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Submittal & Specification for Safepour™ EPDM Surfacing

Project: [Enter Specified]

Product: Safepour EPDM Poured-In-Place Rubber Playground Safety Surfacing

Two (2)-layer, seamless system; with a base layer comprised of 100% post-consumer recycled SBR rubber (Styrene Butadiene Rubber) and polyurethane binder.

Top layer wear course of EPDM (Ethylene Propylene Diene Monomer) rubber and either “Standard” Aromatic polyurethane binder or “Premium” Aliphatic UV Stable polyurethane binder.

This system is to use the following:

Colors: [specifier note % mix] of each color by volume

[color] [%] size 1 - 4mm granule

Safepour EPDM Poured-In-Place Rubber Playground Safety Surfacing Product:

“SAFEPOUR” is a safe, durable, and low-maintenance surfacing system for today’s playgrounds and water parks. SAFEPOUR EPDM Poured-In-Place is a high-density, 2-layer, seamless system comprised of a base layer of 100% post-consumer recycled SBR rubber (Styrene Butadiene Rubber) and polyurethane binder and a top layer of EPDM (Ethylene Propylene Diene Monomer) rubber and either “Standard” Aromatic polyurethane binder or “Premium” Aliphatic UV Stable polyurethane binder to create a porous uniform surface. SAFEPOUR’s EPDM “Standard” & “Premium” is a proprietary product utilizing the highest quality components available to the safety surfacing industry.

SAFEPOUR is mixed and applied on the job site and can be installed over a compacted sub-grade of base rock, asphalt, or concrete in any design configuration and dimensions, with thickness typically based on required critical fall height. SAFEPOUR is IPEMA (International Play Equipment Manufacturers Association) certified. Additional product and test data can be found in the Specifications below. IPEMA certificates available at www.ipema.org

Installation:

Installation is a critical component of any poured-in-place system. Playgrounds Unlimited’s experience with various products and conditions in Northern California has helped our company to develop systematic installation techniques that consider mix timing, temperature, humidity, and sub-base conditions, enabling Playgrounds Unlimited to provide the highest quality, uniform, and consistent installations in the poured-in-place industry.

SAFEPOUR™

EPDM Poured-in-Place (PIP) "Standard Aromatic Binder" and "Premium Aliphatic UV Stable Binder" Colors (1–4 mm granule)

The Safepour Poured-in-Place Rubber Safety Surfacing System, designed for indoor and outdoor play areas, can be installed as a 50/50 color mix pad or 100% color with designs and color blends using standard Aromatic polyurethane binder or premium Aliphatic UV stable polyurethane binder.

Typical color mixes for EPDM Poured-In-Place (PIP) rubber are 50% Black and 50% Standard Color. Standard solid colors, common color combinations, and colors we recommend for use with Aliphatic UV stable binder are noted below.

Standard Solid Colors

- Eggshell
- Beige
- Terra Cotta
- Bright Green
- Hunter Green
- Sky Blue
- Royal Blue
- Black

Standard 50/50 Color Combinations

- 50% Terra Cotta / 50% Black
- 50% Beige / 50% Black
- 50% Hunter Green / 50% Black
- 50% Royal Blue / 50% Black

Colors We Recommend for Use with "Premium" Aliphatic UV Stable Binder

- Pearl
- Eggshell
- Orange
- Primary Red
- Gold
- Yellow
- Teal
- Sky Blue
- Purple
- Light Gray



Pearl
1102



Eggshell
1306



Beige
1308



Brown
2170



Terra Cotta
1808



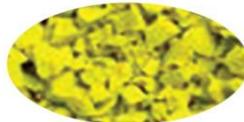
Orange
1904 (indoor only)



Primary Red
1806



Gold
1708



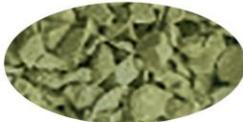
Yellow
1703



Bright Green
1671



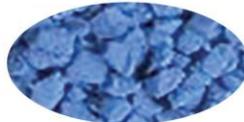
Hunter Green
1672



Army Green
1610



Teal
1410



Sky Blue
1403



Royal Blue
1470



Purple
1508



Light Gray
1204



Dark Gray
1210



Black
BLK



Colors may vary slightly from depicted chart.

playgroundsunlimited.com

Distributed in California by:



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Safepour™ EPDM Specification

Safepour™ EPDM 2-Layer Poured-in-Place Rubber Playground Safety Surfacing Specification

PART 1 – General

1.01 POURED-IN-PLACE RUBBER PLAYGROUND SURFACING

Safepour™ playground surfacing is a two (2)-layer, seamless system comprised of a base layer of 100% post-consumer recycled SBR rubber (Styrene Butadiene Rubber) and polyurethane binder and a top layer of EPDM (Ethylene Propylene Diene Monomer) rubber and Aromatic or Aliphatic (UV stable) polyurethane binder. The porous system is mixed and field-applied in any design configuration and dimensions with thickness to achieve required critical fall heights. Safepour™ is IPEMA (International Play Equipment Manufacturers Association) certified.

1.02 SAFETY & TESTING

American Society for Testing and Materials (ASTM):

- A. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension.
- B. ASTM D624 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
- C. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
- D. ASTM D2859 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
- E. ASTM E303 Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester.
- F. ASTM F1292 Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment.
- G. ASTM F1951 Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.

1.03 SPECIFIC DEFINITIONS

- A. **Critical Fall Height:** Standard measure of shock attenuation. According to the United States Consumer Product Safety Commission Public Playground Safety Handbook, critical fall height is defined as “the fall height below which a life-threatening head injury would not be expected to occur.”

- B. **Fall Height:** According to the United States Consumer Product Safety Commission Public Playground Safety Handbook, fall height is defined as “the vertical distance between the highest designated play surface on a piece of equipment and the protective surfacing beneath it.” The fall height of playground equipment should not exceed the critical height of the protective surfacing beneath it.

1.04 SYSTEM DESCRIPTION

Provide a two (2)-layer SBR rubber, polyurethane binder (Aromatic or Aliphatic), and EPDM rubber playground surfacing system which has been designed, manufactured, and installed to meet the following criteria:

Performance Requirements:

- A. Shock attenuation (ASTM F1292) Gmax - Less than 200
- B. Head injury criteria - Less than 1000
- C. Flammability (ASTM D2859): Pass.
- D. Tensile Strength (ASTM D412): 60 psi (413 kPa).
- E. Tear Resistance (ASTM D624): 140%.
- F. Water Permeability: 0.4 gal/yd²/second.
- G. Accessibility: Comply with requirements of ASTM F1951.
- H. Dry Static Coefficient of Friction (ASTM D2047): 1.0.
- I. Wet Static Coefficient of Friction (ASTM D2047): 0.9.
- J. Dry Skid Resistance (ASTM E303): 89.
- K. Wet Skid Resistance (ASTM E303): 57.

1.05 APPROVALS

Safepour Poured-in-Place Playground Rubber Safety Surfacing is IPEMA certified. IPEMA certificates available at www.ipema.org Contact manufacturer for information on approvals by major owners, agencies, and other industry entities.

Environmental Consideration: this system makes extensive use of post-consumer recycled tire rubber as a major component.

1.06 SUBMITTALS

- A. **General:** Comply with submittal procedures. Submit listed submittals in accordance with conditions of the contract and the order processing procedures outlined in Playgrounds Unlimited’s Control Assurance Manual.
- B. **Coordination Drawings:** Layout plans and elevations drawn to scale for the coordination of playground equipment with playground safety surface systems. Indicate playground equipment locations, use zones, fall heights, extent of protective surfacing, depths of material, critical heights, sub-base materials, hardware, edge details, and drainage.
- C. **For Each Playground Poured-in-Place System:** Include materials, cross sections, drainage, installation, penetration details, and edge termination.

- D. **Color Samples for Initial Selection:** Manufacturer's color charts and/or samples indicating the full range of colors are available. Premium and custom color combinations may have extended lead times as long as 6- to 8-weeks.
- E. **Product Data:** Submit manufacturer's product data and installation instructions, including cleaning and preventative maintenance instructions. Include a list of materials and components to be installed as part of the system (by weight, volume, and recommended coverage as applicable), manufacturer's name, shipment date, storage requirements, and chemical composition.
- F. **Verification Samples:** Submit manufacturer's standard verification samples of 9" x 9" minimum.
- G. **Quality Assurance/Control Submittals:** Submit the following:
1. Certificate of qualifications of the surfacing installer.
 2. As applicable, project references, including contact information, where products similar to those specified are installed and have been in successful service for a minimum period of five (5) years. Date of installation and any service or maintenance to be noted.
 3. A signed statement attesting the surfacing meets the requirements of ASTM F1292 for a head-first fall from the highest accessible portion of the installed play equipment. The impact attenuating qualities of the surfacing system shall not be diminished in the surface areas covering hardware. The statement shall include the name and project location, the manufacturer/installer's name, address, phone number, and testing data as applicable (testing company, date of testing, test results).
- H. **Closeout Submittals:** Submit the following:
1. Warranty documents specified herein.
 2. Maintenance documents specified herein.
 3. Certificate of Insurance document(s) shall be provided by the Poured-in-Place Safety Surfacing System manufacturer, covering both product and general liability of not less than \$1,000,000. The issuing underwriter shall be AA rated or better.

1.07 QUALITY ASSURANCE

- A. Utilize the manufacturer's installation crew that has been trained and certified, and has experience with other projects of the same scope and scale of the work described.
- B. Safepour is IPEMA certified which requires the mfg. to maintain and update their Control Assurance Manual.

1.08 DELIVERY & STORAGE

- A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Store materials in a clean, dry location, protected from weather and deterioration, exposure to harmful environmental conditions, and at a minimum temperature of 40 degrees F and a maximum temperature of 90 degrees F. Comply with any other manufacturer's written instructions for temperature requirements for storage.

1.09 PROJECT SITE CONDITIONS

- A. Install surfacing on a dry sub-surface with no prospect of rain within the initial drying period, and within 40 degrees F and 90 degrees F.
- B. There are three (3) sub-base applications acceptable for Safepour poured-in-place applications:
- Installations may be performed over concrete with a minimum of seven (7) days cure time and as much as 30 days dependent on conditions and temperature.
 - Installations may be performed over fully-cured (30 days) asphalt.
 - Installations may be performed over 95% crushed aggregate/stone base, typical thickness of 4- to 6-inches to allow for proper compaction rates. Also refer to the “*Crushed Stone Base Preparation for Poured-in-Place Playground Surface Installations*” document for additional construction guidelines.

1.10 LIMITATIONS

Some chemicals may cause damage to the playground surface and should be avoided. These include disinfectants, concentrated chlorine bleach, gasoline, diesel fuel, hydraulic and lubricating oils, acids, and organic solvents.

Though not commonly used in water play areas, pool surrounds, and similar applications, dissolved minerals and other chemicals (hydrochlorides) may cause surface discoloration over time. This condition, should it occur, is not considered to be a product failure.

1.11 MAINTENANCE

Hose off the entire playground surface to remove food, drink, sand, dirt, and loose debris. A pressure washer may be used at a setting not exceed 1500 psi (10 MPa) pressure. Do not place the spray nozzle closer than 12 inches to the surface. Repeat the process on an as needed basis. While the surface is still damp from hosing, apply a mixture of a mild household or commercial detergent and water using a garden pump sprayer to an area approximately 4-foot x 4-foot in size. Be sure to follow directions for use on the cleaner you choose from your local supplier. Scrub thoroughly using a 10-inch medium bassine bristle scrub brush. Repeat this process until the entire surface has been completely and thoroughly cleaned or as necessary on heavily stained areas. Once the entire surface has been cleaned, rinse thoroughly using a garden hose with spray nozzle attachment. Dependent on the use of the product: high versus low traffic, natural wear and tear, and exposure to elements, it is recommended to increase longevity and performance of the surfacing to reseal the pad with Safepour polyurethane following the cleaning process above a minimum of every two (2) years.

Should additional maintenance recommendations be necessary, refer to the “*Poured-in-Place Preventative Maintenance Guidelines*” or contact Playgrounds Unlimited. Also refer to the project contract document for any further conditions or project warranty provisions.

Adherence to all of the above requirements will ensure maximum longevity and help maintain the original appearance of the Safepour EPDM surface. Failure to read and follow instructions explicitly will result in damage to the surface and termination of the Safepour EPDM warranty.

1.12 WARRANTY

The playground surface shall be guaranteed against defects in product quality and material for a period of no less than five (5) years for the EPDM “Standard” product and not less than seven (7) years for the EPDM “Premium” product, from the date of completion of the work. See also specifier contract documents. Ordinary wear and tear, abuse, or neglect will be excepted. Warranty coverage is provided by Playgrounds Unlimited. Maintenance requirements must be maintained for the duration of the warranty period. Proper drainage is critical to the longevity of the Safepour surfacing system. Inadequate drainage will cause premature breakdown of the poured system in affected areas and void the warranty.

1.13 TECHNICAL SERVICES

For technical assistance in California, contact Playgrounds Unlimited at 408-244-9848.

PART 2 – Products

A. The playground surface shall consist of synthetic materials meeting the requirements of this specification.

2.01 BASE LAYER

- A. Safepour Primer: Polyurethane.
- B. SBR (Styrene Butadiene Rubber) Color: Black
- C. Safepour Poured-In-Place Base: Blend strand 100% recycled SBR (Styrene Butadiene Rubber) and polyurethane to the proper ratios based on weight: 86% SBR rubber and 14% polyurethane (as divided by total combined weight) or (16+% when urethane divided by SBR weight).
- D. Base Thickness: May vary as determined by the fall height of the play equipment and as required meet ASTM F1292 requirements for critical fall height. Base Thickness for fall height is as follows: 4’= 1.5”, 5’=2.0”, 6’=2.5”, 7’=3.0”, 8’=3.5”, 9’=4.0”, 10’=4.5”, 11’=5.0”, 12’=5.5” ***ADD .5” Top Coat for Total System Thickness.

2.02 TOP LAYER

- A. Safepour Primer: Polyurethane.
- B. Safepour EPDM (Ethylene Propylene Diene Monomer) rubber “Standard” Granule 1-4mm
- C. Colors: Terra Cotta Red, Primary Red, Gold, Beige, Yellow, Bright Green, Army Green, Hunter Green, Teal, Sky Blue, Royal Blue, Purple, Pearl, Eggshell, Brown, Light Gray, Dark Gray, Black. Custom colors combinations available (specify). Standard Colors: Terracotta, Hunter & Bright Green, Sky & Royal Blue, Beige, & Black.
- D. Safepour Poured-in-Place Top: Blend of EPDM (Ethylene Propylene Diene Monomer) and polyurethane. 82% rubber and 18% polyurethane (as divided by total combined weight) or (22+% when urethane weight divided by EPDM weight).

- E. Nominal thickness of EPDM Top Layer: 0.5", with a minimum 0.325" and a maximum 0.625".
- F. System Total Thickness: Thickness may vary by design, however; the fall height of the play equipment should not exceed the critical height of the protective surfacing beneath it as required to meet ASTM F1292 test standards for Gmax and HIC. Total thickness for fall height is as follows: 4' Fall Height = Requires 2" Thickness, 5'=2.5", 6'=3.0", 7'=3.5", 8'=4.0", 9'=4.5", 10'=5.0", 11'=5.5", 12'=6.0"

Specifier Note: There are two (2) industry polyurethane binders for top layer application: "Standard" Aromatic polyurethane binder may yellow "amber" upon exposure to ultra violet rays and, depending on the intensity, may leave a yellow hue over the surface. This is an industry characteristic of this binder type. The hue is less noticeable over time and after use of the surfacing. The "Premium" binder is an Aliphatic UV Stable polyurethane binder, which does not yellow or "amber" from ultra violet exposure, which is available at a somewhat higher cost. The specifier should consider its use, particularly with the following surface colors: Primary Red, Gold, Yellow, Orange, Purple, Teal, Sky Blue, Pearl, Eggshell, Light Gray and/or design work combinations. Consult manufacturer for more information.

2.03 PRODUCT SUBSTITUTIONS

No substitutions are permitted. The Safepour system is a proprietary blend of materials combined with more than 20 years of experience and specific installation techniques.

PART 3 – EXECUTION

- A. Comply with the instructions and recommendations of the surfacing manufacturer.

3.01 EXAMINATION

- A. Verification of Site Conditions: Verify the substrate conditions are suitable for installation of the poured-in-place surfacing. Do not proceed with installation until unsuitable conditions are corrected.
- B. Drainage: Proper drainage is critical to the longevity of the Safepour surfacing system. Inadequate drainage will cause premature breakdown of the poured system in affected areas and void the warranty.

3.02 PREPARATION

- A. Existing Substrate Preparation: Remove any loose or delaminated material that would be deleterious to application of the new surface. Fill cracks in existing concrete with a cementitious patching compound.
- B. Surface Preparation: Using a brush or short nap roller, apply primer to the substrate perimeter and any adjacent vertical barriers (such as playground equipment) at the rate of 300 ft²/gal.

3.03 INSTALLATION

The Safepour components/system shall be installed by Playgrounds Unlimited, a certified installer, familiar with product components and trained in application techniques by the manufacturer.

A. Do not proceed with playground surfacing installation until all applicable site work, including substrate preparation, fencing, playground equipment installation, and other relevant work, has been completed. Consider dust and traffic in adjacent work areas that may impact the surfacing finish.

B. Base Layer Installation:

1. Using screeds and hand trowels, install the base layer at a consistent density of 29 pounds, 1 ounce per cubic foot to the specified thickness.
2. Allow the base layer to cure for sufficient time so indentations are not left in the base layer from applicator foot traffic or equipment.
3. Do not allow foot traffic or use of the base layer surface until it is sufficiently cured.

C. Primer Application: Using a brush or short nap roller, apply primer to the base layer perimeter and any adjacent vertical barriers that will contact the surfacing system at the rate of 300 ft²/gal.

D. Top Layer Installation:

1. Using a hand trowel, install top layer at a consistent density of 58 pounds, 9 ounces per cubic foot to a nominal thickness of 0.5”.
2. Allow top layer to cure for a minimum of 48 hours with aromatic binder and up to 72 hours with aliphatic binder (dependent on weather conditions).
3. At the end of the minimum curing period, verify the surface is sufficiently dry and firm to allow foot traffic and use without damage to the surface.
4. Do not allow foot traffic or use of the surface until it is sufficiently cured.

3.04 PROTECTION

A. Protect the installed surface from damage resulting from subsequent construction activity on the site.



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Safepour™ “Standard” & “Premium” EPDM Poured-in-Place

Fall Height to Required Thickness Chart

<u>PIP Model Number</u>	<u>Fall Height (feet)</u>	<u>Required Thickness (inches)</u>
SPS EPDM 4	4' and below	2" minimum
SPS EPDM 5	5'	2.5"
SPS EPDM 6	6'	3"
SPS EPDM 7**	7'	3.5"
SPS EPDM 8**	8'	4"
SPS EPDM 9**	9'	4.5"
SPS EPDM 10**	10'	5"
SPS EPDM 11**	11'	5.5"
SPS EPDM 12**	12'	6"

**Safepour has increased the required “minimum” thickness by (+).5” for all models 7’ and above based on the IPEMA recommendation to install a surface that performs well below the passing limits in the ASTM F1292 standard.

Determine the fall height of play equipment and refer to the chart above to determine the thickness of the protective surfacing required to meet the minimum critical fall height impact criterion.

- Fall height can be determined by measuring the vertical distance between a designated play surface and the surface beneath it; the distance from the top of decks, slide entrance, play events, and overhead upper body equipment to the top of the play surface finish grade.
- Fall height or CFH of play equipment is often provided on the play equipment manufacturers drawing or included in architectural plans and specifications for reference; be sure to field verify heights.

Definitions

***Fall Height:** the vertical distance between a designated play surface and the surface beneath it.

***Designated Play Surface:** any elevated surface for standing, walking, sitting, or climbing, or a flat surface greater than 2.0” wide by 2.0” long having less than 30* angle from horizontal.

***Critical Fall Height (CFH):** the highest theoretical drop height from which a surface meets the impact attenuation performance criterion of ASTM F1292-17.

*The Critical Fall Height (CFH) of surfacing shall not be less than the fall height of the play equipment to be compliant with ASTM F1292.