

ProTurf with Cushion:

SURFACING FOR PLAYGROUNDS

1. Description of System

ProTurf Safety Surfacing is a rolled out application to provide for a resilient, seamless artificial turf surface installed over the specified base. The underlying cushion material shall consist of polyurethane resin-based **post-consumer recycled rubber shred material derived from recycled tires**. The Turf material is a polyethylene and nylon thatch monofilament blade with a polypropylene backing. Binder shall consist of nonflammable, non-shrinking, one-part moisture cured polyurethane adhesive as recommended by the manufacturer and capable of bonding to concrete or asphalt. Safety: ProTurf Safety Surfacing shall be stable and durable to comply with all requirements set forth in the Americans with Disabilities Act (ADA). Surfacing within playground equipment use zones shall meet or exceed the performance requirements of CPSC, ASTM F 1292 and CSA Z614-98 that a surface yield both a peak deceleration of no more than 200 g's 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.

Manufactured Safety Surface: for surfaces manufactured for the purpose of playground safety surface, a certificate of compliance shall document the impact attenuation performance.

2. Materials

Polyurethane Primer and Binder – Binder is a single component polyurethane pre-polymer formulated using a polymeric foam of Diphenylmethane, 4, 4' Diisocyanate (MDI), Amber Viscosity – 4500cps, NCO content – 9.0, Density – 20dc-68, PCF Flash Point – >390dF, Elongation – 550%, Tensile – 3900 lbs/sq. in. No toluene diphenyl isocyanate (TDI) shall be used. No filler materials shall be used in urethane binder and the catalyzing agent shall contain no heavy metals. Weight of polyurethane shall be no less than 8.5 lbs/gal (1.02 Kg/l) and no more than 9.5 lbs/gal (1.14 Kg/l).

Artificial Turf Wear Layer: A 1-3/4 pile, in-filled polyethylene monofilament with a nylon thatch designed specifically for landscape and playground applications with 45% nylon thatch construction. Denier 5250/4200 respectively, face weight is 58 ounces with stitch rate of 9.75/3". Primary backing composition 100% woven polypropylene, UV resistant, 4 ounces per square yard with a finish coat of polyurethane at 24 ounces per square yard. Particulate infill type use a quality recommended infill at a weight of 5 pounds to 2.5 pounds per square foot.

Impact Course/SBR Cushion Layer – Safety surface shall be a poured-in-place system and shall be indicated on the drawings. Impact Attenuating Cushion Layer: Substrate shall consist of shredded styrene butadiene rubber (SBR), can be made up of **post-consumer**

recycled rubber shred material derived from California recycled tires, adhered with a 100 percent solids polyurethane binder to form a resilient porous materials. Strands of SBR may vary from 0.5mm – 2.0mm in thickness by 3.0mm - 20mm in length. Binder shall be not less than 14 percent, nor more than 16 percent, of the total weight of rubber, and shall provide 100 percent coating of the particles. The substrate shall be compatible with the wearing surface and shall meet requirements herein for impact attenuation.

3. Standard Testing Results

Impact Attenuation - ASTM F1292-99 and ASTM F1292-04: Impact attenuation test results will be provided to the owner or owner's representative.

Coefficient of Friction - ASTM D2047-82: All products must meet a minimum standard on coefficient of friction of .9-wet, 1.0-dry. No exceptions will be made to this requirement in an effort to ensure ample slip-resistant conditions.

Permeability: Product shall meet or exceed a coefficient of permeability of five (5) feet per minute. NOTE: From a geotechnical standpoint, the permeability of a material is a measure of the velocity at which water will flow through the void spaces or pores under a given hydraulic gradient.

Flammability of Finished Floor Cover – ASTM D2859: Product shall pass flammability.

UPITT Test for Combustion Product Toxicity: Product shall pass the Pittsburgh Protocol Test for toxicity. The passing result is that the product is considered no more toxic than wood.

Tensile Strength – ASTM D412-87 and Tear Resistance – ASTM D624-86: This test indicates a product's ability to stretch, and how far it will stretch before it breaks. Test results must be a minimum of tensile strength = 60 PSI, and % elongation @ break = 40 (140% of original size).

To assure compliance with (a), (b), (c), (d), (e), (f) and (g) above, installation shall be provided by the manufacturer: ProDek Inc.

4. Base Requirements & Preparation

The base shall have the specific minimum slope (2%) and shall vary no more than 1/8" when measured in any direction with a 10' straight edge. Asphalt base shall be allowed to cure a minimum of fourteen (14) days and new concrete shall be allowed to cure a minimum of seven (7) days prior to commencement of surfacing. A compacted stone base will not require cure time but will be subject to slope and tolerance specification. NOTE: If stone is used as a base, proper treatment with herbicides by others must be applied prior to arrival of surface installation crew. Minimum of 1½" of surface (total depth) is required over a stone base. Also, no rolled products or prefabricated tiles will be acceptable. It is

the primary intent of this specification to provide a seamless, porous safety surface. Safety surface shall be installed after the playground equipment is installed and after the subsurface is ready to receive the safety surface. The temperature should be 40 degrees and rising during installation of surface. Cleaning – The entire subsurface shall be clean, dry and free from any foreign and loose material.

5. Installation

Rubber Cushion Layer System: The SBR components of the safety surface system 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 and completely bonded to the subsurface. Material shall cover all foundations and fill around all elements penetrating the surface.

Substrate: Whenever practical, substrate layer of surfacing material shall be installed in one continuous pour on the same day. When a second pour is required, fully coat the edge of the previous work with polyurethane binder to ensure 100 percent bond with new work. Apply adhesive in small quantities so that new substrate can be placed before the adhesive dries.

Turf Wear surface system: To be laid onto a stabilized SBR rubber base, seams should be mechanically fastened or glued with an appropriate adhesive. Edge attachment system shall be either mechanically fastened or glued. Product to be infilled approximately .25" to .75 "depending on type of application. Surfacing system thickness throughout the playground equipment use zone shall be as required to meet the impact attenuation requirements specified herein.

Clean Up: Manufacturer's installers shall not leave adhesive on adjacent surface or play equipment. Spills of excess adhesive shall be promptly cleaned. Security or Surface Protection: The synthetic SBR safety surface shall be allowed to fully cure in accordance with manufacturers

Instructions. The owner from all traffic shall protect the surface during the curing period as instructed by the manufacturer.

6. Submittals

- a.** One original hard copy of the submittal package will be supplied. Upon request only hard copies shall be supplied.
- b.** Manufacturer's descriptive data and installation instructions.
- c.** Manufacturer's details showing depths of wear surface and sub-base materials, anchoring systems and edge details.
- d.** A list of all materials and components to be installed, including manufacturers name, storage requirements, and precautions, and shall state chemical composition and test results to which material has been subjected in compliance with these specifications.
- e.** Upon request a listing of a least five installations where products similar to those proposed for use have been installed and have been in successful service for a minimum period of two years. This list shall include owner or purchaser, address of installation, date of installation, contact person, and phone number.
- f.** Statement signed by an official authorized to certify on behalf of the manufacturer of the synthetic safety surfacing attesting that the surfacing meets the requirements of ASTM F 1292 for a head-first fall from the highest accessible portion of specified

playground equipment.

g. Statement signed by the manufacturer of the synthetic safety surfacing attesting that all materials under this section shall be installed by the manufacturer or its certified installers and that playground surfacing installation shall not be performed by anyone other than the manufacturer or its certified installers.

h. A certificate of insurance shall be provided by manufacturer or its certified installers of synthetic safety surfacing for use as playground safety surfacing, covering both general and product liability, or not less than \$1,000,000. The issuing underwriter shall be AA-rated.

i. Upon request, a sample of safety surface proposed for this project.

j. Warranty: Surfacing shall maintain required impact attenuation characteristics and be guaranteed against defects in workmanship and materials for a period of eight (8) years or as specified and agreed upon per alternate contract.

k. Schedule of Values: 70% material and 30% labor.

7. Contractors Qualifications

a. Contractor must hold specific valid California State Contractors license (D/12).

b. Contractor must have at least 50 installations of exact or similar safety surfacing applications.

c. Contractor must have installed a minimum of 150,000 square feet of exact or similar safety surfacing applications.

d. Contractor must have been in business in the same safety surfacing industry for at least 3 years.