

TotTurf® TPV(1-4mm) Product Specification

PART 1 – GENERAL

1.1 POURED IN PLACE PLAYGROUND SURFACING

TotTurf® TPV poured in place rubber playground surfacing shall consist of a polyurethane binder mixed with 100% recycled, shredded tire buffing's which will make up the Cushion Layer. The Cushion Layer is capped with TPV (Thermal Plastic Vulcanized) granules mixed with an Aliphatic or Aromatic binder creating the Wear Course. Robertson Industries Inc. surfaces comply with ADA and CPSC guidelines as well as ASTM Standards. TotTurf® is certified by IPEMA, a third-party testing organization for playground surfaces and equipment.

1.2 PERFORMANCE REQUIREMENTS

- A. Area Safety: Poured in place within playground equipment use zones shall meet or exceed the performance requirements of the CPSC, ADA and Fall Height Test ASTM F1292-17a. The surface must yield both a peak deceleration of no more than 200 G-max and a Head Injury Criteria (HIC) value of no more than 1,000 for a head-first fall from the highest accessible portion of play equipment being installed as shown on drawings. *IPEMA certification is required. (ASTM F1292-17a section 4.3.3: The laboratory test used to determine critical fall height shall have been conducted on surfacing material samples identical in design, materials, components, and thickness and manufactured as the installed playground surface).*
- B. Accessibility: NOTE: Children's outdoor play areas shall be in compliance with the Uniform Federal Accessibility Standards (9AFAS) FED-STD-795 and the Architectural and Engineer Instructions (9AEI) Design Criteria. The requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) 28 CFR Part 36 that provide equal or greater accessibility than the requirements of UFAS must also be met in children's outdoor play areas.
- C. TotTurf® TPV poured in place surfaces intended to serve as accessible paths of travel for persons with disabilities shall be firm, stable, and slip resistant, and shall meet the requirements of ASTM F195-14 and ASTM F1292-17a.
- D. APPLICABLE STANDARDS ASTM

International:

- ASTM C1028 Standard Test Method for Determining the Static Coefficient of friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull Meter Method – This standard replaces ASTM D2047

- ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers – Tension
 - ASTM D624 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
 - ASTM D2859 Standard Test Method for Flammability of Finished Textile Floor Covering Materials
 - ASTM E303 Standard Test Method for Measuring Surface Frictional Properties using the British Pendulum Tester
 - ASTM F1292-17a Standard Specification for Impact Attenuation of Surfacing Materials within the Use Zone of Playground Equipment
 - ASTM F1951 Standard Specification for Determination of Accessibility of Surface Systems under and around Playground Equipment
 - ASTM F2479-12 Standard Specification for Purchase, Installation and Maintenance
- E. TPV material shall be angular granules with a (Shore A) hardness of $65^{\circ}\text{A} \pm 5$ and a particle size between 1-4 mm. Binder shall be not less than 15% percent of the total weight of TPV material used in the wear surface, and shall provide 100% percent coating of the particles. No other granule sizes are acceptable.
- F. Third part test results of tensile strength equal to or greater than 170psi and elongation yield equal to or greater than 180% percent.
- G. TotTurf® TPV poured in place surfaces shall be manufactured and installed by trained, experienced company employees or certified installers who have successfully completed the “Certified Installers Training Program” required by Robertson Industries Inc. Aliphatic or Aromatic urethane is to be used in wear course.
- H. Delivery, Storage and Handling: Materials and equipment shall be delivered and stored in accordance with the manufacturer’s recommendations.
- I. TotTurf® TPV poured in place surfacing must be installed on a dry sub-surface, with no prospect of rain within the initial drying period, and within the recommended temperature range of the manufacturer. Installation in weather conditions of extreme heat, or less than 55°F, and/or high humidity may affect cure time and the structural integrity of the final product. Immediate surroundings of the site must be reasonably free of dust conditions as this could affect the final surface appearance. The manufacturer’s Service Center Manager reserves the right to control the installation based on such factors without penalty to the company.

- J. Sequencing and Scheduling: TotTurf® TPV poured in place surfacing shall be installed after all playground equipment, shade structures, signs and any other items within the surfacing area. Surface installation will be coordinated by a Robertson Industries Inc. representative.
- K. Warranty: TotTurf® TPV poured in place surfacing shall maintain required impact attenuation characteristics and be guaranteed against defects in workmanship and materials for a limited Five (5) year period or as specified and agreed upon per alternate contract. Warranty will be specific to maintenance requirements and performance standards of completed product.
- L. Submittals: The Following shall be submitted:
 - 1. One original hard copy of the submittal package will be provided. Additional hard copies are available by request. All specifications/details/testing data can be obtained from your sales representative or found on the TotTurf® website www.totturf.com.
 - 2. Products submitted as equal must include hard copies of manufacturer's written specifications and warranty.
 - 3. Manufacturer's descriptive data and installation instructions.
 - 4. Manufacturer's details showing depths of Wear Course and sub-base materials, anchoring systems and edge details.
 - 5. Upon request, a listing of at least five installations where products similar to those proposed for use have been installed and have been in service for a minimum period of 3 years. This list shall include owner or purchaser, address of installation, date of installation, contact person, and phone number.
 - 6. A signed statement by an authorized official certifying that the surfacing system meets the requirements of ASTM F1292-17a for a head-first fall from the highest accessible portion of the specified playground equipment.
 - 7. A signed statement from the manufacturer of the poured in place surfacing attesting that all materials under this section shall be installed only by the Manufacturer's Trained Installers.
 - 8. A certificate of Insurance shall be provided by Robertson Industries, Inc. for poured in place surfacing for use as playground safety surfacing, covering general and product liability, of not less than \$1,000,000 for each occurrence, \$2,000,000 general aggregate, with an excess/umbrella liability of \$25,000,000. The issuing underwriter shall be AA rated.
 - 9. Upon request, samples of the proposed material for this project.

10. IPEMA CERTIFICATION MANDATORY.

PART 2 – PRODUCTS

Safety Surfacing shall consist of both recycled and synthetic materials meeting the requirements of this specification. The type of safety surfacing shall be TotTurf® TPV, manufactured and installed by Robertson Industries Inc., a PLAYCORE company, Telephone 800-858-0519, or its Certified Installers.

2.1 PRODUCT SCOPE

- A. Poured in Place Surface: The poured in place surface shall consist of 100 percent recycled granulated and or shredded tire material mixed with a polyurethane binder and capped with a TPV granule mixed with an aliphatic or aromatic binder.
- B. It shall consist of a uniform material manufactured in such a way that the Wear Course meets the

requirements specified herein for wear surface.

- C. The type safety surfacing shall be a poured-in-place system and shall be indicated on the drawings.

2.2 CUSHION LAYER SECTION

- A. Impact Attenuating Cushion Layer: Cushion Layer consists of shredded styrene butadiene rubber (SBR) and/or cryogenic crumb rubber and adhered with a 100% percent solids polyurethane binder to form a resilient porous material.
- B. Strands of SBR may vary from 0.5 mm – 2.0 mm in thickness by 3.0 mm – 20 mm in length.
- C. SBR Crumb Rubber (5-9 Mesh) using sieve analysis ASTM D5644 with a fiber content of .1% or less mixed in.
- D. Foam or standard rubber granules are not to be permitted in a Cushion Layer.
- E. Binder shall be between 10-14% percent of the total weight of the material, and shall provide 100% percent coating of the particles.
- F. The Cushion Layer shall be compatible with the Wear Course and must meet requirements herein for impact attenuation.

2.3 WEAR COURSE

- A. Wear Course shall consist of Thermal Plastic Vulcanized (TPV) granules with an Aliphatic/Aromatic binder formulated to produce an even, uniform, seamless surface up to 2000 square feet. (Contact sales representative for seamless pads over 2000 square feet).
- B. TPV material shall be angular granules with a (Shore A) hardness of 65°A ±5 and particle size between 1-4mm. Aromatic binder shall not be less than 20% percent of the total weight of TPV material used in the wear surface, and shall provide 100% percent coating of the particles. No other granule sizes are acceptable.
- C. Thickness of the Wear Course shall be ½” inch (12.7mm).
- D. The Wear Course shall be porous.
- E. See the TotTurf® TPV PIP Specification for the TPV High Density wear resistant inserts under swings, slide exits, and high traffic areas.

2.4 BINDER

- A. No Toluene Diphenyl Isocyanate (TDI) shall be used. Aliphatic or Aromatic urethane is to be used.

- B. No filler materials shall be used in urethane such as plasticizers, and the catalyzing agent shall contain no heavy metals.
- C. Weight of polyurethane shall be no less than 8.5 lbs./gal (1.02 Kg/1) and no more than 9.5 lbs./gal (1.14 Kg/1).
- D. Manufacturer is permitted to modify the type of urethane required to match extreme weather conditions.

MATERIALS

A. Wear Course – TotTurf® TPV Granules

Manufacturer: Rosehill Polymers
As Distributed by: Robertson Industries Inc. (800) 858-0519
Location Used: Playground Area

B. Cushion Layer – TotTurf® Shredded SBR

As Distributed by: Robertson Industries Inc. (800) 858-0519
Location Used: Playground Area

C. Binder – VORAMER MR Products

Manufacturer: DOW Chemical
As Distributed by: Robertson Industries Inc. (800) 858-0519
Location Used: Playground Area

D. Binder – Aliphatic Urethane Premium, Non-Ambering

Manufacturer: Accella Polyurethane Systems
As Distributed by: Robertson Industries Inc. (800) 858-0519 Location
Used: Playground Area

E. Binder – Aromatic Urethane

Manufacturer: Marchem Pacific, Inc.
As Distributed by: Robertson Industries Inc. (800) 858-0519 Location
Used: Playground Area

PART 3 – EXECUTION

3.1 SITE PREPARATION (OWNER OR OWNERS REPRESENTATIVE SHALL)

- A. Finished Grade/Slope: Verify that finished elevations of adjacent areas are as indicated on the architectural or site plans, that the appropriate sub-grade elevation has been established for the particular safety surface to be installed, and that the subsurface has been installed per architectural, site or equipment plans while meeting accessibility and use zones requirements.
- B. Sub Base: Tolerance of concrete or bituminous sub base shall be within 1/8" inch (3.0mm) in 10' feet (3050mm). Tolerance of aggregate sub base shall be within 3/8" inch (10mm) in 10' ft. (3050mm). Verify that aggregate sub base has been fully compacted in 2" inch watered lifts to 95% percent or greater. Sub base shall be a minimum of 4" inches and should exhibit positive drainage.

- C. Curing of Asphalt and Concrete: If poured in place surfacing is installed, verify that concrete Sub base has cured (All areas appear white in color usually between 3-7 days) and that all concrete curing compounds and other deleterious substances that might adversely affect adhesion have been removed. Surface shall be clean and dry.

Asphalt cure time requires fourteen (14) days. Once the new asphalt has cured, it must be pressured washed prior to the surfacing being installed. The contractor shall be responsible for flooding the pad to insure proper slope and tolerance.

Any areas holding enough water to cover a flat nickel shall be patched prior to arrival of our installation crews.

- D. Drainage: Verify that sub-surfacing drainage, if required, has been installed to provide positive drainage per architectural plans.

3.2 INSTALLATION

- A. Poured in Place Surfacing: Components of the poured in place surfacing shall be mixed on site in a rotating tumbler to ensure components are thoroughly mixed and are in accordance with manufacturer's recommendations. Installation of surfacing shall be seamless up to *2,000 square feet* per day and completely bonded to concrete of sub base. Material shall cover all foundations and fill around all elements penetrating the surface.
- B. Cushion Layer: Whenever practical, cushion layer of surfacing material shall be installed in one continuous pour on the same day of up to 2,000 square feet. When a second pour is required, step the seam (see detail) and fully coat the step of the previous work with polyurethane binder to ensure 100% percent bond with new work. Apply adhesive in small quantities so that new cushion layer can be placed before the adhesive dries.
- C. Wear Course: Wear Course must be TPV (Thermoplastic Elastomer Vulcanized) rubber granules. Wear surface shall be bonded to Cushion Layer. If necessary, additional primer will be used between the cushion layer and Wear Course. Apply adhesive to Cushion Layer in small quantities allowing the Wear Course to be applied before adhesive dries. Surface shall be hand troweled to a smooth, even finish. Except where the Wear Course is composed of differing color patterns, pour shall be continuous and seamless up to *2,000 square feet per day*; (Contact sales representative for seamless installations in excess of 2000 square feet). Where seams are required due to color change, size or adverse weather, a step configuration will be constructed to maintain Wear Course integrity.

The edge of initial pour shall be coated with adhesive and wearing surface mixture shall be immediately applied. Pads with multiple seams are encouraged to include a top coat of urethane before being placed into use. Butt joint seams are not acceptable except for repairs. Under special conditions and with owners written approval seams may be permitted in same color pad. Consult with manufacturer for specific applications.

- D. Perimeter: For installations over existing concrete, the perimeter must be saw cut to provide a keyway 1" deep x 1" wide or formed during the pour, with surfacing rolled down inside void. Primer adhesive must be applied to all sides of the void. When connecting to a concrete curb or border, the inside vertical edge shall be primed with adhesive and the final 2" of the cushion layer shall be tapered to allow the wear surface material to be 1.5" – 2" thick where it joins the concrete edge.

- E. When installing over new or existing asphalt, a curb or other type of border must be installed around the entire pad. Primer adhesive must be applied to the inside vertical edge of the border before Poured in Place surface installation.
- F. Thickness: Construction methods, such as the use of measured screeds or guides shall be employed to ensure that full depth or specified surfacing material is installed. Surfacing system thickness throughout the playground equipment use zone shall be as required to meet the impact attenuation requirements specified herein.
- G. Clean up: Manufacturer's installers shall work to minimize excessive adhesive on adjacent surfaces or play equipment. Spills of excess adhesive shall be promptly cleaned.
- H. Protection: The safety surface shall be allowed to fully cure in accordance with Manufacturer's instructions. The surface shall be protected by the owner from all traffic during the curing period of 48 hours or as instructed by the Manufacturer.
- I. Manufacturer's Services: For poured in place safety surfacing, a manufacturer's representative who is experienced in the installation of playground safety surfacing shall be provided. The representative shall supervise the installation to ensure that the system meets the impact attenuation requirements as specified herein.
- J. Security & Waste Disposal: Surface installation crew shall be responsible for the protection of surface during the installation process while on site only. Owner or general contractor shall be responsible for the protection of the surface during the curing period upon completion of the installation and overnight during the installation. Owner or general contractor shall be responsible for having a dumpster on site for all waste and debris. Failure to provide security and a dumpster will result in additional cost.
- K. Utilities & Access: Power and water must be available within 300 feet of installation. Site will require tractor-trailer access. In a case where tractor-trailer access is not possible, owner or general contractor shall be responsible for transporting materials from delivering carrier to the installation site.