



RT₂C ROOM TEMPERATURE TOOLING COMPOUND

DESCRIPTION

RT2C is a strong, lightweight, fiber reinforced paste epoxy system for use in preparing sandwich laminated tools and fixtures. The RT2C resin and hardener are color coded to insure a good mix, and both have a smooth, creamy consistency for easy handling and processing. The system has a 1 : 1 ratio that helps to eliminate weighing errors. The mixed viscosity of RT2C is very creamy, and it has good cohesive properties for efficient handling and application to the pattern. The curing exotherm of RT2C is very low, therefore shrinkage is negligible. RT2C is a non-toxic product for improved safety in the workplace. Clean-up is easily accomplished with soap and water. Tools fabricated with RT2C are easy to handle, have a very high strength-to-weight ratio, are dimensionally stable and can be machined easily.

PRODUCT SPECIFICATIONS

	RT2C Resin	RT2C Hardener	ASTM Method
Color	Blue	Yellow	Visual
Viscosity, @77°F, centipoise	Syntactic Paste	Syntactic Paste	D2392
Specific Gravity, gms./cc	0.7	0.7	D1475
Mix Ratio	100 : 100 By Weight or Volume		PTM&W
Pot Life, 1 lb. Mass @ 77°F	60 - 90 minutes		D2471

DIRECTIONS FOR USE

Construction Methods:

(1) For general tooling applications, a sandwich construction method is recommended as follows; Apply 2 layers of PT1105 or PT1154 epoxy surface coat to the properly prepared pattern and follow with 2 layers of style 7500 type tooling cloth impregnated with PR2114 / PH3016 laminating system. A ¼ to ½ inch thick layer of RT2C is then applied to the back of the PR2114 laminate. The RT2C layer is allowed to stand until it is firm enough to proceed. Finally, an additional 2 ply layer of cloth and PR2114 is applied to the back of the RT2C

(2) For limited use tools, and situations where the added strength is not required, the fiberglass reinforcement described in (1) can be eliminated. In those instances, the tool would consist of two layers of surface coat backed up with the RT2C layer.

Mixing and Applying RT2C:

(1) Mixing - RT2C resin and hardener are color coded to give a visual indication of a uniform, thorough mix. Small quantities of RT2C can be mixed by hand, but mechanical mixing is much more efficient for larger batches. Either a dough mixer or stationary paddle 5-gallon pail mixer will do an excellent job of mixing RT2C. A uniform green color, free of light or dark streaks indicates complete mixing.

(2) Roll Out The RT2C- A constant and uniform tool thickness is always desirable in a composite tool, no matter what the construction method. This approach yields the most consistent performance as well as the most efficient use of materials. The best way to achieve this with RT2C is to utilize a “roll-out” board. This is a board 1 to 1.5 feet wide about 3 feet long. Spacers are attached to the surface so that the RT2C can be rolled out like bread dough to a uniform thickness. First, a layer of waxed kraft paper or plastic film is placed on the board. Then, a quantity of mixed RT2C is placed onto the waxed kraft or plastic film, and a second layer of the paper or film is placed on top of the RT2C. A large diameter PVC pipe is then used to roll the RT2C to a uniform thickness, as determined by the thickness of the spacers.

3) Transfer To The Tool - After the RT2C is rolled out, cut it into manageable squares of approximately 1 square foot. Then transfer the RT2C to the tool and lay it onto the wet top layer of the surface coat or laminating resin. The mixed RT2C has good cohesive

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Mixing and Applying RT2C, continued:

qualities and is not crumbly, so the transfer is easy to do. In placing the squares of RT2C, be sure to butt the edges together properly, so that there are no voids in the tool, which would cause weak spots. Also, press the RT2C firmly into the wet resin layer, so that there are no voids just behind the tool surface. A “tie coat” is sometimes used between the laminate and RT2C layer to provide better adhesion to the laminate and minimize trapped air between the layers. A quantity of mixed RT2C is diluted with mixed high temperature laminating resin to yield a thick, paintable consistency, and brushed onto the laminate before the RT2C pieces are applied. This “tie coat” provides a good bond, and fills any small gaps between the layers, for better cured performance

(4) The Backing Laminate - If you are applying a back laminate layer, the RT2C must be allowed to firm up somewhat before the laminate is applied. Thirty minutes is usually sufficient, but the actual time required will depend upon the ambient temperature in the shop. After the RT2C is firm enough, the top layers of epoxy and fiberglass are applied and the tool is allowed to cure overnight (12 - 24 hours, depending upon temperature). Then the tool can be pulled, cleaned up and put into service.

TYPICAL MECHANICAL PROPERTIES

	RT2C A / B	ASTM Method
Color	Green	Visual
Mixed Viscosity, @77°F, centipoise	Smooth Cohesive Paste	D2393
Cured Hardness, Shore D	65 Shore D	D2240
Shrinkage, in./in., 1 lb. Mass Mold Number 2	Nil	D2566
Exotherm, 1 lb. Mass	100°F	D2471
Specific Gravity, grams, cc	0.7	D1475
Density, lb./cu. Inch	.0253	D792
Specific Volume, cu. in./lb.	39.5	
Flexural Strength, psi	7,000 psi	D790
Flexural Modulus, psi	608,000 psi	
Ultimate Compressive Strength, psi	6,100 psi	D695
Coefficient of Thermal Expansion, Range 80°F to 120°F	3.149×10^{-5} in./in./ °F	D696

PACKAGING WEIGHTS

	5-Gallon Pail Kit
RT2C Part A	20 lb.
RT2C Part B	20 lb.
Kit Weight (Kit Volume)	40 lb. (6.84 gallons)
Kit Coverage @ 1/2 Inch Thickness	21.8 Square Feet

SAFETY and HANDLING

PTM&W epoxy products are made from raw materials carefully chosen to minimize or even eliminate toxic chemicals, and therefore offer the user high performance products with minimum hazard potential when properly used. Generally, the PTM&W epoxy resins and hardeners will present no handling problems if users exercise care to protect the skin and eyes, and if good ventilation is provided in the work areas. However, breathing of mist or vapors may cause allergenic respiratory reaction, especially in highly sensitive individuals. As such, avoid contact with eyes and skin, and avoid breathing vapors. Wear protective rubber apron, clothing, nitrile rubber gloves, face shield or other items as required to prevent contact with the skin. In case of skin contact, immediately wash with soap and water, followed by a rinse of the area with vinegar, and then a further wash with soap and water. The vinegar will neutralize the hardener and lessen the chances of long term effects. Use goggles, a face shield, safety glasses or other items as required to prevent contact with the eyes. If material gets into the eyes, immediately flush with water for at least 15 minutes and call a physician. Generally, keep the work area as uncluttered and clean as possible, and clean up any minor spills immediately to prevent accidental skin contact at a later time. Keep tools clean and properly stored. Dispose of trash and empty containers properly. Do not use any of these types of products until Material Safety Data Sheets have been read and understood.

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