



Surface Preparation & Application Guide
Polyurethane Modified Concrete



1.0 - INTRODUCTION

The purpose of this guide is to familiarize applicators with the basic information necessary for properly bidding, ordering and installing Tnemec's Ultra-Tread floor topping. Prior to starting work, please read this entire guide carefully. If you have questions, contact your Tnemec representative or call 1-800-TNEMEC1. It is important that you obtain answers to any questions before beginning the process. Due to the complex application and potential exposure to extreme environments, only qualified applicators should install Ultra-Tread.

Please review all pertinent Product Data Sheets as well as Detail Drawings.

Also, reference the project specifications and compare them with this guide and the Product Data Sheets. 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 Sheets, please contact your Tnemec representative or call 1-800-TNEMEC1 for assistance.

2.0 PRECAUTIONS

- Material should be stored and applied between 50° F and 80° F.
- Do not install material if substrate temperatures are below 40° F or above 85° F.
- Do not install if relative humidity is above 85%.
- Do not attempt to split kits or Part C aggregates.
- Do not mix material by hand.
- Due to the limited working time of the material, adequate manpower should be considered.
- Part B is moisture sensitive. Do not open until ready to mix.



3.0 PRODUCTS AND PACKAGING

SERIES 244 ULTRA-TREAD M

Series 244 is a seamless mortar floor topping designed to resist chemicals, organic acids and thermal shock due to hot liquids, cleaning procedures and severe temperature fluctuations. It is applied between ¼" to ½" using a screed/trowel method and loop rolled to a smooth, even surface.

Series 244 is available in two colors—00GR gray and 00RD red.

244 PACKAGING

PART A (PARTIALLY FILLED)	PART B (PARTIALLY FILLED)	PART C (AGGREGATE)	PART D (COLORANT)
1 1-gallon can	1 ½-gallon jug	38 lb. bag	1 unit

Theoretical yield: 17 sq. ft. per mixed kit at ¼"*

* Substrate condition, application and waste may vary and can affect coverage.

SERIES 245 ULTRA-TREAD S

Series 245 is a self-leveling slurry to be applied between ⅜" to ½" through the use of notched/gauged equipment such as a notch trowel or gauge rake. The surface may be spike rolled smooth or aggregate may be broadcast into it for enhanced slip resistance. Aggregate or colored quartz may be used to achieve a solid color, while blends of colored quartz may be used to provide a more aesthetic, multi-colored or tweed appearance.

Series 245 is available in two colors—00GR gray and 00RD red.*

245 PACKAGING

PART A (PARTIALLY FILLED)	PART B (PARTIALLY FILLED)	PART C (AGGREGATE)	PART D (COLORANT)
1 1-gallon can	1 1-gallon jug	42.4 lb. bag	1 unit

Theoretical yield: 28 sq. ft. per mixed kit at ⅜"***

* Surface finish will be determined by aggregate color when a broadcast layer is applied.

**Substrate condition, application and waste may vary and can affect coverage.

SERIES 243 ULTRA-TREAD V

Series 243 is a vertical/coving material for application where vertical trowelling, such as trench walls, vertical faces of equipment pads or coving, is required. A brush or short nap roller, wetted with water and shaken out, may be used to seal and provide a smoother appearance to the mortar.

Series 243 is available in two colors—00GR gray and 00RD red.

243 PACKAGING

PART A	PART B	PART C (AGGREGATE)	PART D (COLORANT)
1 1-quart can	1 1-quart jug	1 unit	1 unit

Theoretical yield: 13 sq. ft. per mixed kit at $\frac{3}{16}$ "*

18-20 lineal feet per mixed kit of 4" rolled radius base*

* Substrate condition, application and waste may vary and can affect coverage.

4.0 SURFACE PREPARATION

CONDITION OF CONCRETE

New concrete should be allowed to cure a minimum of 14 days in accordance with American Concrete Institute (ACI). Before the installation of either Series 244 or 245, the floor must be free of any contaminants and visibly dry. Concrete shall display a minimum compressive strength value of 3000 PSI when obtained and tested by a professional petrographic laboratory according to ASTM C39/C39M-03 and C42/C42M-03 or the most current revision. Further analysis should demonstrate that there is a strong concrete mix with an acceptable paste to aggregate ratio, as well as adequate presence of aggregate near the top layer of the concrete mix. Existing concrete should be sound and free of all contaminants. Removal of weak or contaminated concrete prior to installation is required to ensure a strong bond between the concrete and the Ultra-Tread floor topping system.

Ultra-Tread is a breathable product and may be installed in areas where high rates of moisture vapor transmission would prevent the use of non-breathing flooring systems. Consult with your Tnemec representative or Tnemec Technical Service if moisture vapor transmission exceeds 8.0 lbs per 1000 sq ft per ASTM F 1869. **Caution:** Application of topcoats over Series 244 or 245 will affect the breathability of these flooring products. Contact Tnemec Technical Service for additional information.

PREPARATION OF CONCRETE

All surfaces must be prepared in accordance with the SSPC-SP13/NACE 6 standard prior to applying floor topping materials. All poor or weak concrete and any contaminants including surface hardeners or curing agents must be removed to provide a sound substrate. Surface profile should be in accordance with ICRI-CSP 5-9.

PATCHING

All surface imperfections such as spalls, large cracks and areas requiring keyways, such as drains and terminations, should be detailed prior to the installation of the Ultra-Tread topping. This may be achieved utilizing Series 218, 219 or the Ultra-Tread material itself. Series 243 offers itself as an excellent patching material option because of

the kit's low volume yield and the consistency/workability of the material.

TERMINATIONS

Any stopping points such as perimeters, drains, trenches, etc., must be keyed to provide anchorage against shrinkage during cure and thermal cycling stress. This is achieved by saw cutting $\frac{1}{2}$ " wide by $\frac{1}{2}$ " deep channels into the substrate. On large floors (3,000 sq. ft. and up), it may be beneficial to cut additional channels in a grid pattern throughout the substrate being topped. Do not featheredge. (Refer to StrataShield Standard Detail Drawings TFS 1, 2, 3, 4, 5, 11 and 12.)

NOTE: Preset drains will also require isolation joints to allow for thermal movement of the surrounding substrate.

CONTROL JOINTS

Control/construction joints should be cleaned out and left exposed. They will assist in acting as anchor keyways in the floor.

EXPANSION JOINTS

Expansion joints can be considered moving joints and should be honored by placing keyways on either side. Appropriate caulking/sealants should be selected based on the intended use of the area. New expansion joints should be installed to isolate the following areas: load support columns, equipment set in the substrate, preset drains, any areas exhibiting differences in temperature from the surrounding floor such as around ovens and freezers, and when butting up to different flooring materials. (Refer to StrataShield Standard Detail Drawing TFS 13.)

5.0 MIXING

TIME AND PROCESS

SERIES 243, 244 AND 245 ULTRA-TREAD

To mix either Series 243 or 244, use a minimum one horsepower, 60-rpm rotary mortar mixer with at least .5 cubic feet capacity or a variable speed drill $\frac{1}{2}$ " chuck fitted with a mixing blade with three 5" diameter wheels (mud blade type), box blade or equivalent. Never mix more material than can be applied within 15 minutes of initial mixing. For Series 245, only a variable speed drill fitted with a mixing blade with three 5" diameter wheels (mud blade type) or equivalent is recommended. It is also not recommended to mix more than one kit of Series 245 at a time.

Pour the Part A into mixing container and begin mixing. Slowly add the Part B and let blend until material has a consistent tan color. This should take no more than one minute with a mixer and less than 30 seconds with a drill and mixing paddle. Add Part D colorant and let blend into the mixed liquid until it begins to become a consistent color. Once the colorant has begun to blend into the liquid, gradually add the entire contents of Part C aggregate and let mix until all aggregate is wetted out

and is a uniform consistency. This entire process should not exceed 3 minutes. Exceeding this time frame may adversely affect the material's application characteristics, performance and cured appearance.

NOTE: The entire kit must be mixed. Mixing less than a full kit can result in miscatalization.

6.0 SCREED AND HAND TROWEL APPLICATION

SERIES 244 ULTRA-TREAD M

Once the surface has been properly prepared, Series 244 may be mixed and applied using a screed box and hand trowels.

After the material is mixed for the appropriate amount of time, immediately place material into the screed box and slowly pull across the floor. It may help to level the material with a trowel in the box. This will help ensure that the material is laid out evenly. The material can then be trowelled to close and smooth. After troweling, loop roll the surface to help remove trowel marks and further close and smooth the surface.

7.0 SLURRY APPLICATION

SERIES 245 ULTRA-TREAD S

Once the material is thoroughly mixed, immediately transfer to working area. Pour onto the floor in a thick ribbon and then evenly spread to the appropriate thickness with either a trowel or screed rake. A smoothing blade may be used at this point to further level the material. Once level and even, a wire porcupine roller or loop roller should be used to backroll the material to help facilitate leveling and alleviate imperfections. Backrolling will also help force the aggregate down into the system while working a layer of resin to the surface. If left alone, this layer of resin will help close or seal the surface. If aggregate is to be broadcast, the resin will assist in adhering an adequate amount of the aggregate to the surface.

NON-SLIP OPTION

If a textured surface is desired, an aggregate or decorative quartz may be immediately broadcast randomly or to refusal (estimate broadcast to refusal rates at approximately 1 lb. per sq. ft.) into the spike or loop rolled surface of the Series 245. Excess aggregate can either be vacuumed or swept off once the material has cured. An optional 100% solids epoxy sealer may then be applied to lock in the aggregate.

8.0 VERTICAL AND COVING

SERIES 243 ULTRA-TREAD V

The wall must first be primed to improve adhesion and assist in hanging the material on to the wall. Mixing the Part A and B liquids will create a priming material. The two may be mixed together at a 1:1 ratio and brushed on the vertical surface to be trowelled. The primer should be allowed to tack up but not completely dry, approximately 15-30 minutes. Dependent upon the porosity of the vertical surface the primer is being applied to, an additional prime coat may be required to provide a tacky surface. Once the Series 243 kit is mixed, it may be placed on the vertical surface with a trowel. A brush, dampened with water, may be used to seal and smooth the surface of the mortar.

9.0 CURING

Both Series 244 and 245 should be ready to return to light duty service within 8 hours dependant upon temperatures and humidity. This includes decontamination of area as well as dry processing and foot traffic. The material should be allowed to cure an additional 4 hours before being returned to full service where exposed to fork lift traffic and where water and/or chemicals are used. Allow a full 24 hrs. cure when immediate exposure to harsh chemicals is a critical part of the area's processing/production.

10.0 CLEANUP

Clean all tools and equipment immediately with Xylene or MEK.

