Tuflex®
Recycled Rubber Tile

ROPPE.
Proven. Flooring. Experiences.

Product Data

Section 9
Resilient Flooring

1. Product Identification
Roppe Tuflex® Recycled Rubber Tile

2. Manufacturer

Roppe Corporation
1602 N. Union Street
P.O. Box 1158
Fostoria, Ohio USA 44830-1158
Phone: (419) 435-8546
Fax: (419) 435-1056
Toll-Free (800) 537-9527
Email: sales@roppe.com
Web-Site: www.roppe.com
Sweets Catalog: 09 65 00/ROP

3. Product Description
3.1 Basic Application
Tuflex Rubber Flooring Tiles for interior and exterior sports and commercial applications are proven in the industry since 1957. Tuflex is the flooring choice for many professional sports facilities that house the NFL, NHL, MLB and NBA. Tuflex Tiles are manufactured with a patented vulcanization process using predominantly recycled rubber and contains approximately 99% recycled content. Tuflex is available in two styles, Spartus and Titan. Spartus and Titan are also available in both Interlocking and Square Edge Tile. Titan is available in seven colors, plus ebony. The Spartus series is available in twelve color patterns. Both Titan and Spartus Tuflex are the rubber flooring of choice for years of enduring strength. Used by tens of thousands of health and fitness centers, golf and country clubs, hockey arenas, recreational centers, schools and colleges, government and military complexes, retail establishments and professional sports facilities and more.

Square Tiles are available in 27" x 27" (685.8mm x 685.8mm) x 3/8"(9.00mm) thickness, and Interlocking Tiles are available in 27" x 27" (685.8mm x 685.8mm) x 3/8" (9.00mm)

thickness. A resilient anti-fatigue surfaces that is excellent for free weight/work-out machine applications as well as rinks and animal care clinics.

Tuflex Floors of Fame:

- Football: Atlanta Falcons, Buffalo Bills, Cincinnati Bengals, Cleveland Browns, Detroit Lions, Indianapolis Colts, Jacksonville Jaguars, Kansas City Chiefs, Miami Dolphins, New York Jets, Pittsburgh Steelers, Seattle Seahawks, Tampa Bay Buccaneers and Tennessee Titans.
- Hockey: Columbus Blue Jackets, Dallas Stars, L.A. Kings, Mighty Ducks of Anaheim, New Jersey Devils, St. Louis Blues, San Jose Sharks, Tampa Bay Lightning, Toronto Maple Leafs and Washington Capitals.
- Baseball: Arizona Diamondbacks, Baltimore Orioles, Californian Angels, Chicago Cubs, Chicago White Sox, Cleveland Indians, Detroit Tigers, Florida Marlins, Kansas City Royals, Los Angeles Dodgers, Minnesota Twins, Montreal Expos, New York Mets, New York Yankees,

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Philadelphia Phillies, Pittsburgh Pirates, St. Louis Cardinals, San Francisco Giants, Texas Rangers and Toronto Blue Jays.
Basketball: Boston Celtics, Cleveland Cavaliers, Denver Nuggets, Miami Heat, Miami Sol, New Orleans Hornets, Phoenix Suns, Portland Trail Blazers, San Antonio Spurs, Seattle Supersonics and Washington Wizards.

Recommended Applications:

- Athletic: Weight Room, Locker Room, Cardiovascular Rooms, Hockey Ice Arena (off-ice area), Golf Pro Shop and Clubhouse.
- Educational: Library, Bookstores, Cafeteria, Multipurpose Room, Classroom, Hallway and Restroom.
- Retail: Hotel, Restaurant (non-kitchen areas), Sales Floor and Wine Cellar
- Institutional: Day Care Center, Governmental, Military, Retirement Center, Factory and Correctional Facilities.

Animal Care Facilities: Dog and Cat Day Care. Horse Stalls and Wash Areas.

3.2 Product Construction
The addition of post-consumer & post-industrial waste rubber, a renewable resource, adds visual appeal while enhancing slip resistance, sound and shock absorption. Tuflex's Titan and Spartus products may contribute to the LEED® Green Building Certification System credits MR 4.1, MR4.2, MR5.1 and MR5.2.

3.3 Tuflex Titan & Spartus: Weights, Packaging, Dimensions, Gauges, Minimum Quantities and Custom Colors.

3.3.1 Titan - Square Edge Tile
Dimensions: 27" x 27" (685.8mm x 685.8mm) nominal
Gauge: 3/8" (9.00mm) nominal
Approximate Tile Weight: 11lbs./piece
Packaging: Unboxed Tiles - shrink wrapped & palletized
Standard Colors: 849 Ebony, 950 Confetti, 970 Crimson, 976 Hunter, 977 Natural, 978 Pacific, 982 Taupe and 981 Citrus.

3.3.2 Titan - Interlocking Tile
Dimensions: 27" x 27" (685.8mm x 685.8mm) nominal
Gauge: 3/8" (9.00mm) nominal
Approx Tile Weight: 11lbs./piece
Packaging: Unboxed Tiles - shrink wrapped & palletized
Standard Colors: 849 Ebony, 950 Confetti, 970 Crimson, 976 Hunter, 977 Natural, 978 Pacific, 982 Taupe and 981 Citrus.

Caution: When measuring for the installation of Inter-Locking Tile, the actual tile size is not a "true" 27" x 27" (685.8mm x 685.8mm) due to interlocking tabs. Therefore, all job measuring and installation must be based on 25¾" x 25¾" (654mm x 654mm) or 4.6sq/ft per tile.

3.3.3 Spartus - Square Edge Tile
Dimensions: 27" x 27"(685.8mm x 685.8mm) nominal
Gauge: 3/8" (9.00mm) nominal
Approximate Tile Weight: 11lbs./piece
Tile Packaging: Unboxed
Standard Colors: 031 Fiesta, 753 Red Brick, 758 Pecan, 880 Sunset, 886 Terracotta, 901 Adobe, 913 Charcoal, 911 Seabreeze, 914 Greystone , 916 Ash, 990 Mirage & 971 Moss.

3.3.4 Spartus - Interlocking Tile
Dimensions: 27" x 27" (609.6mm x 609.6mm) nominal
Gauge: 3/8" (9.00mm) nominal
Approx Tile Weight: 11lbs./piece
Packaging: Unboxed Tiles - shrink wrapped & palletized

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Standard Colors: 031 Fiesta, 753 Red Brick, 758 Pecan, 880 Sunset, 886 Terracotta, 901 Adobe, 913 Charcoal, 911 Seabreeze, 914 Greystone , 916 Ash, 990 Mirage & 971 Moss.

Caution: When measuring for the installation of Inter-Locking Tile, the actual tile size is not a "true" 27" x 27" (685.8mm x 685.8mm) due to interlocking tabs. Therefore, all job measuring and installation must be based on 25¾" x 25¾" (654mm x 654mm) or 4.6sq/ft per tile.

3.4 Feature Strips:

Colors: Cardinal Red, Sand Beige, Williamsburg Green, Royal Blue and Pearl Grey.
Width: 3", 6" & 9" nominal
Gauge: 3/8" (9mm) nominal
Lengths: 27" nominal

3.5 Rubber & Vinyl Accessory Indoor Recommendations for Tuflex:

3/8" (9.00mm):

Rubber: #25 Reducer Strip 5/16", #26 Reducer Strip 3/8" and #60 Rubber Tile/ Carper Joiner
Vinyl: #152 Snap-Down Divider, #154 Snap-Down Edging and #196 Vinyl/ Carpet Reducer.

- Subfloor Leveler: #301, #302, #303 & #304.

Available in four thicknesses – 1/8", 1/4", 3/8" & 1/2" Roppe Rubber & Vinyl Accessory Products are recommended for indoor use only!

3.6 Features and Benefits

- PVC Free.
- Manufactured from Post Consumer & Post Industrial waste material.
- May contribute to the LEED® Green Building Certification System, however due to formulation variances, recycled content may vary by color.
- Available in 27" x 27" Square Edge Tile and 27" x 27" Inter-Locking Tiles
- Inter-Locking Tiles designed for loose-laid installation, for easy repairs and replacement.
- Safety – exceeds ASTM, OSHA & ADA Standards for Static Coefficient of Friction (slip-resistance).
- Durability – excellent abrasion resistance.
- Resiliency – excellent anti-fatigue surface.
- Excellent fire and cigarette burn resistance.
- Excellent soil, spills and stains resistance – non-porous.
- Flexible & durable construction for fast and economical installations.
- Sound absorption characteristics reduce noise levels.
- Easy to maintain, enhances slip-resistance and improves shock absorption.
- The industry's best warranty.
- Tuflex is the sports floor of choice for 14 NFL, 11 NHL, 20 MLB, 1 WNBA & 10 NBA Teams.
- Ideal for Athletic, Educational, Retail, and Institutional applications.
- Excellent for Dog day care, veterinary and other animal facilities.
- Works well in marine applications such as workboat decks, as well as in bridges, quarters and galleys.
- Available in two appealing designs: Titan – black background with colored flecks; and Spartus – speckled colored background with colored flecks.
- Custom color matching available; minimum quantities may apply.

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4.0 Technical Data (Typical Properties) Composition: 100% Recycled Elastomers

4.1 Technical & Specification Data

Characteristic Requirement ASTM Test Method	Physical Properties:	Results:
Hardness – Shore A (ASTM D – 2240)	60 +/- 5 pts.
Taber Abrasions (ASTM C-501 – 1kg wt 7,000 cycles)	6.0% (max) wt loss.
Tear Resistance (ASTM D-624)	93 +/- 15 lbs/in.
Tensile Strength (ASTM D-412)	525+/- 100 psi.
Elongation (ASTM D- 412)	130% +/- 25%
100% Modulus (ASTM D-412)	390 +/- 50 psi.
Compression Set (ASTM D-395 method B)	6.0% +/- 1%
Ozone Resistance (ASTM D1149 – 50 pphm, 70 hrs. @ 104° F, Bent Loop Method	Pass
Impact Resistance (ASTM D-2632)	32.0% Rebound
Coefficient of Friction (ASTM D-2047)	1.20
Critical Radiant Flux (ASTM E-648 Class II)	0.25 watts per sq cm
Specific Gravity	1.14 +/- 0.03
Acoustic Properties	0.60 Sound Absorption Coefficient
Stain Resistance	Good
Chemical Resistance	Good
Spike/Skate Traffic	Excellent
R Value (Thermal Insulation)	0.29 ft2 hr F/Btu (0.51 K m2/W)

*Society for Testing and Materials (ASTM)

4.2 Architects' Material Specifications

4.2.1 Architects' Material Specifications- ROPPE TUFLEX TITAN RECYCLED RUBBER TILE
Roppe Tuflex Titan Recycled Rubber Tile shown in the finish schedule or listed herein as Roppe Tuflex Titan Recycled Rubber Tile shall be _____ (3/8" {9.00mm}) in nominal thickness, furnished by Roppe Corporation, Fostoria, Ohio. Each shall be smooth and free from imperfections which detract from its appearance, and contain no asbestos fiber. Tuflex Titan Recycled Rubber Tile shall be _____ (27" x 27" {685.8mm x 685.8mm} Square Tile and/or 27" x 27" nominal {685.8mm x 685.8mm} Inter-Locking Tiles, and in the color _____ (list color) selected.

4.2.2 Architects' Material Specifications- ROPPE TUFLEX SPARTUS RECYCLED RUBBER TILE
Architects' Material Specifications- Roppe Tuflex Spartus Recycled Rubber Tile shown in the finish schedule or listed herein as Roppe Tuflex Spartus Recycled Rubber Tile shall be _____ (3/8" {9.00mm}) in nominal thickness, furnished by Roppe Corporation, Fostoria, Ohio. Each shall be smooth and free from imperfections which detract from its appearance, and contain no asbestos fiber. Tuflex Spartus Recycled Rubber Tile shall be _____ (27" x 27" {685.8mm x 685.8mm} Square Tile and/or 27" x 27" nominal {685.8mm x 685.8mm} Inter-Locking Tiles, and in the color _____ (list color) selected.

5. Product Limitations/Precautions

Tuflex Flooring Products are made from the highest quality recycled materials. Pattern consistency is stringently controlled, however exact color uniformity is not guaranteed. Shading and other cosmetic variations are part of the unique character of the Tuflex patented vulcanization process. Any claims regarding physical defects or cosmetic appearance issues must be made prior to installation. Notice: It is the Flooring Installer's direct responsibility to inspect and loose lay the flooring in the room or area prior to installation to determine the proper layout and best overall appearance. Flooring Installer must inspect all material for manufacturing imperfections and irregularities prior to installation. All manufacturing imperfections or irregularities must be reported to the appropriate authority. DO NOT install Tuflex Flooring if visual defects are discovered, material does not match

or if the wrong type or color was received. Roppe will not be held liable for material or labor if flooring is installed with visual/manufacturing defects, color variations/shading, or if incorrect material was received. Always dry-lay each floor before beginning to ensure the desired look is achieved. Roppe TA 176 One-Part Solvent-Free Moisture-Cured Polyurethane Adhesive must be used for all installations of Tuflex Square Edge Tile over approved and properly prepared substrates only. All materials are to be delivered to the installation location with labels intact. Store products in a dry area protected from the weather on a smooth, flat, dry surface with temperatures maintained between 65°F (19°C) and 85° F (30° C). DO NOT stack pallets or tiles. Remove all plastic wrapping and strapping from the pallets in the installation area at least 48 hours prior to installation. For proper acclimatization, unwrap tile and stack evenly on a smooth dry surface with each stack no more than 18" high. The installation area, substrate, flooring and adhesive are to be maintained between 65°F (19°C) and 85° F(30°C) for at least 48 hours before installation, during installation, and thereafter. Maintain room temperatures between 65°F (19°C) and 85° F(30°C) thereafter to prevent adhesive failure and to prevent distortion or destruction of flooring. Exposure to moisture within 24 hours after installation may slow the adhesive set up time, and may adversely affect the adhesive, resulting in an installation failure. Exposure to rain within 72 hours after installation may slow the adhesive set up time, and may adversely affect the adhesive, resulting in an installation failure. Therefore, use extreme caution when installing. There are to be no rolling loads, lateral sheer or equipment installed until at least 72 hours after installation to prevent adhesive displacement and telegraphing. Roppe Rubber & Vinyl Accessory Products recommended for the installation of Tuflex Flooring is limited to indoor use only. Since Tuflex Flooring is manufactured from recycled material content, slight lot-to-lot color variations should be expected, which is typical for this type of flooring material. Actual product colors may not appear exactly as shown in literature or samples provided. Permanent indentation can occur if excessive weight (i.e.: weight machines, free weights and stationary equipment etc.) is installed directly on the flooring. The product must be installed in accordance with Roppe's recommendations in order for the product warranty to be in effect. Tuflex Flooring may be stained if it is allowed to remain in contact with rubber products that may contain staining ingredients such as tires, casters, and walk-off mats. Flooring may become distorted or stained when exposed to chlorine (i.e.: swimming pools and hot-tubs etc.). Roppe will not warranty Tuflex Flooring products (including Floor Finish) against fading or discoloration when exposed to direct or indirect sunlight. Tuflex Flooring is not to be used in or near commercial kitchens or in areas exposed to animal fats, greases, oils, lubricating oils, solvents, strong detergents, petroleum-based material, chlorine or any product that may discolor or stain the flooring, or where there is excessive moisture. Follow all local, state, and federal safety standards and practices.

6. Installation

6.1 General Preparation and Conditioning

First read Tuflex's flooring literature concerning the product description, product limitations, product installation, adhesive information, product maintenance, and warranty before installing the flooring. Inspect all material for proper type and color. Conduct the proper moisture emission and pH testing on the substrate. Proceed with the installation only when the conditions are proper and correct. A bond test using Tuflex Square Edge Tile and

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Tuflex TA-176 One-Part Solvent-Free Moisture-Cured Adhesive throughout the area approximately 50 feet apart should be performed at least one week prior to the scheduled installation to assure the surface is suitable. After 72 hours, there should be an unusual amount of force to lift the flooring from the substrate with adhesive bonding to the tile and the substrate. All materials are to be delivered to the installation location in its original packaging with labels intact. Store products in a dry area protected from the weather on a smooth, flat, dry surface with temperatures maintained between 65ºF (19ºC) and 85ºF (30ºC). Remove all plastic wrapping and strapping from the pallets in the installation area at least 48 hours prior to installation. For proper acclimatization, remove the flooring from the packaging and stack tiles evenly no more than 18" high. The installation area, substrate, tile, adhesive are to be maintained between 65ºF (19ºC) and 85ºF (30ºC) for at least 48 hours before installation, during installation and maintain room temperatures between 65ºF (19ºC) and 85ºF (30ºC) thereafter. Flooring should be loose laid in the room or area prior to spreading of adhesive to determine the proper layout to assure the best overall appearance and to minimize small border cuts. Close the area to traffic during installation. Install flooring and accessories after other finishing operations, including painting, have been completed. If the back of the flooring becomes soiled prior to installation, clean with a soft cloth dampened with a mild soap and water solution, rinse, let dry. Flooring may be installed over radiant heated floors, provided the surface temperature is maintained between 65ºF (19 ºC) and 85ºF (30ºC). If radiant-heated floors have cooled after installation, a gradual increase in temperature is required to prevent adhesive bond from being adversely affected. *Warning*: Follow all local, state, and federal standards and practices for the proper removal and disposal of flooring, adhesives, or other materials. Follow all local, state, federal, and manufacturer's safety standards for the use of all products and equipment.

6.2 Subfloor/Substrate Inspection and Preparation

6.2.1 All subfloors/substrates must be inspected prior to installation. All substrates must be clean, smooth, permanently dry, flat, and structurally sound. The substrate must be free of moisture, dust, sealers, paint, curing compounds, parting agents, residual adhesives, adhesive removers, hardeners, resinous compounds, solvents, wax, oil, grease, asphalt, gypsum compounds, alkaline salts, excessive carbonation or laitance, mold, mildew, any other extraneous coatings, films, materials and all other foreign matter which might interfere/restrict proper adhesive bonding. DO NOT use sweeping compounds, solvents, citrus adhesive removers, or acid etching to clean the substrate. DO NOT install flooring over gypsum-based or plaster based leveling or patching compounds. DO NOT install new floor covering over old floor covering, as the old floor covering may not be adequately bonded, hide possible structural defects, or cause plasticizer migration into the new flooring. However, Interlocking Tile can be loose laid over smooth and well bonded resilient flooring, ceramic tile, solid or engineered wood flooring, metal and terrazzo. In renovation or remodel work, remove all existing *adhesive residue so that 100% of the overall area of the original subfloor/substrate is exposed. Follow The Resilient Floor Covering Institute's (RFCI) "Recommended Work Practice for Removal of Existing Floor Covering and Adhesive, and all applicable industry, local, state, and federal standards. Care must be taken to analyze the conditions and correct any problems prior to installation. Follow the manufacturer's

recommendations for any patching or underlayment materials, excluding gypsum based or plaster based levelers or patching compounds. * Some previous manufactured asphaltic "cutback" contained asbestos. For removal instructions, refer to the Resilient Floor Covering Institute's publication "Recommended Work Practices for Removal of Resilient Floor Covering".

6.2 Subfloor/Substrate Inspection and Preparation

6.2.1 All subfloors/substrates must be inspected prior to installation. All substrates must be clean, smooth, permanently dry, flat, and structurally sound. The substrate must be free of moisture, dust, sealers, paint, primers, curing compounds, parting agents, residual adhesives, adhesive removers, hardeners, resinous compounds, solvents, wax, oil, grease, asphalt, gypsum compounds, alkaline salts, excessive carbonation or laitance, mold, mildew, any other extraneous coatings, films, materials and all other foreign matter which might interfere/restrict proper adhesive bonding. DO NOT use sweeping compounds, solvents, citrus adhesive removers, or acid etching to clean the substrate. DO NOT install flooring over gypsum-based or plaster based leveling or patching compounds. DO NOT install new floor covering over old floor covering, as the old floor covering may not be adequately bonded, hide possible structural defects, or cause plasticizer migration into the new flooring. In renovation or remodel work, remove all existing *adhesive residue so that 100% of the overall area of the original subfloor/substrate is exposed. Follow The Resilient Floor Covering Institute's (RFCI) "Recommended Work Practice for Removal of Existing Floor Covering and Adhesive, and all applicable industry, local, state, and federal standards. Care must be taken to analyze the conditions and correct any problems prior to installation. Follow the manufacturer's recommendations for any patching or underlayment materials, excluding gypsum based or plaster based levelers or patching compounds. *Some previous manufactured asphaltic "cutback" contained asbestos. For removal instructions, refer to the Resilient Floor Covering Institute's publication "Recommended Work Practices for Removal of Resilient Floor Covering".

6.2.2 Concrete substrates on all Grade Levels must be tested in accordance with ASTM F 1869 to quantitatively determine the amount of moisture vapor emission at least one week prior to the installation. **Caution:** Calcium Chloride test cannot predict long-term moisture conditions of concrete slabs. Moisture testing only indicates moisture conditions at the time the tests are performed. Before conducting a Calcium Chloride test, the installation area must be maintained between for 65° F (19°C) and 85° F (30°C) or at least 48 hours prior to testing, during testing and thereafter. In addition, the concrete's temperature range must also be identical to that of the installation area. Conduct three Calcium Chloride test for the first 1,000 sq. ft. and one additional test for each 1,000 sq. ft. or fraction thereof per grade level (on, below or above grade). The moisture emission shall not exceed 4.0 pounds per 1000 square feet per 24 hours. If the substrate does not meet the moisture emission requirement, the flooring shall not be installed until the problem has been corrected. DO NOT install flooring if there is hydrostatic pressure. Every concrete floor slab on-grade or below grade to receive resilient flooring shall have a permanent, effective moisture vapor retarder installed below the slab. A pH test must be performed to test for excessive alkalinity using a pH pencil or litmus paper and deionized water. A scaly, sandy, or powdery surface is an indication of some form of contaminant, usually

excessive alkalis or an alkali-silica residue. A pH reading higher than 8 is an indication of a potential problem and the concrete must be neutralized by rinsing with clear water. Apply clear water with a mop and allow to dry. Re-rinse with clear water, allow to dry and retest to ensure pH level is within acceptable range of 5 to 8 on the pH scale. Continue to neutralize until the pH level is acceptable. The testing of concrete for alkalinity indicates the degree of alkalinity only at the time the test is conducted, and cannot be used to predict long-term conditions. Moisture and alkali salts in the concrete can cause the following problems after installation: adhesive deterioration, bumps, ridges, bubbles, discoloration, mold, mildew, bacteria growth, efflorescence, tile shifting, tile releasing, tile peaking, or sheet seam curling. DO NOT install over burnished (slick troweled) concrete to avoid adhesive and underlayment patch or self-leveling bonding problems due to the non-porosity of the concrete finish. Corrective measures such as bead blasting (shot blasting) or scarifying must be performed prior to installation. The concrete slab must be of good quality, standard density concrete with low water/cement ratios consistent with placing and finishing requirements, having a maximum slump of 4", a minimum compressive strength of 3500 psi, and following the recommendations of ACI Standard 302.1R-96 for class 2 or call 4 floors and the Portland Cement Association's recommendations for slabs on ground. Joints such as expansion joints, contraction joints, isolation joints, saw cuts, control joints, grooves or other moving joints shall not be filled with patching compound or covered with resilient flooring. Expansion joint covers designed for use with resilient flooring should be used. Any non-moving surface cracks, depressions, and other irregularities shall be filled and smoothed with a high quality grade Portland cement-based, water resistant, non-shrinking, non-staining, mildew resistant, alkali resistant underlayment having a minimum compressive strength of 3500 psi after 28 days. Some underlayments may fail under excessive weight; an epoxy caulking compound may be required for certain repairs. Mechanically cleaning the substrate by shot-blasting, scarifying, or sanding shall be performed to achieve a flat, smooth, clean surface to prevent irregularities, roughness, or other defects from telegraphing through the new resilient flooring. The surface of the concrete shall be flat to within the equivalent of 3/16" in 10 feet, as described in ACI 117R. The surface shall be cleaned of all loose material by scraping, brushing, vacuuming, or other methods, or a combination thereof, immediately before commencing installation of resilient flooring. Follow the proper safety practices during the preparation and installation. Follow the recommendations of the American Concrete Institute (ACI 302.1R, *Guide for Concrete Floor and Slab Construction;* ACI 360.R, *Design of Slabs on Grade;* ACI 223*, Standard Practice for the Use of Shrinkage-Compensating Concrete);* The American Society for Testing and Materials (ASTM F 710, *Standard Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring*), and the American National Standards Institute (ANSI A157.1, *Recommended Practice for Concrete Floor and Slab Construction*) for the preparation of concrete to receive resilient flooring. Refer to 6.2.1.

6.2.3 Wood subfloors to be used as subfloors/ substrates are to follow the procedures recommended for concrete in 6.2.1 and 6.2.2. Wood subfloors should be of double layer construction with a minimum thickness of 1". Crawl spaces underneath wood subfloors shall be in compliance with local building code ventilation practices and have clearance of at least 18" of

cross-ventilated space between the ground level and joists. Wood joists should be spaced on no more than 16" centers. Place a moisture retarder; having a maximum rating of 1.0 perm, on the top of the ground under the wood subfloor overlapped at least 8". APA, The Engineered Wood Association, Underlayment Grade plywood, minimum 3/8" thick, with a fully sanded face is to be used. Use APA approved exterior grade plywood if finished floors are subjected to moisture. OSB, lauan, maranti, solid-core mahogany, waferboard, particleboard, chipboard, flakeboard, tempered hardboard, glass mesh mortar units or cementitious tile backer boards, sheathing-grade plywood, preservative-treated plywood, or fire-retardant treated plywood are not recommended as some manufacturers may use resins or other adhesives in the manufacturing of the product that may cause discoloration or staining of the flooring. Wood subfloor movement, flexing or instability will cause the flooring installed to release, buckle or become distorted. DO NOT proceed with the installation until corrective measures have been made. The warranties, performance, installation, and use are the responsibility of the manufacturer and/or contractor. DO NOT use plastic or resin filler to patch cracks. DO NOT use cement or rosin coated nails or staples or solvent-based construction adhesive to adhere the plywood. Installation on a sleeper, a wood subfloor system constructed over the top of concrete, is not recommended. Installation directly over Sturd-I-Floor panels is not recommended. All wood subfloors, single construction plywood floors, single and/or double tongue-and-groove strip floors, and wood plank floors must be prepared to receive resilient flooring in accordance with federal and industry standards. Follow the recommendations of the APA, The Engineered Wood Association, *Design/ Construction Guide, Residential and Commercial*, and ASTM F 1482*, Standard Guide to Wood Underlayment Products Available for Use Under Resilient Flooring*, for the installation and proper construction of the panels to receive resilient flooring. It is the contractor's responsibility to determine if the subfloor is acceptable to receive the flooring. Refer to 6.2.1.

6.2.4 Cementitious Terrazzo and ceramic floors to be used as subfloors/substrates are to follow the procedures recommended for concrete in 6.2.2. Ceramic tile must be solidly adhered and all loose tiles must be removed and repaired or replaced. Ensure all glazed, sealed, smooth, and/ or shiny surfaces are properly sanded and cleaned. Fill all grout lines and other irregularities with a manufacturer's recommended Portland cement-based underlayment with a minimum compressive strength of 3500 psi. The subfloor must be structurally sound. Inspect and ensure there is an adequate bond of the old flooring to the original substrate. DO NOT install over epoxy based terrazzo. Cementitious terrazzo must first be sanded to remove all finishes, and then cleaned. Conduct a bond test with adhesive to ensue a successful bond can be achieved before installing. Roppe **will not** warranty the product if there is a bond failure caused by problems relating to the old flooring. Refer to 6.2.1.

6.2.5 Metal floors to be used as subfloors/ substrates must be thoroughly cleaned of any residue, oil, paint, primer, sealer, rust, and oxidation and properly sanded/grinded to provide a smooth, level, clean substrate to receive flooring. The flooring must be installed within 12 hours after sanding/grinding to prevent the metal from re-oxidizing. The metal subfloor shall be structurally sound. Deflection of the metal can cause a bond failure between the adhesive and the metal substrate. It is the contractor's

responsibility to decide the feasibility of the application, and Roppe Corporation will not be held liable for failures caused by flexing or deterioration of metal substrates. On an extremely smooth, non-porous, metal substrate, a longer "tack up" may be required in order to prevent the adhesive from oozing between the seams. Refer to 6.2.1. **Caution:** The installation of flooring material will not prevent deterioration of metal substrates from occurring.

6.3 Adhesive Information

6.3.1 Tuflex TA-176 Solvent-Free Moisture-Cured Polyurethane Adhesive

TA-176 Solvent-Free Moisture-Cured Polyurethane Adhesive is a premium one-part adhesive designed for high performance installations of Tuflex Square Edge Tile for installations over porous, metal and other non-porous substrates, on grade, below grade, or above grade. **Caution:** Exposure to moisture/ cleaning within 24 hours after installation may slow the set up time, and may adversely affect the adhesive resulting in an installation failure. Exposure to rain within 72 hours after installation may slow the adhesive set up time, and may adversely affect the adhesive, resulting in an installation failure. Therefore, use extreme caution. TA-176 has excellent plasticizer migration resistance and superior bond strength. Trowel size and spread rates will vary depending on porosity of the substrate and subfloor. For smooth or non-porous substrates (i.e.: metal, terrazzo & ceramic tile), a 1/16" x 1/16" x 1/16" square notch trowel is required and the approximate coverage is 90-100 square feet per gallon. TA-176 must be allowed to "tack-up" approximately 15 minutes over non-porous substrates (i.e.: metal, terrazzo, ceramic tile) and the flooring must be continuously rolled until the adhesive has dried completely. However, DO NOT allow the adhesive to dry or "skin-over" or extend the "tack-up" time causing very little or no adhesive transfer to the backing of the flooring resulting in an installation failure. For installations over porous or rough substrates, a 3/32" x 3/32" x 3/32" "U" notch trowel is required (approx. coverage: 75-80 sq/ft per gallon) and the adhesive must be allowed to "tack-up" approximately 15 minutes before installing flooring. Coverage will vary according to the type of surface, surface texture, spreading angle, and adhesive temperature). TA-176 is a moisture cured polyurethane adhesive, therefore, the open time will vary depending on ambient temperature, substrate temperature and relative humidity. Typical working time is approximately 3 hours at 75°F (24°C) and 50% relative humidity. At elevated relative humidity levels, the working time can be shortened. **Caution:** If to much adhesive is applied, oozing at seams, air-bubbles, adhesive displacement, and telegraphing may occur along with adhesive displacement when the floor is rolled or exposed to rolling loads and lateral sheer stress resulting in loose and unsightly areas. Therefore, test trowel size and flooring prior to installation to avoid the above noted potential problems. Adhesive is available in two gallon and five gallon pails. Shelf life is six-months @ 70°F (21°C) in an unopened container. Although the urethane components are non-freezing, the adhesive must be allowed to stabilize to ambient temperature before applying. Any adhesive on the surface of the tile/flooring or surrounding area must be removed immediately with a clean cloth dampened with mineral spirits. DO NOT allow the adhesive to cure on the surface of the flooring, tools etc. A bond failure will occur if the adhesive is not properly applied. Label information is in English and Spanish. Read all of the product and safety information concerning the adhesive and any other chemicals or cleaning agents prior to installation.

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Tuflex TA-176 One-Part Solvent-Free Moisture-Cured Calculated VOC's according to California Rule
#1168: 0 calculated grams per liter of coating.

6.4 Adhesive Application and Product Installation

6.4.1 Tuflex Flooring Square Edge Tile installation using Roppe TA-176 One-Part Solvent-Free Moisture-Cured Polyurethane Adhesive
Read product limitations/precautions and installation literature before proceeding. Follow safety precautions on the adhesive label and Material Safety Data Sheet. If more than one box is being installed, ensure each have the same run number. Prior to applying adhesive, the installer must dry-lay the entire installation in order to examine the flooring and confirm product type and material conditions are satisfactory to all parties prior to adhesion. Inspect flooring from all pallets received. Mixing and turning tiles is required, which will result in a blended pattern appearance. Pattern ratios are stringently controlled but color uniformity is not guaranteed. Shading and other cosmetic variations are part of the unique character of the patented Tuflex vulcanization process. No cosmetic claims will be honored following adhering the flooring. Variations are inherent in all flooring products so blend, rotate, plan cuts and install variations with consideration for the overall design, use and traffic pattern of the facility. If the back of the flooring becomes soiled prior to installation, clean with a soft cloth dampened and denatured alcohol and allow to completely dry before installing. Carefully select the ideal layout to avoid seams in high traffic areas, while achieving an equal balanced in the room, and all side cuts should be equal in dimension. All tile seams must be approximately 6" away from any seams in the underlayment or substrate. The room must be precisely measured in order to square-off the area, to determine the center point. First establish the room's center and snap chalk lines across the width of the room 27" on each side of the center. These lines establish the 54" first course of two tile rows from which to proceed (see diagram below). Then pour the contents of the adhesive container onto the substrate and spread evenly, DO NOT puddle adhesive, using the required 1/16" x 1/16" x 1/16" square notch trowel for installations over smooth or non-porous substrates (approx. coverage: 90-100 sq/ft per gallon). For installations over rough or porous substrates, a 3/32" x 3/32" x 3/32" "U" notch trowel is required (approx. coverage: 75-80 sq/ft per gallon). Spreading large areas of adhesive in excess of 150 square feet could possibly allow the adhesive to cure or setup before the flooring is installed which would result in a bond failure. TA-176 must be allowed to "tack-up" approximately 15 minutes over non-porous substrates (i.e.: metal, terrazzo, ceramic tile) and the flooring must be continuously rolled until the adhesive has dried completely. Tuflex Square Edge Tile must be fully adhered with TA-176 Adhesive. DO NOT allow the adhesive to dry or "skin-over" causing very little or no adhesive transfer to the backing of the flooring resulting in an installation failure. **Caution:** Open time and curing characteristics will vary upon the type of substrate, substrate temperature, ambient temperature, relative humidity, and proper conditioning of the adhesive. Allowing the adhesive to remain open too long will result in a bond failure. Install the first row of tiles starting at the rooms center line and install toward each wall. If necessary, under-cut tiles (see diagram below) being installed against each wall. Make wall cuts 1/8" larger than the space to be occupied and undercut the tile for a tight fit. Borders and other specialty cut tiles/flooring must be undercut or scribed to fit snugly, not

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tightly, against the wall, threshold, transition strip, fixtures, or other obstacles. Forcing incorrectly sized flooring into smaller areas will cause buckling of the flooring. DO NOT wait until all the main aisle flooring has been installed to begin laying the borders. Lay the border tiles/ flooring within the adhesive open time. While installing, ensure proper tile alignment and proper adhesive (90%) transfer to the products backing. Fit tile tightly together. Alignment is to be checked continuously throughout the installation and corrected if needed. Border/Side cuts should not be less than 6" wide to ensure proper adhesive bonding.

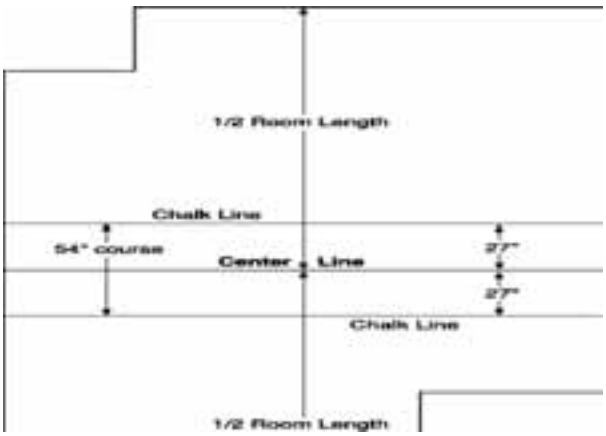

*Diagram is not to scale

The second row of tile must be installed in a "brick wall" (see diagram below) pattern. Stagger rows that tile corners DO NOT meet any one point on the first row installed. The third row of tile should be installed on the opposite side of the starting row. Be alternating sides from the starting row, maximum time is allowed for the adhesive to harden before being subjected to installer traffic. During the installation of the second, third and subsequent rows, it will be necessary to work on the newly installed tiles.

Therefore take extreme caution not to move or shift the tiles and make sure all tile joints have been properly taped together (see taping instructions below) to prevent movement. If tiles have shifted/moved, re-adjust before adhesive has started its drying process. Tiles can not be re-adjusted once adhesive has dried. Allow enough material for doorways, closets and alcoves etc. Allow an extra 3" for trimming or more if necessary for walls that are not square. **Caution:** All seams must be fitted tightly together and held immediately with reinforced fiber tape or industrial grade masking tape, such as Manco 8090, for a minimum of 24 after the installation has been completed while the adhesive cures. Banked Turns, such as indoor running tracks, must be weighted with sandbags with ample weight to conform the tiles to the sub-floor configuration immediately after rolling. Notice: The primary cause of seam gapping and thickness discrepancy is a failure to properly tape the seams, roll the floor and restrict traffic until the adhesive has fully cured. Apply reinforced fiber tape or industrial grade masking tape immediately after installing each row of tile, and check to ensure tile is fitted tightly together. DO NOT wait until the installation has been completed or additional rows of tile have been installed before applying the recommend tape. DO NOT use duck tape or other tapes with tacky residues that will be either difficult or impossible to remove.

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Square Tile "Brick Wall" Design

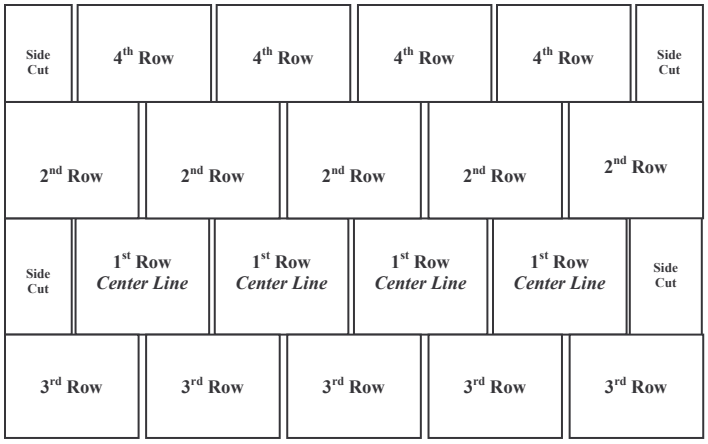

*Diagram is not to scale.

Side Cuts

1. Measure distance to wall– mark tile 1/8" longer and cut.

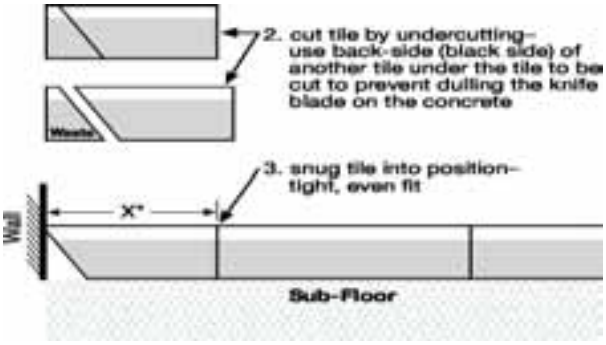

*Diagram is not to scale

Caution: When laying the flooring, use a kneeling board, or for best results, work off the flooring whenever possible to avoid shifting of the flooring and to also not track adhesive onto the surface of the flooring. If the adhesive is bleeding or oozing at the seams, either too much adhesive has been applied, or the adhesive is too "wet". Immediately remove excessive wet adhesive with a soft, clean cloth dampened with warm mineral spirits. Always install the flooring gently into the adhesive to avoid trapping air and preventing bubbles beneath the flooring.

Caution: If the adhesive is allowed to dry on the face of the flooring, tools etc, it can not be removed. Periodically, lift the flooring to check for proper adhesive transfer. There should be at least a 90% coverage of adhesive on the back of the flooring. Observe the adhesive to assure that the adhesive has not surpassed the open time and has not begun to cure. After the required tape has been applied to each tile's seam, roll and cross roll each section of flooring laid with a 100-pound (45 kgs) 3-section roller within 15 minutes after the flooring section has been installed. The rolling time may need to be adjusted to climatic conditions. Use a hand roller in areas that cannot be reached with the larger roller. Conduct a visual inspection during the rolling process to assure there has been no shifting of the flooring and that there is no adhesive on the surface of the flooring. DO NOT wait until the entire installation is completed before rolling as the adhesive may have surpassed the open time and be cured. Roll and cross roll a second time approximately 30 minutes after the initial rolling and thereafter as needed.

* Ice Rink Expansion Joints: The ice rink slab holding the refrigeration coils is invariably isolated from adjoining slabs with a 3" wide expansion void that must be allowed to absorb the expansion/contraction occurring when the is off/on. This void can not be filled with adhesive! Arrange full 27" squares of Tuflex so that they are centered over and span the void. Apply adhesive to the area 12" from each edge of the void and install while the ice is turned "off" (i.e.: warm slab). The contraction of the slab that occurs when the ice is "on" will be absorbed.

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Thin sheet metal, 3" wide should be loosely installed beneath the Tuflex square and directly over the void. If the expansion void is other than the customary 3" width, center the Tuflex square over the void, then apply adhesive on the sub-floor up to, but not including, the void itself. During contraction of the slab, the Tuflex will stretch, developing small openings between the square spanning the void. An alternative method is to install Tuflex normally and then cut through the tiles directly over the void. When the slab contracts, the Tuflex will ride the slab and an opening will appear equal to the amount of contraction. There is to be no foot traffic on the floor for at least 24 hours and no rolling loads for 72 hours. **Caution:** The flooring , including Feature Strips (if applicable) must be properly cleaned using Tuflex TC-1, & then sealed (see maintenance instructions below) using Tuflex TA-2 Finish before the flooring is released for normal use. If Feature Strips are to be installed, use same installation instructions noted above regarding trowel size, taping and rolling. Feature strips are available in 3/8" gauge, 3", 6" & 9" widths and 27" lengths. The installation lay-out will need to be adjusted to accommodate the width of the feature strip being installed. Feature strips are to be installed around the perimeter of each tile. Depending on the layout of the job, first install tile, then feature strip. Then install the next tile and feature strip and continue thru-out the installation. Protect flooring against mars, marks, indentations and other damage.

6.4.2 Tuflex Interlocking Tile Installation
6.4.3 Interlocking Tile – Wall to Wall Installation
Read product limitations/precautions and installation literature before proceeding. If more than one box is being installed, ensure each have the same run number. Prior to applying adhesive, the installer must dry-lay the entire installation in order to examine the flooring and confirm product type and material conditions are satisfactory to all parties prior to installing. Inspect flooring from all pallets received. Mixing and turning tiles is required, which will result in a blended pattern appearance. Pattern ratios are stringently controlled but color uniformity is not guaranteed. Shading and other cosmetic variations are part of the unique character of the patented Tuflex vulcanization process. No cosmetic claims will be honored following adhering the flooring. Variations are inherent in all flooring products so blend, rotate, plan cuts and install variations with consideration for the overall design, use and traffic pattern of the facility. Before installing the tile, carefully select the ideal layout to avoid seams in high traffic areas, while achieving an equal balanced in the room, and all side cuts should be equal in dimension. All tile seams must be approximately 6" away from any seams in the underlayment or substrate. It is extremely important the tile is balanced in the room to enhance the appearance of the installation, and all bordering tile should be equal in dimension verifying the layout is correct. The room must be precisely measured in order to square-off the area to determine the center point. First, measure area where tile is to be installed to determine the best starting position in the room. Then use a chalk line to mark two lines that intersect these positions at right angles, creating four (4) quadrants. Start the installation at the center point of the room where the two (length & width) lines intersect, installing from left to right. Fill-in tile along right wall, if necessary, using a straight edge and razor knife. The tile should be under-cut to the wall (see diagram above) however DO NOT force tile into place to prevent buckling. Alignment is to be checked continuously throughout the installation and corrected if needed. To finish off doorways, use a straight edge and razor knife and remove the interlocking tabs.

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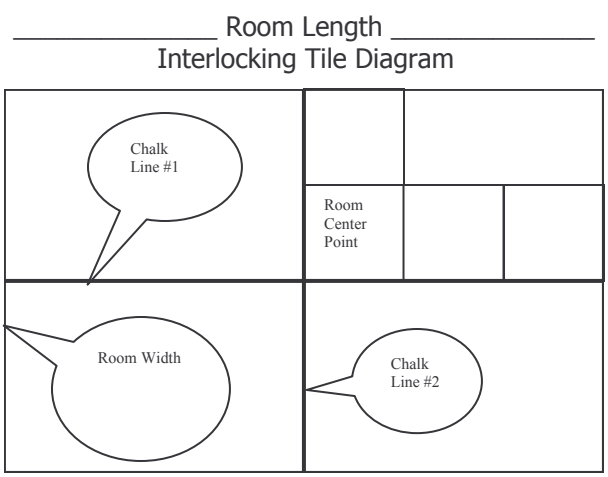

Interlocking Tile Diagram

6.4.4 Interlocking Tile – Mat Lay-Out
For a Mat Lay-Out installation, install interlocking tiles to the length and width desired. In order to achieve a finished look, the interlocking tile tabs around the perimeter/side of the area installed can be removed by using a straight edge and razor knife.

7. Product Maintenance

7.1.1 Initial Maintenance & Initial Required Finish Application
DO NOT scrub, buff or mop the flooring for at least 24 hours after installation to allow the adhesive to properly cure. DO NOT flood the flooring when cleaning and DO NOT allow the cleaning solution or topical moisture to work its way beneath the flooring which can result in an adhesive and/or flooring failure. Remove any covering that may have been used to protect the floor, including all tape used during installation. The flooring & feature strips must be properly cleaned using Tuflex TC-1, & then sealed using Tuflex TA-2 Finish before the flooring is released for normal use. The new floor must be swept and vacuumed to remove dirt and other particulates; then scrubbed with Tuflex TC-1 Cleaner diluted one-part TC-1 to five parts of warm water, using an auto-scrubber (DO NOT heel the scrubbing machine) or a sponge mop. Allow TC-1 Cleaner to stand 5 to 10 minutes on the flooring surface. Then remove all soil lifted by the TC-1 using an auto-scrubber or a with a clean damp sponge mop. Next, continue removing the TC-1 solution until the rinse water is clear using a clean damp sponge mop or wet/dry vacuum. Allow flooring to completely dry. Once dry, Tuflex TF-2 Finish must be applied prior to allowing traffic of any kind in order to seal microscopic surface irregularities of the flooring and to protect against embedded soil and dirt. TF-2 Finish is to be diluted one part TF-2 to three parts of warm water. After applying the initial finish treatment, allow the finish to completely dry for twelve (12) hours before subjecting to traffic.
The initial finish treatment is required and should be allowed to cure for a minimum of thirty (30) days. After thirty (30) days, the owner may remove the finish or apply additional finish a their own discretion. **Caution:** TF-2 and other finishes can be marked by skate blades, cleats etc, even thought the Tuflex tile in no damaged. DO NOT use highly alkaline or acidic cleaners. DO NOT use sweeping or cleaning agents containing oils or solvents. Always check for compatibility and performance prior to cleaning by utilizing uninstalled material or test in an inconspicuous area before proceeding to determine if the desired results can be achieved without distorting or having an adverse effect on the flooring. **Caution:** Applying sealers will darken the floorings original color. When applying sealers always check for compatibility and bonding on a scrap piece of flooring to ensure the desired results and appearance is achieved. **Caution:** Some germicides, disinfectants, cleaning agents, floor maintenance products, and pesticides may stain or damage

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the surface of the flooring; therefore, test the products to ensure they will not stain or damage the flooring. Spills of any type must be removed immediately to help prevent staining or permanent damage. The use of floor sealers may reduce the slip resistant of the flooring. Roppe Corporation will not be held liable for finishes applied directly to flooring causing them to become slippery and/or reducing the floorings slip resistance! **Caution:** When wet, the flooring will become slippery; therefore, use the appropriate warning signs on the flooring to eliminate foot or other traffic. **Caution:** When wet, the flooring will become slippery; therefore, use the appropriate warning signs on the floor to eliminate foot or vehicular traffic.

7.1.2 Non-Finish Cleaning:
Follow Cleaning instructions noted under Initial Maintenance & Initial Required Finish Section.

7.1.3 Tuflex TF-2 Finish – TF-2 Finish is a versatile, protective micro-thin film which will provide a matte, semi-gloss or glossy finish for Tuflex Tile. TF-2 makes cleaning easier, improves the appearance and prevents the damaging effects of abrasive dirt. The use of TF-2 Finish is not required after the initial finishing treatment. Each facility manager must evaluate the trade-off between desired appearance, frequency of application and overall maintenance budget and decide accordingly to apply of not to apply TF-2. After applying the initial finish treatment, allow TS-2 to completely dry for twelve (12) hours before subjecting to traffic. The initial finish treatment is required and should be allowed to cure for a minimum of thirty (30) days. After thirty (30) days, the owner may remove the finish or apply additional finish a their own discretion. TS-2 can be diluted with one part of TF-2 to three parts warm water for a Matt/Dull Finish. For a Semi-Gloss finish, TS-2 is to be diluted one part TS-2 to one part of warm water. For a Glossy Finish, apply one-coat of TF-2 un-diluted with a lamb's wool applicator. Like most finishes, TF-2 can be marked by golf spikes, weights and skate blades etc, even though the Tuflex Tile is not damaged in any way.

7.1.4 Periodic Stripping of TS-2 Finish
If the flooring has heavy soiling, grease and dirt build-up, the floor needs to be stripped with Tuflex TS-3 Stripper. TS-3 must be diluted with an equal amount of warm water. For moderate or average buildup, dilute one part TS-3 with five parts of water. Diluted TS-3 is to be applied liberally with a sponge mop or standard soft-bristle scrub brush or automatic scrubber (soft-bristle). Allow solution to stand 5 to 10 minutes to loose the old finish. Remove the dissolved finish/soil with a sponge mop or with a wet/dry vacuum. After the floor has been thoroughly cleaned, rinse with clean water using a sponge mop. Allow the floor to dry completely before applying TS-2 Finish, if desired.

7.1.5 Tuflex Maintenance Products

Product	Approx. Coverage Sq/Ft	Sizes	Weight
Tuflex TC-1 Cleaner	2,000	One-Gallon	10 lbs.
Tuflex TC-1 Cleaner	10,000	Five-Gallon	50 lbs.
Tuflex TF-2 Finish	1,500	One-Gallon	10 lbs.
Tuflex TF-2 Finish	7,500	Five-Gallon	50 lbs.
Tuflex TS-3 Stripper	1,000	One-Gallon	10 lbs.
Tuflex TS-3 Stripper	5,000	Five-Gallon	50 lbs.

8. Availability and Cost
8.1 Products are available through Roppe distributors. Contact Roppe Customer Service (800) 537-9527 or visit www.roppe.com for a distributor near you.

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8.2 Samples
Samples may be obtained by calling Roppe Customer Service at 1-800-537-9527, or by visiting www.roppe.com.

9. Technical Assistance
Technical service information and assistance may be obtained by calling Roppe Customer Service at 1-800-537-9527, or by visiting www.roppe.com.

10. Limited Warranty
Roppe Corporation manufactures and markets its floor products under the trade name Roppe Tuflex is warranted for a period of one (1) year from date of installation to be free of defects in material and workmanship. Roppe Tuflex Flooring products are made from the highest quality recycled materials. Pattern consistency is stringently controlled, but exact color uniformity is not guaranteed. Shading and other cosmetic variations are part of the unique character of the Tuflex vulcanization process. **Any claims regarding physical defects or cosmetic appearance issues must be made prior to installation.** Tuflex has a five (5) year Limited Wear Warranty if installed in the intended athletic and commercial application described within this document, maintained, and used strictly in accordance with Roppe's written instructions and installed with the recommended Roppe Adhesives. Roppe will not warranty Tuflex Flooring products against fading or discoloration when exposed to direct sunlight or indirect sunlight. This Limited Warranty only applies to Tuflex Flooring, which has been installed, maintained, and used strictly in accordance with Roppe's written instructions and is valid only under normal wear and traffic conditions in a use for which it was designed. Instructions may be obtained from a Roppe distributor or by writing Roppe, Attention: Internal Sales Manger, P.O. Box 1158, Fostoria, OH 44830. Notice of any defect must be made in writing to Roppe within thirty (30) days after buyer learns of the defect. No merchandise is to be returned prior to Roppe's inspection and written approval. Installation of material installed with obvious visual defects is not warranted. Buyer's sole and exclusive remedy for breach of this Limited Warranty shall be a pro rata credit, based on the period remaining in this Limited Warranty, toward the purchase of new Tuflex Flooring, or in the event Tuflex Flooring is not available, other Roppe material. Replacement credit shall be equal to the proportion of Limited Warranty time remaining multiplied by the current price of Tuflex Flooring or the last price if Tuflex Flooring is not available. In no event shall Roppe be liable for labor, incidental or consequential damages, even if some other provision of this Limited Warranty is unenforceable. Buyer waives all other claims, and remedies against Roppe, whether statutory, based in common law or in equity, and including, but not limited to, direct, indirect, special, incidental, and consequential damages. In order to use this Limited Warranty, Buyer must present this Limited Warranty and proof of time of purchase to Buyer's Roppe representative. Roppe shall have no liability whatsoever to Buyer in the event the goods become defective if such defect is caused in whole or part by cuts, tears, vandalism, fire, willful destruction, improper installation, installed with obvious defects, damaged from high heels, spike footwear, or improper maintenance, accident or act of God. Products installed as "seconds", "mill runs", "non-conforming", not being of first quality, are sold 'as is" and Roppe makes no warranties whatsoever, expressed or implied, with respect thereto, including warranties of merchantability or fitness for a particular use. This Limited Warranty is valid only if Tuflex Flooring is installed pursuant to the

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Limited Warranty, using Roppe's recommended adhesives. These warranties are expressly in lieu of any other warranties expressed or implied, including, but not limited to any implied warranty of merchantability or fitness for a particular purpose. By retaining Roppe's merchandise for more than five (5) days after receipt of such merchandise, Buyer agrees that it accepts the terms of this Limited Warranty and that there are no warranties or rights beyond those contained herein. Tuflex Flooring is not designed for use in or near commercial kitchens, or exposure to vegetable oils, animal fats, petroleum-based material, food coloring or any other product which may discolor or stain the flooring. Read the Tuflex Flooring Product Data information concerning Product Limitations, Installation, and Maintenance available from a Roppe Distributor or Roppe Customer Service Representative.

* Limited Wear Warranty Terms (Products Types & Design: Tuflex Spartus and Titan)
If excessive wear is suspected, the original purchaser must notify Roppe Corporation in writing and permit an inspection of the flooring. If Roppe Corporation determines excessive wear, and the flooring has been properly installed and maintained, Roppe Corporation will replace the flooring based on the following terms:

A. Terms

a. Within One-Year: If excessive wear is determined by Roppe within one (1) year of installation, Roppe will furnish new material of the same or similar style and color sufficient to repair or replace the defective material. Roppe will also pay reasonable labor cost once submitted in writing and approved.
b. Within Two-Years: If excessive wear is determined by Roppe within two (2) years of installation, Roppe will furnish new material of the same or similar style and color sufficient to repair or replace the defective material. Roppe will also pay fifty-percent (50%) of reasonable labor cost once submitted in writing and approved.
c. After Two-Years & Within Five-Years: If excessive wear is determined by Roppe after two (2) years and within five (5) years of installation, Roppe will furnish new material of the same or similar style and color sufficient to repair or replace the defective material. Roppe will not pay labor cost for material installed after two (2) years and within five (5) years of installation.

10/07