

CHATHAM COUNTY PURCHASING DEPARTMENT

ADDENDUM NO. 1 TO BID# 22-0009-5

FOR: REMOVE AND REPLACE EPOXY FLOOR COATING AT THE CHATHAM COUNTY DETENTION CENTER

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PLEASE SEE THE FOLLOWING ADDITIONS, CLARIFICATIONS AND/OR CHANGES:

1. **Clarification:** A General Contractor License is not required for this project.
2. **Clarification:** Please see attached material specifications.
3. **Clarification:** The patches called out in the specification shall be cleaned in accordance with ICRI-CSP 5 Surface Profile, minimum. A keyway of each patch shall be saw cut a with a 1/8" diamond blade, minimum 1/8" in depth. The patches shall be chipped out a minimum 25% from the leading edge to assure that only tightly adherent coating is left in place. The shape of the patches shall be shaped to either a square or rectangle. Series 479 may be applied at a minimum thickness of 3/8 Inch to 10". The rep anticipates the average thickness to be 1/2". Series 479 can be tinted to a red color.

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**BID DUE DATE WILL REMAIN 2:00PM
FEBRUARY 16, 2022**

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BIDDER IS RESPONSIBLE FOR MAKING THE NECESSARY CHANGES.

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February 8, 2022

DATE



 MARGARET H. JOYNER
PURCHASING DIRECTOR
CHATHAM COUNTY



SURFACE PREPARATION AND APPLICATION GUIDE

**EPOXY POLYMER CONCRETE
INCLUDES SERIES 469 & 479**

TNEMEC COMPANY, INC.

6800 Corporate Drive, Kansas City, MO 64120
+1 816-483-3400 www.tnemec.com

Published technical data, instructions, and pricing are subject to change without notice. Contact your Tnemec technical representative for current technical data, instructions, and pricing. Warranty information: The service life of Tnemec's coatings will vary. For warranty, limitation of seller's liability, and product information, please refer to Tnemec's Product Data Sheets at www.tnemec.com or contact your Tnemec Technical Representative. 06/2020

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INNOVATION IN EVERY COAT.™

1.0 INTRODUCTION

The purpose of this guide is to acquaint applicators with the basic information necessary for properly ordering, storing and installing Tnemec's Series 469 & 479 LavaCrete.

Prior to starting work, please read this entire guide carefully. If you have questions, contact your Tnemec representative. It is important that you obtain answers to any questions before work begins. Please reference the project specifications and compare them with this guide and the product data sheet. Resolve any inconsistencies prior to starting work.

This application guide cannot cover every issue that may be encountered in the field. If issues arise that are not addressed in this guide or the product data sheet, please contact your Tnemec representative or call +1-816-483-3400 or email techsvcs@tnemec.com for technical assistance.

2.0 PRODUCT OVERVIEW

Series 469 & 479 LavaCrete are non-shrinking, epoxy polymer concretes used for the rehabilitation of severely eroded concrete or the corrosion proofing of new concrete where chemical resistance is required throughout the complete topping system. Extremely fast setting, allowing for rebuilds of process floors and secondary containment structures. Also used to cast sumps, drains and trenches and is an outstanding grouting material for vibration dampening in base plates and on motor pads. Series 469 & 479 kits are packaged for casting and standard placement of material. A grouting mix may be made by adjusting the kit for a more fluid application.

3.0 JOB SET-UP

Prior to starting installation, please note the following:

- Itemize all materials ordered from Tnemec.
- Establish surface preparation requirements.
- Ensure all equipment is readily available and in working order.
- Set-up a mixing area clearly designated at least 50 feet (15.2 meters) away from heat, sparks, open flame, welding, or other sources of ignition.
- Communicate the installation, safety procedures, and requirements with all persons involved.

Note: Polymer concretes should never be poured, placed or grouted in direct sunlight. Further temperature conditions and protection from rain and other elements must be assured prior to beginning any preparation or application of these materials. If necessary, tenting and introduction of conditioned air may be required. Many times, a pop-up awning is sufficient to protect the area from overheating and/or from the direct sunlight.

4.0 EQUIPMENT OVERVIEW

- Wheel barrows and other conveyance equipment should be lined with heavy plastic to aid in cleanup.
- Equipment and unmixed components should be placed as close to the application site as possible.
- Large projects should have a back-up mortar mixer on site.

- Before mixing, all screed guides, membranes and forms should be in place and checked prior to pouring the material.

5.0 SURFACE PREPARATION

5.1 PREPARATION OF CONCRETE

Prepare concrete surfaces in accordance with SSPC-SP13/NACE No. 6 Joint Surface Preparation Standards and ICRI Technical Guidelines. Abrasive Blast, shot-blast, water jet or mechanically abrade concrete surfaces to remove laitance, curing compounds, hardeners, sealers and other contaminants and to provide a minimum ICRI CSP 5 surface profile. **Note:** For grouting polymer concrete and tying multiple lifts over cured material a minimum CSP 8 may be required.

5.2 STEEL & MISC METALS

Series 469 & 479 are not typically applied over steel; however incidental contact or overcoating of some ferrous metals may be encountered during applications.

5.4 REINFORCING STEEL

When applying Series 469 or 479 to deep or large horizontal areas or vertical pours of polymer concrete, suitable reinforcements such as corrosion resistant rebar should be considered. When making large horizontal pours, applying the material in a "checkerboard" pattern can avoid heat build-up and potential cracking from curing stresses. When making heavy pours greater than eight (8) inches (20 cm) in depth it is recommended to consult with Tnemec Technical Services.

5.5 TERMINATIONS

Before beginning application, all terminations should be planned. Terminations should be made into saw-cuts, keying the material not less than ½-inch (12.7 mm) depth. Expansion and control joints are to be provided on 14-foot (4.3 m) centers, around fixed objects at the periphery of the floor and/or at any existing expansion joint. These joints shall have an appropriate sized closed-cell foam backer rod inserted and filled flush with Tnemec Tank Armor® Series 351 or other service-specific, flexible chemical-resistant compound. All perforations, gaps or other areas of expected movement or flex shall also receive an application of selected flexible linings for complete chemical resistance.

5.6 FRAMING

If walls, curbs or other vertical structures are to be poured and cast from Series 469 or 479, formwork will need to be built to retain the polymer concrete. Prior to assembly or erection of the formwork the pieces shall be covered with heavy plastic and or other suitable release agents to assist in preventing attachment of the polymer concrete to these surfaces. When casting into forms it is imperative that all joints and mating surfaces are completely sealed to prevent Series 469/479 from flowing out. All seals and joints must be tight enough to hold water. Where forms meet irregular surfaces such as concrete, it is a good idea to place a heavy caulk bead or putty at this interface for additional "weep" resistance.

6.0 PRIMER INSTALLATION

6.1 PROBOND 3600

ProBond 3600 is a 100% solids, low surface energy, moisture tolerant, self-leveling primer for use on concrete and porous surfaces to help slow outgassing and improve adhesion to most substrates.

The use of this primer should be discussed at the specification phase to determine applicability. This primer may not be required on all LavaCrete pours. Contact Tnemec for specific details. ProBond 3600 is ideally formulated for use on concrete and cementitious substrates.

6.2 PROBOND 3600 CURING TIMES

TEMPERATURE	MIN. RECOAT	MAX. RECOAT
90°F (32°C)	2 Hours	12 Hours
70°F (21°C)	6 Hours	24 Hours
40°F (4°C)	10 Hours	48 Hours

Curing time varies with surface temperature, air movement, humidity and film thickness. A wet-on-wet pour is acceptable provided ProBond 3600 is allowed to cure for a minimum of 2 hours at 70°F (21°C) or 4 hours at 40°F (4°C). **NOTE:** Primer should be checked for "amine blush." If primer is sticky or amine blush is present, wash with mild soap and water solution and dry before proceeding. If recoat window is exceeded, primer should be abraded and/or a fresh coat of ProBond 3600 should be applied.

6.3 PROBOND 3600 PACKAGING

KIT SIZE	PART A	PART B	YIELD (Mixed)
Small	1 gallon cans	1 gallon can	1.5 gallons (5.7 L)

6.4 PROBOND 3600 THEORETICAL COVERAGE RATES

DRY MILS (MICRONS)	SQ. FT./GAL COVERAGE RATE (M ² /GAL)
4.0 - 8.0 (102 - 203)	401 - 201 (37.3 - 18.6)

6.5 PROBOND 3600 MIXING

Slowly mix Part A and Part B to resuspend any settled solids. Use a power mixer with a 3/8-inch (9.5 mm) shaft and double helix blade or similar equipment at low speed. Do not whip or entrain air into material.

NOTE: Do not thin.

6.6 PROBOND 3600 POT LIFE

Pot life is approximately 30 to 40 minutes at 75°F (24°C). Material should be poured out onto surface and used immediately after mixing.

6.7 PROBOND 3600 MATERIAL & STORAGE HANDLING

Minimum storage temperature is 40°F (4°C) and maximum is 80°F (27°C). Prior to application, the material temperature should be above 60°F (16°C). It is suggested the material be stored at this temperature at least 48 hours prior to use.

Temperatures will affect workability. Cool temperatures increase viscosity and decrease workability. Warm temperatures will decrease viscosity and shorten pot life.

6.8 PROBOND 3600 APPLICATION EQUIPMENT

Roller: Use high-grade, solvent-resistant phenolic rollers,

Other: Pin-rakes, flat or notched squeegee, trowels or other appropriate application tools.

6.9 PROBOND 3600 APPLICATION CONDITIONS

CONDITION	MATERIAL	SUBSTRATE	AMBIENT
Preferred	60°F (16°C)	70°F (21°C)	70°F (21°C)
Minimum	50°F (10°C)	40°F (4°C)	40°F (4°C)
Maximum	90°F (32°C)	90°F (32°C)	90°F (32°C)

NOTE: The surface should be dry and at least 5°F (3°C) above the dew point. Coating will not cure below the minimum surface temperature.

6.10 PROBOND 3600 CLEANUP

Flush and clean all equipment immediately after use with the recommended thinner or MEK.

7.0 LAVACRETE INSTALLATION OVERVIEW

7.1 SERIES 469/479 LAVACRETE INTRODUCTION

Series 469 & 479 LavaCrete are epoxy polymer concretes used for the rehabilitation of severely eroded concrete or the corrosion proofing of new concrete where chemical resistance is required throughout the complete topping system.

7.2 SERIES 469/479 LAVACRETE CURING TIMES

TEMPERATURE	TO HANDLE	RETURN TO SERVICE
90°F (32°C)	4 Hours	8 Hours
77°F (25°C)	6 Hours	24 Hours
35°F (2°C)	8 Hours	48 Hours

NOTE: Curing times are based upon 3/8-inch (9.5 mm) of material, thicker castings and pours may result in longer set times.

7.3 SERIES 469/479 LAVACRETE PACKAGING

KIT	PART A	PART B	PART C	YIELD (Mixed)
Large	5 gallon pail	1 gallon can	4 - 70 lb (31.75 kg) bags	18.3 gallons (69.2 L)
Small	1 gallon can	1 quart can	1 - 70 lb (31.75 kg) bag	4.5 gallons (17.0 L)

Note: To create a grouting material refer to the mixing section for additional information.

7.4 SERIES 469/479 LAVACRETE COVERAGE RATES

Refer to the charts below for coverage rates based on kit size and application. **IMPORTANT:** LavaCrete products must be placed at a minimum thickness of 3/8 inch (9.5 mm) to minimize aggregate exposure.

Series 469 Casting/Topping Application:

KIT	CUBIC FEET (CUBIC METERS)
Large	2.4 (.07)
Small	0.60 (.02)

Series 479 Casting/Topping Application:

KIT	CUBIC FEET (CUBIC METERS)
Large	2.76 (.08)
Small	0.69 (.02)

Series 469 Grouting Application:

KIT	CUBIC FEET (CUBIC METERS)
Large	1.64 (.05)
Small	0.41 (.01)

Series 479 Grouting Application:

KIT	CUBIC FEET (CUBIC METERS)
Large	1.72 (.05)
Small	0.43 (.01)

7.5 SERIES 469/479 LAVACRETE MIXING

Power mix the contents of Series 469/479 Part A and Part B separately in their original containers prior to combining. Add the Series 469/479 Part B into the pre-mixed Part A and power mix the material approximately one to two minutes before placing material in a drum mixer or adding aggregate.

Immediately pour entire contents of catalyzed liquid into the mortar mixers tub, making sure to scrape as much resin out of the container as possible. Start the mixing unit on low speed (15-20 rpms) and immediately begin adding Series 469/479 Part C into the mixer. Allow the first bag to be fully mixed before adding additional bags.

For additional mixing instructions please reference the charts below:

Casting/Topping (Large Kit as supplied):

Part A	Part B	Part C
5 gallon pail (partially filled)	1 gallon can	4 - 70 lb (31.75 kg) bags

Casting/Topping (Small Kit as supplied):

Part A	Part B	Part C
1 gallon can	Quart can	1 - 70 lb (31.75 kg) bag

Grouting (Large Kit):

Part A	Part B	Part C
5 gallon pail (partially filled)	1 gallon can	2.5 - 70 lb (31.75 kg) bags

Grouting (Small Kit):

Part A	Part B	Part C
1 gallon can	Quart can	44 lbs (20 kg)

Additional LavaCrete Parts A, B or C may be ordered as needed to adjust batching and placement characteristics. Adding Part C will increase the stiffness and the coverage rate. By decreasing the amount of Part C, the flowability or fluidity of the material will increase, however the coverage rate will be reduced. The following adjustments may be made in the field at the installer's discretion to the standard & fluid mix formulas found on the product data sheet and in this guideline to create a mix that is preferred by the applicator.

To make the material heavier, add up to 70 lbs. (31.75 kg) in a large kit (LK) or 20 lbs. (9 kg) in a small kit (SK) of Part C. To make the material looser, reduce up to 44 lbs. (20 kg) in a LK or 11 lbs. (5 kg) in a SK of Part C.

NOTE: Material and ambient temperature have a great effect on the handling characteristics of polymer concretes. Before making adjustments to the mix, these conditions should be considered.

7.6 SERIES 469/479 LAVACRETE SLUMP TESTING

When slump testing Series 469, the ideal material mixture should measure 8.5 in. (21.6 cm) slump when casting or topping, or 11 in. (27.9 cm) slump when mixed for grouting.

When slump testing Series 479, the ideal material mixture should measure 9.5 in. (24.1 cm) slump when casting or topping, or 11 in. (27.9 cm) slump when mixed for grouting.

7.7 SERIES 469/479 LAVACRETE MATERIAL TEMPERATURE

For optimum application, handling and performance, the material temperature during application should be between 60°F and 90°F (15°C and 32°C). Temperature will affect the workability. Cool temperatures increase viscosity and decrease workability. Warm temperatures will decrease viscosity and shorten pot life.

7.8 SERIES 469/479 LAVACRETE SURFACE TEMPERATURE

Surface temperatures during application should be no less than 40°F (5°C) and below 90°F (32°C). At minimums, temperatures should be anticipated to be on the rise. Do not apply if temperatures are expected to fall below 40°F (5°C) within 24 hours of application.

7.9 SERIES 469/479 LAVACRETE WORKING TIME

Working time is approximately 30 to 40 minutes at 75°F (24°C) & 50% RH. **Note:** Placement and finishing time is dependent on environmental conditions and temperature of components. Material should be transferred to substrate and placed immediately after mixing.

IMPORTANT: Do not attempt to retemper the polymer concrete with additional resin or water. Material should be moved quickly from the mixer to the area of placement.

8.0 LAVACRETE TOPPING INSTALLATION

8.1 SERIES 469/479 LAVACRETE MATERIAL TRANSFER

When the primer is ready (see Section 6.2), materials should have been appropriately mixed and moved to the placement location and the initial drops can be made onto the substrate.

Placement of the wet polymer concrete shall be from the transfer unit (wheel barrow or tub) and on to the substrate in a staggered drop fashion. If placed between screed guides, allow enough distance between drops so the material will meet the sides, rise up to the top of the rail and once pulled moving forward, each drop of material meets the previous drop. Once a rhythm is established the transfer installer will know the screed applicator's preference for the location of each drop.

If the area is small and no screed guides are in place, the material from a mixed kit should still be placed in spaced amounts to make pulling or troweling of the material more manageable.

Unless a pour is more than two (2) inches (5 cm) in depth, it is never advised to drop all two cubic feet of material in one location.

IMPORTANT: Final finishing should be completed within 30-40 minutes.

8.2 SERIES 469/479 LAVACRETE INITIAL FINISHING

Once material has been delivered and properly placed in the area to be topped, finishing begins.

Between the guides, adjust the lay of polymer concrete drop towards the side rails so contact is made and just below the top of the screed guide, using a trowel or other tool.

Begin moving the wet polymer concrete along the guiderail path by dragging a screed board or a heavy straight wood 2x4, long enough to extend one-foot outside or past each guiderail, across the guiderail tops. This length will allow extra movement in the "scissoring" and tamping of the material and allow the installers to be at angles from each other.

After dragging screed board across material several times, gaps, low spots and material deficiencies shall have additional wet polymer concrete placed in these areas and again tamped into place. Continue down the pathway avoiding creation of a cold joint in unplanned locations.

Make sure no dry pockets are created and the material has been firmly pushed and in contact with the primed or prepared substrate.

If not using guide rails and screed boards but hand-troweling in smaller footprints or locations, use similar techniques to place and finish the material.

8.3 SERIES 469/479 LAVACRETE FINAL FINISHING

Once the material has been fully placed, it is at thickness required and while the area is no larger than what the finishers can easily access, final finishing begins.

Using a high-grade steel trowel final-finish the polymer concrete, adjusting pitches, working "pop-up" aggregates back down and bringing some of the resin to the surface for a better appearance.

The following may also be employed when trowel finishing:

- LavaCrete may have Tnemec Thinner No. 2 used sparingly as a lubricant on the trowel or misted on to the polymer concrete to assist in smoothing.
- Another option, with or without the use of a smoothing agent, is to broadcast 20/40 silica sand onto the wet polymer concrete.

9.0 LAVACRETE CASTING INSTALLATION

9.1 SERIES 469/479 LAVACRETE CASTING GENERAL INFORMATION

- Forms and framework should always be made from ¾-in thick exterior grade plywood or similar stout materials. Where applicable they should be firmly anchored or pinned.
- All formwork surfaces must be either layered with heavy plastic (+3-mil thickness), waxed or heavily greased with a petroleum based release agent. All guiderails and formwork should be removed immediately after material has set firmly.
- All minor gaps or surface irregularities in the formwork must be filled with caulk or a putty prior to casting. The form must be made water tight to prevent weeping of resins.
- Vibrating equipment is highly recommended for efficient compacting and removal of air pockets.
- If the exterior of a casting is found not to be of a finish grade desired or a color change is desired, it is imperative that all

waxes and greases be removed prior to further application. After release agents are removed a sweep blast is recommended.

- Apply a prime coat of appropriate primer as recommended for the specific polymer concrete.
- For color change, use same polymer based resin in specific color chosen and apply over the polymer concrete.

9.2 SERIES 469/479 LAVACRETE CASTING

The mixed polymer concrete should be moved to the sturdy framework which has been lined or lubricated for release once cured. If using chains or a pig to help pull material into tighter or longer portions of the casting, they should be in place with the excess lengths of chain or line at the other end of the pull, easily grabbed for quick removal.

It is recommended that some type of funneling or "headbox" be fabricated to assist in filling the annular space from the wheel barrel and that a constant head pressure be kept to assist flow into the space.

Series 469 & 479 LavaCrete should be poured from one side of the casting only; this helps to avoid air entrapment. It is important that there is venting available at the opposite end of the pour; this allows air to move out of the form as the polymer concrete is being poured.

While still fluid, LavaCrete should be worked to completely fill the cavity or annular space using vibrating equipment, tamping or rodding devices, chains or other tools to compact the space thereby limiting honeycombs and air pockets.

LavaCrete pours in excess of ten (10) inches (25.4 cm) deep should be made in multiple lifts. Subsequent lifts should be made after the first pour has dissipated heat through the exotherm process and cooled down.

Ideally, between 60°F (16°C) and 80°F (27°C), the subsequent lifts should be made within four (4) hours of the previous pour to achieve best bonding.

If in excess of four (4) hours, or when installing in warmer ambient temperatures, pieces of rebar, chicken wire or lath may need to be placed in the previous casting prior to the set of the a new pour and allowed to protrude to accept bonding and tie of subsequent pours. Also acceptable is heavy scarification to no less than a visual standard ICRI/CSP-8. **NOTE:** It is recommended that the specific primer for the selected polymer concrete be applied to the interface of subsequent pours whenever four (4) hours or more have elapsed between lifts.

10.0 LAVACRETE GROUTING INSTALLATION

10.1 SERIES 469/479 LAVACRETE GROUTING GENERAL INFORMATION

- Work on grouting projects should conform to ACI 351.5-15 "Specification for Installation of Epoxy Grouting Between Foundations and Equipment Bases" published by the American Concrete Institute (ACI). Best practices and allowances are detailed, especially in Part 3-Execution.
- When grouting pump/motor/engine bases or rail settings, always use the "grouting" mix in lieu of the "casting" formula.
- The goal in vibration control and dampening is to have the grout create a solid connection from the equipment, through the baseplate to the foundation and finally into the soil: a tight and air-pocket-free fill is critical.

- Anchor bolts, leveling screws and forms should always be installed by experienced grout personnel.
- Polymer concretes are not used for “grouting” between tiles as the aggregate size is too large.

Typically, an API compliant or other baseplate or bedplate is set on top of a new or in good condition concrete foundation or pad. If the concrete is a new pour it must be adequately cured prior to beginning this work. If an existing foundation is to be used, check for chemical contamination, grease or oils and remove prior to mechanically cleaning the surface to accept Series 469/479.

To achieve a good bond of the polymer concrete to the concrete foundation, the surface should be chipped using a pneumatic or air driven chipping hammer to expose no less than 50% of the aggregate. This irregular surface should not have pockets or holes any deeper than the aggregate itself as these cavities can potentially hinder the flow of the grout and/or create air pockets. Additionally, the parameter of the concrete pad shall be chamfered down to provide a greater depth of the grout material along the edge of the pad. All chips and dust shall be blown clean with oil-free dry air and with the assistance of heavy bristle brushes.

10.2 LAVACRETE GROUTING FRAMEWORK

Forms should be constructed in accordance with ACI 301 “Specifications for Structural Concrete.” In general, a framework form shall be created around the prepared concrete pad and tightly affixed to the outside parameter. This framework should be fabricated out of ¾-inch plywood and/or 2x4 or 2x6 straight studs, and all gaps or cracks caulked or putty-filled to retain grout material. The interior sides shall be heavily waxed or petrolatum-based lubricated with thick paste to facilitate the release of the forms once the grout has set. In general, the top of this containment framework, should have a height level to the baseplate at the following corresponding levels:

- Engine frame plates: a minimum of 1 inch (2.5 cm) below the top of the plate
- Rail or soleplates: a minimum of ½ inch (1.27 cm) from the bottom of the plate.
- Skid “I” beams: over the flange and up the web a minimum ½ inch (1.27 cm).

NOTE: In order to fix a more accurate height of the grout containment frame, it is usually placed after the setting and leveling of the baseplates or rails.

10.3 LAVACRETE GROUTING BASEPLATE

The baseplate shall be prepared by abrasive blasting the internal side to SSPC-SP6 Commercial Blast or better. The exterior side of the plate should also be abrasive blasted to remove paint where the grout is specified to meet the metal.

Equipment alignment, leveling of plates including adjustment screws and anchor bolts and expansion joints are the responsibility of the owner's installer. The contractor should be familiar with best-practice procedures and have experience in these disciplines.

Leveling screws for the baseplate should have the bottom of the screw resting on a leveling pad that underneath has had this small area filled with a quick setting leveling compound. Pad should have a 3-inch (7.6 cm) diameter and be glued to the prepared foundation substrate to offset twisting.

Anchor bolt jackets/sleeves placed in the concrete foundation shall protrude slightly above the foundation and receive expansion joint

compound between the jacket and sleeve.

The anchor bolt sleeve to be surrounded by LavaCrete shall be protected from the grout by placing foam pipe insulation pieces (Armaflex or similar) of a matching size, diameter and length around the shaft. Spray-applied urethane foam may also be used.

It should be confirmed that appropriate vent holes have been removed prior to pouring grout.

10.4 LAVACRETE GROUTING APPLICATION

It will be necessary that some type of funneling or “headbox” be fabricated to assist in grouting application. Depending on the location and configuration of the foundation top to be grouted the box for concentrating the pour may need to be fairly large. For small baseplates with fill holes up to three (3) inches (7.6 cm) in diameter, many times a plastic traffic cone with a smooth interior and the tip cut off to allow flow is sufficient.

The head box or cone should always be at an elevation above the highest point of the pour. Material placed in the head box or funnel should never be allowed to fall below the highest point of the grout fill as air or pockets will be introduced when these gaps occur.

Uninterrupted filling of the head box/funnel to maintain hydraulic pressure or head pressure should be maintained for maximum flowability and push of the grout.

- Grout should enter through a singular inlet of the baseplate at one end and flow until it has reached an adjacent inlet. Move headbox or funnel to that inlet and continue grouting until complete.
- If grouting using a lance or hose, it should be inserted under the plate to the point furthest from extraction. The lance/hose shall be withdrawn as grout is pumped, keeping it embedded in the grout at all times.

The outer perimeter edges of the surface pour shall be relieved with a 45° chamfer strip.

LavaCrete should be poured from one side of the casting only; this helps to avoid air entrapment. It is important that there is venting available at the opposite end of the pour; this allows air to move out of the form as the polymer concrete is being poured.

If expansion joints are necessary, the following are guidelines:

- Expansion joints must be situated from the top of the grout to the bottom meeting the concrete base or pad.
- Expansion joints should be placed every 3-7 feet (1-2 m), isolate each grout plate or rail from each other and run the length of the pour.
- Pour grout into adjoining expansion joint areas once the previous expansion joint is at least 50% full of grout.
- They may be made from rigid Styrofoam or hard rubber or other non-oil absorbing material.
- An alternate method is to plastic wrap wood strips and pour the grout around them at the desired expansion joint locations. Once the LavaCrete has firmly set, these strips are removed and filled with an appropriate chemical-resistant flexible joint material.

11.0 VERTICAL APPLICATIONS & FINISH COAT

11.1 SERIES 469/479 LAVACRETE VERTICAL APPLICATION & FINISH COAT

Series 469/479 Lavacrete may be applied to vertical and overhead surfaces in applications in a general range of 50-80 mils (1270-2032 microns). However, applications to these surfaces above this thickness will require multiple lifts or reverting to the usual placement of the material as a casting, between forms. The standard Part A and Part B liquid resin components are used, the only change is to substitute the Part C aggregate bags with appropriate amounts of Series 211-9111 Bulking Additive. Series 211-9111 is a special blend of powders that thickens the mixed resin components to a workable level to trowel or roll the material on to these substrates. Series 211-211 may be used as an alternative.

11.2 SERIES 469/479 LAVACRETE CURING TIMES

TEMPERATURE	TO HANDLE	RETURN TO SERVICE
90°F (32°C)	4 Hours	8 Hours
77°F (25°C)	6 Hours	24 Hours
55°F (12°C)	8 Hours	48 Hours

NOTE: Curing times are based upon 3/8-inch (9.5 mm) of material, thicker castings and pours may result in longer set times.

11.3 SERIES 469/479 LAVACRETE PACKAGING

KIT	PART A	PART B	PART C	YIELD (Mixed)
Large	5 gallon pail	1 gallon can	4 - 70 lb (31.75 kg) bags	18.3 gallons (69.2 L)
Small	1 gallon can	1 quart can	1 - 70 lb (31.75 kg) bag	4.5 gallons (17.0 L)
MPK	50 lb (22.7 kg) bag	-	-	See 11.4 & Yield Chart

Note: To create a grouting material refer to the mixing section for additional information.

11.4 SERIES 469/479 LAVACRETE MIXING FOR VERTICAL APPLICATIONS

Using a low speed, high torque drill with a box style blade, power mix the contents of Series 469/479 Part A and Part B separately in their original containers prior to combining together to catalyze the material. After mixing Part A and Part B together, split the material into either two containers or one much larger container to allow for the increased volume when adding Series 211-9111 and to allow for the blending of the bulking powder into the liquid resin.

Add the Series 211-9111 to the catalyzed Series 469/479 at the rate of 20 to 25 pounds (9 to 11.3 kg) per gallon and mix until consistency is at the level required for vertical or horizontal application.

See the following chart for adjustments in viscosity and coverage per target thickness.

COVERAGE CALCULATOR/USING TNEMEC BULKING POWDERS			
DESCRIPTION	POUNDS (kg)	DRY FILM THICKNESS (DFT)	COVERAGE
VERY WET	10 (4.5)	50	46 (4.3)
	YIELDS 1.3 GAL (4.90 L)	60	38 (3.5)
		70	33 (3.1)
		80	29 (2.7)
		100	23 (2.1)
WET/SLURRY	15 (6.8)	50	53 (4.9)
	YIELDS 1.5 GALS (5.70 L)	60	44 (4.1)
		70	37 (3.4)
		80	33 (3.1)
		100	26 (2.4)
STANDARD -	20 (9)	50	60 (5.6)
	YIELDS 1.7 GALS (6.45 L)	60	50 (4.6)
		70	42 (3.9)
		80	37 (3.4)
		100	30 (2.8)
STANDARD +	25 (11.3)	50	66 (6.1)
	YIELDS 1.9 GALS (7.20 L)	60	55 (5.1)
		70	47 (4.4)
		80	41 (3.8)
		100	33 (3.1)
HEAVY	30 (13.6)	50	73 (6.8)
	YIELDS 2.1 GALS (7.95 L)	60	61 (5.7)
		70	52 (4.8)
		80	46 (4.3)
		100	36 (3.3)
TNEMEC SERIES 211-9111/ 211-9215/211-9214			
FOR USE WITH SERIES 469/479 ONLY			
COVERAGE RATES ARE THEORETICAL AND SHOWN IN SQUARE FEET (M ²) FOR THE NEW YIELD			

11.5 SERIES 469/479 LAVACRETE MORTAR APPLICATION

After mixing to desired working viscosity, immediately begin applying the semi-fluid mortar to the substrates using a trowel or other appropriate tool. Any heavy trowel marks may be addressed by lightly rolling over the fins using a 3/8-inch nap, solvent resistant roller slightly dampened with Tnemec No. 2 Thinner.

11.6 SERIES 469/479 LAVACRETE REINFORCEMENT (OPTIONAL)

If specified or desired, while the mortar coat in section 11.5 is still fluid, reinforcement, such as Series 211-227 Chopped Strand Mat or other appropriate fabrics, can be impressed into the mortar coat. Using a steel ribbed-roller or similar tool, make full contact of the reinforcement into the mortar coat bed using additional catalyzed 469/479 resin as a saturant coat to remove all entrapped air and orient stray wicking glass fibers flat to the surface. Allow to cure and lightly abrade the surface to de-gloss and remove stray wicked glass, removing all detritus prior to proceeding to Finish Coat Application.

11.7 SERIES 469/479 LAVACRETE TOPCOAT OR FINISH APPLICATIONS

Finish or topcoats are not usually required. However, if desired, Series 469/479 may be used as a self-leveling finish coat as supplied. The material is pigmented and need only be mixed and directly applied to the selected locations.

Using a low speed, high torque drill with a box style blade, power mix the contents of Series 469/479 Part A and Part B separately in their original containers prior to combining together to catalyze the material. After mixing Part A and Part B together, immediately begin applying the material as the pot life and working conditions are limited. Pour in ribbons on to the horizontal surfaces and squeegee or roll the material out at a square foot rate appropriate to the desired film thickness. If desired, while still in a fluid condition light or heavy broadcasting of aggregates into the applied film will create a slip resistant finish.

If applying the finish coat to vertical surfaces, 10 to 15 pounds (4.5 to 6.8 kg) of 211-9111 or a sufficient amount of Series 211-211 may be added to the material to assist in holding the film thickness. In general, 10-12 mils (254-305 microns) DFT can be achieved with this rate of bulking additive addition and the film will not down gloss or appear gritty.

12.0 CLEAN UP

It is recommended to clean mortar mixers after mixing approx. 15 large kits of LavaCrete to avoid acceleration or work time loss due to fresh materials being added to older catalyzed material. Actual field conditions and temperatures may necessitate more frequent cleaning or extend the number of mixes. Scheduled cleaning limits the inadvertent setting of materials on parts in the mixer that may fall into the polymer concrete, potentially affecting the applicator's work progress or ruining the mixer. Production stops of one (1) hour or more should have the mixing drum thoroughly cleaned before re-starting.

Cleaning is generally accomplished using solvents and scrub brushes on the mixer blade. Sand can also be added to help scour the internals as well as the empty LavaCrete Part C bags can be thrown into the mixing drum. MEK is the preferred cleaning solvent; however, abide by local VOC-regulations and plant site permissions for appropriate solvents.

13.0 HEALTH & SAFETY

LavaCrete is for industrial use only and must be installed by qualified coating and lining application specialists only. Paint products contain chemical ingredients which are considered hazardous. Read container label warning and Material Safety Data Sheet for important health and safety information prior to the use of this product. Keep out of the reach of children.

More detailed health and safety requirements for LavaCrete products are available in the Safety Data Sheet. Contact your local Themec representative for more information.



LAVACRETE SERIES 479

PRODUCT PROFILE

GENERIC DESCRIPTION

Epoxy Novolac Polymer Concrete

COMMON USAGE

Series 479 is a non-shrinking novolac epoxy polymer concrete ideal for the rehabilitation of severely eroded concrete or for the corrosion-proofing of new concrete where superior chemical resistance is required throughout the complete topping system. Extremely fast setting, allowing for rebuilds of sumps, pump pads, trenches, process floors and secondary containment structures. Series 479 kits are packaged for casting and standard placement of material. A grouting mix may be made by adjusting the kit for a more fluid application.

COLORS

905 Dark Gray **Note:** Color may vary from batch to batch.

FINISH

Flat (as poured). **Note:** A semi-gloss finish can be achieved by troweling the surface.

COATING SYSTEM

PRIMERS

Series 3600

SURFACE PREPARATION

CONCRETE

Prepare concrete surfaces in accordance with NACE No. 6/SSPC-SP13 Joint Surface Preparation Standards and ICRI Technical Guidelines. Abrasive blast, shot-blast, water jet or mechanically abrade concrete surfaces to remove laitance, curing compounds, hardeners, sealers and other contaminants and to provide a minimum ICRI-CSP 5 surface profile. **Note:** A heavier anchor profile may be required for tie-ins and grouting, refer to the application guide for additional information.

ALL SURFACES

Must be clean and free of oil, grease and other contaminants. Always take precautions to prohibit the surface from becoming contaminated prior to product application.

TECHNICAL DATA

VOLUME SOLIDS

100% (mixed)

RECOMMENDED DFT

3/8" to 10" (1.0 - 2.5 cm) in a single pour.

CURING TIME

Temperature	Light Traffic/To Handle	Return to Service
90°F (32°C)	4 hours	8 hours
77°F (25°C)	6 hours	24 hours
35°F (2°C)	8 hours	48 hours

VOLATILE ORGANIC COMPOUNDS

0.09 lbs/gallon (11.2 grams/litre)

THEORETICAL COVERAGE

Coverage rates based on Casting/Topping Application:

88 sq ft (8.2 m²) at 3/8" per kit66 sq ft (6.1 m²) at 1/2" per kit33 sq ft (3.1 m²) at 1" per kit

See APPLICATION for additional coverage rates.

PACKAGING

	Part A	Part B	Part C	Yield (mixed)
Large Kit	5 gallon pail (partial fill)	1 gallon can	4 - 70 lb bags	18.31 gallons (69.1 L)
Small Kit	1 gallon can	Quart Can	1-70 lb bag	4.58 gallons (17.3 L)

Note: To create a grouting material refer to the mixing section for additional information.

STORAGE TEMPERATURE

Minimum: 50°F (10°C) Maximum: 75°F (24°C)

TEMPERATURE RESISTANCE

(Dry) Continuous 300°F (93°C)

SHELF LIFE

18 months at recommended storage temperature.

FLASH POINT - SETA

>230°F (110°C)

HEALTH & SAFETY

Paint products contain chemical ingredients which are considered hazardous. Read container label warning and Safety Data Sheet for important health and safety information prior to the use of this product.

Keep out of the reach of children.

LAVACRETE | SERIES 479

APPLICATION

COVERAGE RATES

Before commencing, obtain and thoroughly read the LavaCrete Surface Preparation and Application Guide.

Casting/Topping Application

	Cubic Feet (Cubic Meter)
Large Kit	2.76 (.08)
Small Kit	0.69 (.02)

Grouting Application

	Cubic Feet
Large Kit	1.72 (.05)
Small Kit	0.43 (.01)

WORKING TIME

Approximately 30-40 minutes at 77°F (27°C), & 50% R.H. **Note:** Working time decreases as temperatures increase. Material should be transferred to substrate and placed **immediately** after mixing.

MIXING

Power mix the contents of Series 479 Part A and Part B separately in their original containers prior to combining. Add the Series 479 Part B into the pre-mixed Part A and power mix the material approximately one to two minutes before placing material in a drum mixer or adding aggregate.

Pour entire contents of catalyzed liquid into the mortar mixer tub, making sure to scrape as much resin out of the container as possible. Start the mixing unit on low speed (15-20 rpm) and immediately begin adding Series 479 Part C into the mixer. Allow the first bag to be fully mixed before adding additional bags.

For additional mixing instructions please reference the charts below:

Casting/Topping (Large Kit as supplied):

Part A	Part B	Part C
5 gallon pail (partially filled)	1 gallon can	4 - 70 lb bags

Casting/Topping (Small Kit as supplied):

Part A	Part B	Part C
1 gallon can	Quart can	1 - 70 lb bag

Grouting (Large Kit)

Part A	Part B	Part C
5 gallon pail (partially filled)	1 gallon can	2.5 - 70 lb bags

Grouting (Small Kit)

Part A	Part B	Part C
1 gallon can	Quart can	44 lbs

THINNING

APPLICATION

Do not thin or attempt to retemper material.

Topping Application: Projects 200 sq ft (18.6 m²) or less may be trowel applied. Projects exceeding 200 sq ft (18.6 m²) should have mixed material placed in appropriately sized and spaced drops between pre-set guide rails or metal screeds that have been set to the specified depth. The fluid material should be pulled along using a screed board in a sawing and compacting motion. Trowels may be used to assist in packing and the small movement of material. Finishing should begin quickly using a high grade steel trowel, wetted with No. 2 Thinner to assist with smoothing. If material is too resin rich or sticky, sand may be broadcast over the surface during finishing.

Casting Application: If Series 479 is to be cast into forms, all forms should be properly built, anchored and caulked for weep spots. Forms should be liberally waxed with release agents or lined with heavy gauge plastic secured to the internal sides. Once the forms are set, proceed with mixing the material per the mixing instructions above. Immediately move mixed polymer concrete to the form and pour into a funnel or head-box. Pour into annular space from one side as this allows for air to escape at the opposite end of the pour. Tamping rods, chains and vibrating equipment should be used to assist in moving and packing the material to limit voids in the polymer concrete once cured. **Important:** Do not cast over 10-inches (25 cm) in depth, contact Tnemec Technical Services for additional information.

Grouting Application: Series 479 can be mixed to create a fluid polymer concrete that allows for good flow into the annular spaces of previously set and leveled baseplates. **Note:** If using this material to restore the surface of a concrete pad prior to baseplate seating, those surfaces should be scarified to an ICRI CSP-8, the existing edges chamfered and framework built prior to application. Work on grouting projects should conform to ACI 351.5-15 "Specification for Installation of Epoxy Grouting Between Foundations and Equipment Bases" published by the American Concrete Institute.

APPLICATION EQUIPMENT

Hand troweling can be accomplished on small projects using steel concrete finishing trowels, broad knives, rubber floats, wooden floats or plastic floats. Plastic bottles for misting the smoothing liquids onto the trowels or on the polymer concrete surface may also be needed.

SURFACE TEMPERATURE

Minimum substrate and ambient application temperature 40°F (4°C) and rising. Do not apply if expected to fall below this temperature within 24 hours of application.

MATERIAL TEMPERATURE

For optimum application, handling and performance, the material temperature during application should be between 60°F and 90°F (15°C and 32°C). Temperature will affect the workability. Cool temperatures increase viscosity and decrease workability. Warm temperatures will decrease viscosity and shorten pot life.

CLEANUP

Flush and clean all equipment immediately after use with No. 2 Thinner or MEK and using plastic scrub brushes on the mixing blades and mixing drum. Sand and the discarded Part C bags can be added to the mixer to help scour the material. Finish with soap and water.

LAVACRETE | SERIES 479

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Tnemec Company, Inc. 6800 Corporate Drive Kansas City, Missouri 64120-1372 +1 816-483-3400 www.tnemec.com