

A product of: Unity Creations, LTD.

"Unity" Surfacing Systems™

Interlocking, Unitary, Rubberized Safety Surfacing, Flooring and Pavers.

RUBBER ROOF PAVERS - BALLIST TILE/MAT/BLOCK

FOUR (4) PART SPECIFICATIONS:

1.) Product:

Self-Interlocking (with "Button-Lock™ Technology"), resilient, unitary, rubberized safety surfacing flooring and paver products in the tile/mat/block form with bolt-down capabilities. 22"X44" in size = 6.72 sq. ft. per unit [+or- a quarter inch (1/4") tolerance due to temperature related expansion and contraction of our recycled rubber products].

Related sections: Division 7 (see below: section 1.01 sub-section "B")
Division 2 (see below: section 1.01 sub-section "B")

2.) Sales & Marketing Dept:

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PART ONE (1) GENERAL:

1.01 SUMMARY

A.) Section Includes:

Self-Interlocking (with "Button-Lock™ Technology"), resilient, unitary, rubberized safety surfacing flooring and paver products in the tile/mat/block form.

B.) Related Sections:

Division 7

Sub: 07700 Roof Specialties and Accessories
Specifically: 07500 – Membrane Roofing
07720 – Roof Accessories
07760 – Roof Pavers
07700 – Roof Specialties / Green Roofs

Division 2

Sub: 02700 Bases, Ballasts, Pavements and Appurtenances
Specifically: 02780 Unit Paver.

1.02 TEST REFERENCES

A.) Applicable Standards:

American Standard for Testing Materials (ASTM)

Consumer Product Safety Commission (CPSC)

American National Standards Institute (ANSI)

Factory Mutual (FM):

- 1.) ASTM F1292-04:
Standard Test Method for Impact Attenuation of Surface Systems Under and Around Playground Equipment.
- 2.) ASTM F355-95:
Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials.
- 3.) ASTM C67:
Standard Test Method for Weathering and Aging of Surface Systems and Materials.
- 4.) ASTM D573:
Standard Test Method for Rubber – Deterioration in an Air Over.
- 5.) ASTM E108:
Modified Test Methods for Fire Tests of Surface Systems and Materials
- 6.) ASTM E108 – Modified For Roof Coverings:
Standard Test Methods for Fire Tests of Roof Covering Materials.
- 7.) ASTM E303-93:
Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester.
- 8.) ASTM F1951-99:
Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
- 9.) ASTM C518-98:
Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus. Measuring = Insulation/R-Values.
- 10.) ASTM E903, E891, E1980
Hemispherical Spectral Reflectance and Total Emittance Test. Presents results of spectral reflectance and total emittance of products tested.
- 11.) ASTM E648
Standard Test Method for Critical Radiant Flux of Floor Covering

Systems Using a Radiant Heat Energy Source (NFPA Designation No. 253)

- 12.) ASTM D 3161-09 (Adhered, Non-Adhered, Over-Top and with Kick-Plate)
Standard Test Method for Wind Resistance (Fan-Induced) via air velocity of 150 MPH.

B.) Misc. Testing

- 1.) CPSC-CH-E1002-08:
LEAD Test - For compliance with US Public Law 110-314 (HR 4040 “Consumer Product Safety Improvement Act of 2008”), lead in accessible substrate materials.
- 2.) Water Penetration Test
For compliance with Sustainable Storm Water Run-off in a testing environment to determine how much water flows through the product based on real world scenarios.
- 3.) ANSI/FM 4474 Test (Adhered):
Simulated Wind Up-lift Pull-Force Test Procedure, to allow design pressure that is estimated to be 277.5 psf (2:1 Factor of Safety) for systems installed in this manner.
- 4.) UL 2218, Class 4 Impact Resistance, 2010.
Standard Test Method for Impact Resistance of Prepared Roof Covering Materials.

C.) LEED – USGBC:

- 1.) Standards specified under the LEED (Leadership in Energy and Environmental Design) criteria development by the USGBC (United States Green Build Council).

a.) Materials and Resources:

- Up to 6 points / credits toward LEED certification.
- Recycled Content.....MR. 4.1
- Recycled Content.....MR. 4.2
- Local/Regional Materials.....MR 5.1
- Local/Regional Materials.....MR 5.2
- Construction Waste Mgt.....MR 2.1
- Construction Waste Mgt.....MR 2.2

b.) Indoor Environmental Quality:

- Up to 1 point / credit toward LEED certification.
- Low Emitting Materials.....EQ 4.1

1.03 SYSTEM DESCRIPTION

A.) Results:

- 1.) Shock Attenuation (ASTM F1292-04 & F355.95):
 - a. G-max – Less than 200 =PASSED.
 - b. Head Injury Criteria – Less then 1000 =PASSED.
- 2.) Weathering/Aging (ASTM C67, D573 & F1292-95): =.....PASSED.

- 3.) Flammability (ASTM E108 & E108 Modified for roof covers): =PASSED.
- 4.) Flammability (ASTM E648).....PASSED
- 5.) Skid Resistance (ASTM E303-93):
 - a. WET =PASSED.
 - b. DRY =PASSED.
- 6.) ADA Accessibility (ASTM F1292-99): =PASSED.
- 7.) R-Value, Thermal Conductivity (ASTM C518-98): =PASSED.
- 8.) Lead In Materials/Children’s Products (CPSC-CH-E1002-08): = PASSED.
- 9.) Reflectance/SRI and Emmittance (ASTM E903, E891, E1980).....VARIES
- 10.) Water Penetration Test (Sustainable Storm Water MGT/Run-off).....VARIES
- 11.) Pull Force Test On Solid Sub-Base (ANSI/FM 4474 Approval, Appendix B...277.5 psf.
- 12.) United States Green Build Council (USGBC) via LEED:Up to 7.
- 13.) Wind Test (ASTM D 3161-09 Adhered, Non-Adhered, Over-Top, Kick-Plate)..150 MPH
- 14.) Class 4 Impact Resistance (UL 2218, 2010) PASSED

1.04 SUBMITTALS

A.) General:

- 1.) Submit listed submittals in accordance with Conditions of the Contract and Division 1
- 2.) Submittal Procedures Section.

B.) Product Data:

- 1.) Submit manufacturer’s product data, specifications and installation instructions.

C.) Verification Samples:

Submit manufacturer’s standard verification samples of 4”X4” minimum. Two of the submitted samples must show the male/female self-interlocking connection (with “Button-Lock™ Technology”).

D.) Quality Assurance/Control:

- 1.) Manufactured a minimum of one-million (1,000,000) square feet of safety surfacing, flooring and paver products, known as self-interlocking tiles/mats/blocks/pavers.
- 2.) Certificate of qualifications of the surfacing installer.
- 3.) Utilize an installer having five (5) years experience with projects of similar scope and complexity.

E.) Closeout Submittals: Submit the following:

- 1.) Warranty documents specified herein.
- 2.) Repair & Maintenance documents as issued by the manufacturer.
- 3.) Photographs of completed installation, with close-up shots of cut tiles.
- 4.) Submit listed "Closeouts" in accordance with Conditions of the Contract and Division 1 Closeout Procedures Section.

F.) Approvals:

- 1.) Contact manufacturer for information on approvals by major owners, agencies, architects, engineers, municipalities and other industry entities.

G.) Environmental Considerations:

- 1.) This resilient, rubberized safety surfacing flooring and paver products in the tile/mat/block form makes extensive use of clean recycled tire rubber and other recycled rubber products as a major component of its operation.

1.06 DELIVERY, STORAGE & HANDLING

A.) General

Comply with Division 1 Product Requirement Section.

B.) Delivery:

Deliver materials in the manufacturers original, unopened, undamaged containers with identification labels showing and intact.

C.) Storage and Protection:

Store materials protected from exposure to harmful environmental conditions and at a minimum temperature of 40 degrees F and a maximum temperature of 100 degrees F.

1.07 PROJECT/SITE CONDITIONS

A.) Environmental Requirements:

Install surfacing system when minimum ambient temperature is 40 degrees F and a maximum ambient temperature is 90 degrees F. Do not install in steady of heavy rain, snow and/or sleet.

1.08 WARRANTY

A.) Project Warranty:

Refer to conditions of the contract for project warranty provisions.

B.) Manufacturer's Warranty:

Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.

1.) Warranty Period:

Standard Five (5) Years from date of product shipment; or a Ten (10) Year Prorated from date of product shipment shall be selected prior to ordering. A default Five (5) Year Prorated Warranty shall be issued if no other warranty is selected prior to ordering.

PART TWO (2) PRODUCTS

2.01 SELF-INTERLOCKING RUBBERIZED SAFETY SURFACING, FLOORING AND ROOF PAVER PRODUCTS IN THE BALLAST TILE/MAT/BLOCK FORM.

A.) Sales & Marketing:
Unity Surfacing Systems

Manufacturer:
Unity Creations, Ltd.

1.) Contact:
56 Bloomingdale Rd.
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F: (845) 246-1700
E: techinfo@surfacingystems.com
Internet: www.surfacingystems.com

B.) Proprietary Products/Systems. Self-Interlocking (with “Button-Lock™”), unitary, rubberized safety surfacing flooring and paver products in the tile/mat/block form, including the following:

1.) Self-Interlocking, rubberized safety surfacing, flooring and roof pavers, in the ballast tile/mat/block form:

a.) Materials:

Pigmented tiles/mats/blocks: 100% post-consumer recycled SBR (Styrene Butadiene Rubber) and pigmented polyurethane] [TPV/EPDM tiles: post-consumer recycled SBR, recycled post-industrial TPV/EPDM (Ethylene Propylene Diene Monomer) rubber and polyurethane].

b.) Thickness and Weight:

¾ &/or 1” thick is~ 30 lbs. each or ~ 4.0 lbs per sq. ft.
1 ¾” (1.75”) thick.....~ 37 lbs. each or ~ 5.5 lbs per sq. ft.
2 ½” (2.50”) thick.....~ 40 lbs. each or ~ 6.0 lbs per sq. ft.
3” thick.....~ 44 lbs. each or ~ 6.5 lbs per sq. ft.
3 ½” (3.5”) thick.....~ 47 lbs. each or ~ 7.0 lbs per sq. ft.
4” thick.....~ 50 lbs. each or ~ 7.5 lbs per sq. ft.

Note: Custom thicknesses and weights are available prior to specifying and/or ordering.

c.) Color:

1.) Pigmented Color:

Black, Splash (Black tile with 50% TPV/EPDM granules), Steel Gray, Red (Terra Cotta), Green, Blue, Tan, White, Purple, Teal, Brown.

Note: Other custom colors are available upon request. Made with Aromatic Binder.

2.) TPV/EPDM Colors:

Red (Terra Cotta), Brt. Red, Green, Brt. Green, Drk Green, Blue, Lt. Blue, Azure Blue (Teal), Purple, Lt. Purple, Turquoise, Beige, Eggshell

(Cream), Brown, Dark Brown, Mustard Yellow, Brt Yellow, Orange, Drk. Gray, Mid-Gray, Lt. Gray, Virgin Black.

Note: TPV/EPDM colors exhibit superior UV and abrasion resistance. Made with Aliphatic Binder.

2.02 PRODUCT SUBSTITUTIONS

A.) Substitutions

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No substitutions permitted.

B.) Substitution requests will be considered in accordance with Section: 01600 provisions.

2.03 ACCESSORIES

A.) Provide accessory items as follows:

- 1.) Unity's Chemrex 948 Urethane Adhesive. Interlock-To-Interlock
- 2.) Unity's Transitional Ramp, Standard Beveled Edge.
- 3.) Unity's Geo-textile Fabric, Landscaping Mesh.

PART THREE (3) EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A.) Comply with the instructions and recommendations of the rubberized safety surfacing, flooring and paver manufacturer.

3.02 EXAMINATION

A.) Site Verification of Conditions: Verify that substrate conditions are suitable for installation of the rubberized safety surfacing, flooring and paver system.

B.) Do not proceed with installation until unsuitable conditions are corrected.

3.03 PREPARATION

A.) Surface Preparation:

- 1.) Ensure that the roofing membrane or substrate is level with a slight pitch for drainage or uniformly sloped since surface variations will be telegraphed through to the rubber tile/mat/block/paver surface.
- 2.) Prepare membrane roofing in accordance with manufacturer's instructions to ensure proper support and drainage for rubber roof pavers – ballast tiles/mats/blocks/pavers.

- 3.) Roofing membrane shall be specified in Division 7 (seven).

3.04 INSTALLATION

A.) Do not proceed with surfacing, flooring and/or paver installation until all applicable site work, including substrate preparation, fencing, playground equipment installation, roofing and other relevant work, has been completed.

B.) Tiles/mats/blocks shall be produced on a rectangular configuration of 22" (inches) by 44" (inches) in size [+or- a quarter inch (1/4") tolerance] with a shadow-center (fake seam) joint to achieve the use of the "step-&-repeat" systems to stagger the seams as if you were installing brickwork (zigzag). As a result, symmetry of 22" by 22" squares will be seen on properly completed jobs (installations). Each tile/mat/block is 6.72 square feet in size [+or- a quarter inch (1/4") tolerance] and has a coned (feet or leg) bottom design at 1 3/4" (1.75") thick for the "Pave-Land" series, 2 1/2" (2.50") thick for the "Play-Land" series, and the 3", 3 1/2" (3.50") thick and 4" thick, for the "Soft-Land" series. Avoid placement when large temperature swings during the time between adhesive application and final curing are expected, as gapping between tiles may result.

Note: 3/4" and 1" thick tiles/mats/blocks do not have coned (feet or leg) bottoms for drainage as seen with the rest of Unity's products. Unity's 3/4" and 1" thick material is a solid top and bottom tile/mat/block, and is usually installed on rooftop as walkway pads only. Call, or e-mail for site specific details.

- 1.) Apply adhesive on tight product-to-product (interlock-to-interlock) installations at a rate of approximately one-hundred (100) square feet per 825 ml tube.
- 2.) Apply adhesive to the tiles/mats/blocks using a large caulking-gun.
- 3.) Apply adhesive to the interlocks, both in the joint and on top of the joint for added strength and security using a caulking-gun. Such application will allow for proper rainwater drainage.
- 4.) Maintain a straight line at the tile joints. To keep lines straight, adjust tiles using a rubber mallet as they are installed. Apply a string line on the first couple of rows installed to maintain a straight line of installation.

3.05 PROTECTION

A.) Protect the installed rubberized safety surfacing, flooring and paver products from damage resulting from subsequent construction activity on the site. Do not walk on materials for at least 24 hours after installation to insure proper glue drying and settlement of the installed product.

B.) Prior to application of the rubberized safety surfacing, flooring and paver materials, the installer shall evaluate the substrate's structural performance. Notify all contractors, architects and engineers of all displacements. Work shall not proceed until unsatisfactory conditions are corrected and signed by the contractors, architects and engineers, and installation manual / guide as been read.

PART FOUR (4) SPECIFIER NOTES:

4.01 DISCLOSURES:

A.) Specifier Disclosure Notes:

- 1.) Revise paragraphs above to suit project requirements. If a reader of this specification could reasonably expect to find a product or component specified in this specification, but it is actually specified elsewhere, then the related section number(s) should be listed in the paragraphs above. In the absence of related sections, delete pertaining paragraph above.
- 2.) Site materials and methods, drainage, playground equipment, fencing, substrate preparation, roofing materials and similar work are provided by others and are described in other sections. Consult manufacturer for specific substrate preparation requirements. Edit, retain or delete paragraphs above to suit project requirements and specifier practice.
- 3.) Article above may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain References Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in the above section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 1 References Section may establish the edition date of standards. This article does not require compliance with standard. It is a listing of all references used in the pertaining section.
- 4.) Article above should be restricted to statements describing design or performance requirements and functional (not dimensional) tolerances of a complete system. Limit descriptions to composite and operational properties required to link components of a system together and to interface with other systems.
- 5.) Article Above includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate the above article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.
- 6.) Article above should include statements of prerequisites, standards, limitations and criteria that establish an overall level of quality for products and workmanship for the section. Coordinate article with Division 1 Quality Assurance Section.
- 7.) Article above should include specific protection and environmental conditions required during storage. Coordinate article above with Division 1 Product Requirements Section.
- 8.) Article above, state physical or environmental limitations or criteria for installation such as weather, temperature, humidity, ventilation or illumination required for proper installation or application.
- 9.) Coordinate article above with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty) Section. Use this article to require special or extended warranty or bond covering the work of this section.

10.) Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

11.) The type of rooftop playground equipment determines the required tile/mat/block thickness. Depending on ASTM F1292-04 requirements for critical fall height of zero (0') to twelve (12') feet, select tile thickness from optional drop height requirements; 1 3/4" (1.75") thick "Pave-Land" is for a five (5') foot fall rating, 2 1/2" (2.5") thick "Play-Land" series is for a seven (7') foot fall rating, 3" thick, 3 1/2" (3.5") thick and 4" thick "Soft-Land" series is for an eight (8'), ten (10') and twelve (12') foot fall rating, respectively. Specify project requirements above and coordinate with working drawings.

12.) Edit Article above to suit project requirements. If substitutions are permitted, edit text above accordingly. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section. Specify subordinate or secondary items that aid and assist primary products specified above or are necessary for preparation or installation of those items. Specify actions to physically determine that conditions are acceptable to receive primary products of the section.

13.) Specify actions required to physically prepare the surface, area or site or to incorporate the primary products of the section. Coordinate article above with manufacturer's recommended installation requirements. Specify provisions for protecting work after installation but prior to acceptance by the owner. Coordinate article below with Division 1 Execution Requirements Section.