneumatic) and mix tip.
2. Cut the blind-end off of the cartridge orifice or remove the plugs and place the cartridge in the dispenser.
3. Dispense just enough material so that both components dispense equally.
4. Assemble the mix tip onto the cartridge with a half-twist.

CONCRETE REPAIR, SELF-LEVELING:

Section 1: Preparation

General Preparation for Concrete Repairs

1. Prepare a cavity, depression, groove, saw-cut, or crack by removing all loose aggregate, dust, old caulks, grease or other compounds from the repair surface.
2. For maximum relief of stresses in large concrete sections, it is best to create a 1/4-inch saw cut entirely through the concrete. However, first determine that there are no other structural limitations including rebar, plumbing and electrical installations. The use of a foam backer imbedded to within 1/4-inch of the surface is recommended for maximum stress relief.
3. For tracing cracks for stress relief, it is best to use a tapered grinder to create a taper starting at 1/4-inch at the top and tapering deeply into the concrete.
4. Use a bristle brush to remove the debris. Then use moisture-free and oil-free compressed air to blow out the fine dust.
5. Mask off the areas surrounding the repair allowing approximately a 1-inch overlap of 3M™ Scotch-Weld™ Urethane Adhesive DP-601 around the periphery of the prepared cavity.

Preparing for Damage from Corrosion:

1. Apply a pre-coat of concrete corrosion inhibitor or protectant exclusively to corroded areas.
2. Allow the pre-coat to dry thoroughly.

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Section 2: Procedures

General Procedure for Doing Concrete Repairs

1. Keeping the mixer tip at the deepest portion of the repair area, dispense into the prepared cavity, depression, void, groove or crack.
2. Slightly over-fill the prepared cavity.
3. 3M™ Scotch-Weld™ Urethane Adhesive DP-601 will self-level and set approximately within one minute and leave a slight meniscus. If desired, one can create a repair flush and level to the concrete floor on smaller areas up to 6 inches square by overlaying a slightly stiff polyethylene sheet (approximately the modulus of a plastic spreader) just prior to the set of Scotch-Weld adhesive DP-601.
4. Overfilling Scotch-Weld adhesive DP-601 and allowing it to overlap approximately one inch along the edges of the repair tapering to just a few mils thickness provides a substantial tie into the concrete and increases the lifetime of the repair.
5. At 75°F (24°C), a 1/4"-thick section sets and becomes tack-free within 4 minutes and will cure within one hour. **Note:** Thicker masses or substrates at higher temperature take less time to cure. Thinner masses or substrates at lower temperature take more time to cure.

Section 3: Clean-up and Finishing

1. Remove the masking tape surrounding the repair areas.
2. If desired, grind the cured product with 36 to 50 grit sanding disks or sandpaper to take off any rough edges and achieve the desired shape. Sand with finer grit sandpaper to the desired finish.

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CUSTOM TAPPING AND FASTENING

The flanges of posts and rails, auditorium and stadium seats, pallet racks, and other load-bearing structures are usually secured into concrete floors by shooting nails or screwing lag bolts into shields embedded within cored holes. Custom tapping provides the advantage that these structures can be easily removed and relocated to other locations without having to grind down the protruding nails or fill the remaining cored holes.

Custom tapping is done by molding the threads of bolts and screws into 3M™ Scotch-Weld™ Urethane Adhesive DP-601. The tough molding properties of Scotch-Weld adhesive DP-601 allows it to form and maintain a high-strength, non-brittle interlock between holes cored into concrete (or wood, ceramic or masonry) and the threads of the inserted bolt or screw. The release characteristics, upon removal, are achieved by simply spraying the bolt or screw with 3M™ 5-Way Penetrant (or other release agent) before the bolt or screw is inserted into the liquid Scotch-Weld adhesive DP-601 prior to its setting. To achieve a more permanent fixture, the bolts and screws simply are not lubricated before imbedding into the liquid Scotch-Weld adhesive DP-601 prior to setting.

Section 1: Preparation For Custom-Tapping:

1. Drill holes into the concrete, wood or masonry to the specified depth using the chart below.

Bolt Width (in.)	Minimum Hole Diameter (in.)	Minimum Hole Depth (in.)
1/4	3/8	2
3/8	1/2	3-1/2
1/2	5/8	4-1/4
5/8	3/4	5
3/4	7/8	6-3/8
7/8	1	7-1/2
1	1-1/8	8-1/4
1-1/8	1-1/4	9
1-1/4	1-3/8	9-3/4
1-3/8	1-1/2	10-1/2
1-1/2	1-5/8	11-1/4

2. Use a round bristle brush to clean the cored holes if they have not been freshly drilled. Use moisture-free and oil-free compressed air to blow out the debris.
3. Lightly coat the bolts or screws with 3M 5-Way Penetrant.

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Section 2: Procedures

Procedure for Custom Tapping Concrete:

1. Dispense 3M™ Scotch-Weld™ Urethane Adhesive DP-601 into the hole nearly halfway full. To obtain a consistent fill, judge for under-fill or overfill by counting the number of squeezes of the trigger.
2. Insert the bolt or screw within the first 20 seconds after dispensing. The paste characteristic of Scotch-Weld adhesive DP-601 will hold the bolt or screw in place until it cures. Once the work life has been exceeded, do not disturb the bolt.
3. Move to the next hole to keep Scotch-Weld adhesive DP-601 flowing in the mixer tip. If material sets in the mixer tip, replace the tip and start dispensing again.
4. Scotch-Weld adhesive DP-601 will become tack-free within 4 minutes and cure within one hour. **Note:** It is best to wait one full hour before extracting the bolt or screw for securing the cupboards, wall hangers or other cabinetry in place.
5. Allow Scotch-Weld adhesive DP-601 to fully cure before applying a load. The maximum torque recommended is 9.0 pounds.

Note: Not for use in repairing or anchoring diving boards.

RE-ANCHORING HANDRAILS AND GRABRAILS

Section 1A: Preparation of Hand/Grabrails

1. Bore a hole through the base of the hand/grabrail just above grade level to allow introduction of the product.
2. Using 80 grit sandpaper, roughen the footing surface of the hand/grabrail which is to be imbedded below the concrete grade.
3. Refer to instructions on cartridge for dispensing.

Section 1B: Preparation of Concrete for Re-anchoring

1. Chip away the cracked or broken concrete to allow removal of the hand/grabrail.
2. Leave the concrete as close as possible around the hand/grabrail. It is best to allow the concrete to remain intact as close as possible (within 1/2 to 1 inch all around) to the base of the hand/grabrail.
3. Dig down to the base of the concrete, typically 4- to 6-inches deep.
4. Expose any rebar, if possible, in order to create a ground connection to the rebar.
5. Create as much as a 1-inch undercut under the concrete in a smooth taper from the concrete surface.
6. Remove all of the loose concrete particles and dust prior to encasing the replacement hand/grabrail.
7. Attach the replacement hand/grabrail to surrounding rebar using a copper wire. Cinch the connection down tightly, allowing a slight amount of slack in the wire connection.
8. Create a shield to corrosion at the base of the hand/grabrail by laying a piece of polyethylene plastic at the base of the hole.
9. Insert the hand/grabrail in the hole. Align the hand/grabrail for its elevation and vertical plumb.

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Section 2 Encasement Procedure

1. Dispense 3M™ Scotch-Weld™ Urethane Adhesive DP-601 into the concrete hole. Product will remain liquid for approximately 50 seconds, and fully cure in 1 hour. Dispense more cartridges as necessary to bring the fill level up to the concrete surface level.
2. Dispense Scotch-Weld adhesive DP-601 into the inside of the hand/grabrail. Fill with product up to and slightly above the grade level. (Filling the inside of the post provides extra strength and protection against corrosion.)
3. Apply cement dust or sand, if desired, to blend the surface appearance into the surrounding concrete.
4. If Scotch-Weld adhesive DP-601 is applied in a traffic area, apply sand or some type of grit to repaired surface area.

Section 3: Repair Clean-up and Finishing

1. Shave or grind cured product with 36 grit sandpaper to achieve desired shape.

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Storage	This product has a shelf life of 6 months when properly stored in unopened packages at temperatures of 65°F to 85°F (18°C to 30°C). Do not expose to excessive cold or moisture.
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Maintenance	No maintenance is required; however, if repairs become damaged, simply reapply 3M™ Scotch-Weld™ Urethane Adhesive DP-601.
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Precautionary Information	Refer to Product Label and Material Safety Data Sheet (MSDS) for health and safety information before using this product. For environmental information, refer to MSDS. Always wear gloves, eye protection, appropriate respiratory protection, and work in a well-ventilated area. For additional health and safety information, call 1-800-364-3577 or (651) 737-6501.
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For Additional Information	To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550 or visit www.3M.com/adhesives . Address correspondence to: 3M Industrial Adhesives and Tapes Division, Building 21-1W-10, 900 Bush Avenue, St. Paul, MN 55144-1000. Our fax number is 651-778-4244. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.
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ISO 9002

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9002 standards.



Industrial Business
Industrial Adhesives and Tapes Division

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