

TECHNICAL DATA

Nominal Dimensions - Square Edge: 27" x 27" x 3/8" (9mm), 5.06 sq. ft. per tile

Nominal Dimensions - Interlocking: 25 3/4" x 25 3/4" x 3/8" (9mm), 4.6 sq. ft. per tile

Surface Texture - Smooth

Area per Tile - 5.06 sq. ft. (square edge), 4.6 sq. ft. (interlocking)

ASTM D2047 - Coefficient of Friction: >0.8

ASTM E648 (NFPA 253) - Critical Radiant Flux: Class I, >0.45 W/cm²

ASTM E662 (NFPA 258) - Smoke Density: Passes < 450

ASTM F2772 - Specification for Athletic Performance Properties of Indoor Sports Floor Systems: Passes

ASTM F2569 – Shock Absorption: Passes Class 1

ASTM F2117 – Vertical Ball Rebound: Passes

ASTM F2157 – Vertical Deformation: Passes

ASTM E303 – Surface Friction, Dry: Passes

ASTM D2240 - Hardness: Shore A; 70 +/- 5

ASTM F970 - Static Load Limit: Pass, > 250 PSI

ASTM F970 – Static Load Limit: Modified for Max Weight: 1,000 PSI

ASTM F1515 – Light Stability: Passes $\Delta E < 8$

ASTM E90 - Sound Transmission Loss: 52 STC*, 63 STC**

ASTM E492 - Impact Sound Transmission: 52 IIC*, 67 IIC**

ASTM E2179 - Delta Impact Insulation: 22 ΔIIC^*

Storage & Acclimation Temperature: 65° - 85° F

Acclimation Time: 48 Hours in Service Conditions

* 6" Concrete, No Drop Ceiling, ** 6" Concrete with Drop Ceiling

SUSTAINABILITY

Tuflex® Force® uses only Red List Free chemicals and pre-consumer recycled materials.

Sustainability Information: **FloorScore** Certificate Available, **HPD** Available, **EPD** Available, **NSF/ANSI 332 Platinum**

Qualifies for LEED Credits, details at: www.flexcofloors.com

Technical Documentation visit: www.flexcofloors.com or send an e-mail to: info@flexcofloors.com.

Technical Support: solutions@rhctechnical.com

APPROVED ADHESIVES

Excelsior MS-700 Modified Silane Wet-Set – A premium, one component modified silane adhesive used for the permanent installation of vinyl & rubber flooring products over porous and non-porous substrate both indoors and outdoors.

Excelsior U-705 Urethane Wet-Set Adhesive – A premium water resistant, single component urethane adhesive used for the permanent installation of resilient flooring products, including recycled or crumb rubber flooring products over porous and non-porous substrates both indoors and outdoors.

Excelsior EW-710 Epoxy Wet-Set Adhesive – A non-flammable two-part urethane-modified epoxy adhesive used for the permanent, installation of vinyl, rubber and quartz flooring products over porous and non-porous substrates in both indoor and outdoor applications.

Adhesive Coverage Rates, Moisture Limits and Traffic Limits						
Coverage Rates (per gallon)			Moisture Limits	Traffic Limits & Maintenance Limits		
Adhesive	Porous	Non-Porous	RH / MVER Limits	Foot Traffic	Heavy Foot Traffic, Rolling Loads	Maintenance
MS-700	135 sq. ft.	160 sq. ft.	95% / 10 lbs.	8-12 Hours	24-48 Hours	48 Hours
U-705	135 sq. ft.	160 sq. ft.	100% / 25 lbs	8-12 Hours	24 Hours	24 Hours
	Brushed & Rough Porous	Smooth Porous & Non-Porous				
EW-710	120 sq. ft.	135 sq. ft.	90% / 6 lbs.	8-12 Hours	24-48 Hours	72 Hours

SUBSTRATE, INSTALLATION & MAINTENACE INFORMATION

1. PRODUCT LIMITATIONS

- Prior to acceptance of this document refer to our website: www.flexcofloors.com to confirm that you have the most current revision.
- Do not install materials over VCT, LVT, vinyl flooring, cushioned vinyl, hardwood, cork, rubber, linoleum or asphaltic materials.
- Do not install in areas that may be subjected to sharp, pointed objects, such as pointed metal spikes.
- When installing in areas that may be exposed to ice skates, ensure skate guards are worn. Product is not intended for use in areas that may be subjected to deliberate abuse and damage.
- Do not allow product to be directly exposed to extreme heat sources, such as radiators, ovens or other high-heat equipment.
- Fading can occur from extensive or long term exposure to heavy direct or glass-filtered sunlight, or unfiltered ultra-violet rays, so use caution or window treatments in these areas
- Protect installation area from extreme temperature changes, such as excessive heat and freezing, as well as direct sunlight/UV for at least 48 hours before, during and for the life of the installation.
- May be susceptible to staining from rubber tires, casters or rubber-backed walk-off mats, as well as harsh disinfectants, cleaning agents, dyes or other harsh chemicals – ensure all chemicals and materials that may come in contact with flooring surface will not stain, mar or otherwise damage the flooring material prior to use.
- Not to be used in Commercial Kitchens or other areas subjected to animal, vegetable or petroleum based oils and solvents.
- If installing over loose lay moisture or sound control products please contact technical service for additional information.
- Observe directional arrows on back of tile to ensure arrows are installed in the same direction.
- Install Square Edge tile in an ashlar or brick pattern to ensure tight seams and an overall ideal visual appearance.
- Not for outdoor use.

2. PRE-INSTALLATION

- Consult all associated product literature concerning installation and warranty prior to installation.
- Allow all trades to complete work prior to installation.

- Deliver all materials to the installation location in its original packaging with labels intact.
- Inspect all materials to ensure there is no leakage or damage.
- Do not stack pallets to avoid damage.
- Protect installation area from extreme temperature changes, such as heat and freezing, as well as direct sunlight for at least 48 hours before, during and for the life of the installation.
- Ensure concrete moisture testing is conducted or scheduled to be conducted prior to flooring installation.
- Ensure all vents, walls, moldings and/or doorways are protected with tape or plastic prior to installation.
- Test substrate for porosity in order to determine the installation method necessary.
- Do not proceed with installation until all conditions have been met.

3. STORAGE, ACCLIMATION & SERVICE ENVIRONMENT

- Ensure material is adequately stored at temperatures between 65° F (19° C) and 85° F (30° C) prior to installation.
- This product is designed, manufactured and tested to perform at constant temperatures, not fluctuating more than 4° from normal selected service temperatures from the allowable 65° F (19° C) - 85° F (30° C) range.
- During acclimation, the material must be in the installation area with the HVAC system functional and operating at desired service temperatures for a period of 48 hours prior to installation, during the installation and for the service life of the installation afterwards.
- It is recommended maintaining an ambient relative humidity between 40% and 60% for a period of 48 hours prior to installation, during the installation and for the service life of the installation afterwards.
- If the material will be installed outside of the above acclimation and service temperature ranges contact Technical Services for more detailed installation recommendations.
- Do not proceed with installation until all conditions have been met.

4. SUBSTRATE PREPARATION

In regards to substrate preparation when mechanical sanding, grinding, shot blasting and vacuuming always follow the Resilient Floor Covering Institute's (RFCI) "Recommended Work Practice for Removal of Existing Floor Covering and Adhesives", and all applicable local, state, federal and OSHA requirements in regards to Asbestos and Silica containment regulations.

All substrates must be prepared according to ASTM F710 or ASTM F1482, as well as applicable ACI and RFCI guidelines. Substrates must be clean, smooth, permanently dry, flat, and structurally sound. Substrates must be free of visible water or moisture, dust, sealers, paint, sweeping compounds, curing compounds, residual adhesives and adhesive removers, concrete hardeners or densifiers, solvents, wax, oil, grease, asphalt, visible alkaline salts or excessive efflorescence, mold, mildew and any other extraneous coating, film, material or foreign matter.

All substrates must have any and all existing adhesives, materials, contaminants or bond-breakers mechanically removed via scraping, sanding, grinding or buffing with a 25 grit DiamaBrush Prep Plus tool prior to adhesive installation. In extreme situations, shot-blasting may be required. Mechanical preparation must expose at least 90% of the original substrate. Following cleaning and removal, all substrates must be vacuumed with a HEPA approved vacuum and flat vacuum attachment to remove all surface dust. ***Sweeping without vacuuming will not be acceptable.***

Do not use solvent/citrus based adhesive removers prior to installation.

CONCRETE SUBSTRATES

All concrete must have a minimum compressive strength of 3500 PSI and be prepared in accordance with ASTM F710. When flooring is being installed directly over concrete, concrete surfaces that have an ICRI Concrete Surface Profile (CSP) over 4 should be smoothed with a self-leveling underlayment or a patch to prevent imperfections from telegraphing through flooring materials.

All substrates must be tested per ASTM F3191 to confirm porosity. Use a pipette or equivalent to conduct three tests by placing a .05 mL (1/4" wide) droplet of clean, potable water onto the surface. If the substrate absorbs water within 60 seconds, the substrate is considered porous. Conduct 3 tests for the first 3000 sq. ft. and one for each additional 2000 sq. ft., at least one per room. All other substrates that do not meet this requirement are considered non-porous. Ensure that all non-porous substrates are not contaminated with any aforementioned contaminants.

In addition to ASTM F2170 Relative Humidity Testing, existing concrete that has previously had floor covering installed on all grade levels must be tested in accordance with ASTM F1869, using Calcium Chloride test kits, to quantitatively determine the Moisture Vapor Emissions Rate (MVER) of the concrete.

If ASTM F2170 or ASTM F1869 test results exceed the prescribed limits, a moisture mitigation product, such as Excelsior MM-100 Moisture Mitigation, must be installed prior to proceeding with installation.

RESINOUS SUBSTRATES

When installing directly over a resinous products, such as the Excelsior MM-100 or an epoxy coating, ensure that coating is dry to the touch and has cured for the prescribed length of time. Substrate must be clean, dry, sound and free of contaminates. Resinous substrates are considered non-porous – make sure adhesive can be used over non-porous substrates and follow all installation instructions and flash times for non-porous substrates.

GYPSUM BASED SUBSTRATES

Gypsum-based substrates must have a minimum compressive strength of 3500 PSI. Gypsum substrates that do not meet this requirement may have one coat of the Excelsior MM-100 installed to improve the top layer bonding strength of the substrate. Substrate must be structurally sound and firmly bonded to the subfloor below. Any cracked or fractured areas must be removed and repaired with a compatible patch or repair product. Follow instructions for installation over a gypsum substrate. New or existing gypsum substrates may require the substrate has a primer or sealer applied just prior to finished floor being installed. Follow all manufacturers' recommendations regarding preparation for resilient flooring installation.

WOOD SUBSTRATES

Wood substrates must be prepared in accordance with ASTM F1482. Prior to installation, moisture retardant sheeting with a maximum rating of 1.0 perm must be installed beneath the wood subfloor, overlapped at least 8". Other wood subfloor materials, such as OSB, lauan, particleboard, chipboard or cementitious tile backer boards, are not acceptable subfloors. Avoid preservative treated and fire-retardant plywood, as some may be manufactured with resins or adhesives that may cause discoloration or staining of the flooring. This also includes plywood sheathing designed for long lasting exposure to exterior climates. These also could contain resins/waxes that could stain or be considered bond breakers. Always refer to those manufactures recommendations. If the subfloor materials mentioned above are already installed or the wood substrate is old and not repairable, the use of multi-ply Underlayment Grade plywood at a minimum of ¼" thick with a fully sanded face will be required. Wood subfloor deflection, movement, or instability will cause the flooring installations to release, buckle or become distorted. As such, do not use plastic or resin filler to patch cracks. Do not use cement or rosin coated nails and staples or solvent-based construction adhesives to adhere the plywood. Only install over a properly constructed sleeper system (wood subfloor system over concrete, consult the technical department for further details) and do not install directly over Sturd-I-Floor panels.

METAL SUBSTRATES

Metal substrates must be thoroughly sanded/grinded and cleaned of any residue, oil, rust and/or oxidation. Substrate must be smooth, flat and sound.

Install flooring material within 12 hours after sanding/grinding to prevent re-oxidation. Excessive deflection in the metal floor can cause a bond failure between the adhesive and the metal substrate.

Metal substrates are considered non-porous – make sure adhesive can be used over non-porous substrates and follow all installation instructions and flash times for non-porous substrates.

EXISTING FLOORING SUBSTRATES

Existing rubber flooring and LVT, as well as the adhesives used to install them, must be completely removed from the substrate prior to installation. Existing VCT, VAT, quartz tile, solid vinyl tile, sheet goods, hardwood flooring, asphaltic materials and existing adhesives or adhesive residue must have a compatible cementitious patch or underlayment installed over the substrate prior to installation. Existing hardwood flooring requires suitable underlayment grade plywood be installed over the substrate.

Adhesive may be installed over existing stone flooring substrates, such as terrazzo, porcelain or ceramic tile. Ensure existing flooring is a single layer of material and that all materials are clean, dry, sound, solid, well adhered and free of site-applied finishes, waxes and/or contaminants. Any and all loose tiles must be removed and repaired or replaced.

All grout lines and irregularities must be filled and troweled flush with a suitable primer and patch such as the Excelsior NP-230 and CP-300 to prevent telegraphing of the existing floor. All existing flooring substrates that are outside of flatness tolerances that cannot be repaired with the Excelsior CP-300 patch should be leveled with the SU-310 self-leveling underlayment to achieve a smooth, flat substrate.

All existing flooring substrates must have any and all site-applied finishes and/or waxes completely removed prior to flooring installation in order to ensure a proper adhesive bond. For mechanical removal, use a low-speed buffer and 40-60 grit sandpaper. Properly prepared substrates should not have any remaining gloss or sheen. For chemical removal, ensure chemical treatments will not disrupt adhesion of the existing flooring to the substrate. Be sure to rinse the existing flooring adequately with clean, potable water to remove any and all chemicals from the surface of material.

Do not install flooring until any moisture on, between or below existing flooring has completely dried. Ensure all dust; dirt and debris are removed prior to flooring installation.

RADIANT HEATING SUBSTRATES

When installing flooring over a substrate that contains a radiant heating system, ensure the radiant heat is turned off 48 hours prior to installation and remains off during the entire installation. The radiant heat may be turned on 48 hours after installation and the normal operating temperature should be increased gradually over the course of 24 hours. Ensure the temperature of the radiant heating system does not exceed 85° F (29.5° C) and avoid making abrupt changes in radiant heating temperature.

4. CRACKS, JOINTS & VOIDS

All cracks, joints and voids, as well as the areas surrounding them, must be clean and free of dust, dirt, debris and contaminants and be repaired with a suitable cementitious patch.

Due to the dynamic nature of concrete slabs, manufacturer **cannot** warranty installations over expansion joints, cracks or other voids such as control cuts saw joints and moving cracks. Do not install flooring or use adhesives directly over any expansion joints.

All expansion joints should have a suitable expansion joint covering system installed to allow expansion joint to freely move.

6. INTERLOCKING INSTALLATION

Ensure substrate is suitably prepared prior to installation, as manufacturer is not responsible for substrates that have not been properly prepared and tested for moisture.

Interlocking tile is recommended to be loose-lay without adhesive, however adhesive can be used if required.

Ensure substrate is clean, dry and sound prior to installation. Square installation area using the 3-4-5 squaring rule or similar method to ensure acceptable installation and establish initial installation starting line. Some flooring products, colors and textures have latent and acceptable color and shade variations. Observe directional arrows on **back** of tile to ensure arrows are installed in the same direction. Dry-lay material prior to installation to verify that there are no visible defects, damages or excessive shading variations. For larger installations, material should be blended between cartons and pallets to ensure a uniform appearance. If there are concerns regarding shade or color variation, do not install material and consult sales agent and manufacturer's technical staff.

Whenever possible, avoid installing flooring seams directly over seams in the substrate. If possible, borders and perimeter pieces should be no less than ½" the width of the tile. Material should be no less than 1/8" from the wall to allow for expansion and so the tiles will not buckle.

Borders and other specialty cut tiles should be undercut to fit snugly, not tightly, against thresholds, transition strip, fixtures, door jambs or other obstacles; forcing incorrectly sized tiles into smaller areas will cause the tile to buckle.

Roll material with a 3 section, 100 lb. roller to ensure all tiles are properly interlocked, crossing in a perpendicular direction after initial roll. Use a hand roller in areas that cannot be reached with larger roller.

Visually inspect installation to ensure that material has not shifted and all seams are tight and flat. To finish open edges of interlocking tiles or areas intended to butt to another flooring material, use a straight edge to remove male ends of tile and install appropriate finishing accessory.

7. SQUARE EDGE INSTALLATION

Ensure substrate is suitably prepared prior to installation, as manufacturer is not responsible for substrates that have not been properly prepared and tested for moisture. All square edge tiles must be installed using adhesive. Ensure adhesive is approved for use with flooring material and the proper trowel type and size is used, as manufacturer is not responsible for any adhesion issues related to improper adhesive selection or usage.

Prior to installation, confirm material installation pattern and direction per design specifications or work order. Observe directional arrows on **back** of tile to ensure arrows are installed in the same direction. ***Install Square Edge tile in an ashlar or brick pattern to ensure tight seams and an overall ideal visual appearance.***

Inspect and dry lay all tiles before installing to verify that there are no visible defects, damages or excessive shading variations. Some flooring products, colors and textures have latent and acceptable color and shade variations. If there are concerns regarding shade or color variation, do not install material and consult a sales representative and manufacturer's technical staff.

Ensure substrate is clean, dry, and flat and sound prior to installation. Square the room using the 3-4-5 squaring rule or similar method to ensure acceptable installation and establish initial installation starting line. Dry-lay several tiles to establish the best layout for the installation area and facility and ensure equal tile sizes are used around the perimeter. Allow a 1/8" gap around the entire perimeter of the room to allow for expansion, ensuring gap is no wider than the trim, wall base or molding to be installed. Cut borders and other specialty pieces to fit snugly against or around walls, thresholds, transition strips, fixtures and other protrusions or accessories. Avoid forcing material tightly against vertical surfaces, as material may buckle.

Use a nail-down guide or equivalent along starting row to expedite wet-set installation. Apply adhesive according to instructions for specific product in use and observe adhesive flash times, if applicable. Ensure all adhesive working times are observed and followed. Be sure to follow instructions based on substrate porosity (porous or non-porous). Use the chart located on page 2 for reference.

Install material into adhesive and observe directional arrows on **back** of tile to ensure arrows are installed in the same direction, unless installing in a specific and pre-determined design, such as a quarter-turn design. Use a pyramid layout when installing tiles to eliminate run-off.

When installing into adhesive using a wet-set method, avoid walking or working on material until adhesive has cured for light foot traffic. Working on material that is installed into wet adhesive could cause adhesive to displace. When working off of material is not possible, use a kneeling board or equivalent to disperse weight evenly and prevent adhesive displacement. Pay close attention to working time to avoid adhesion issues. This may require installing material in smaller sections. Replace trowels at recommended intervals to maintain proper trowel ridge and spread rate.

Periodically lift material to ensure proper adhesive transfer and ensure adhesive has not surpassed the open time – adhesive should cover 90% of tile. Roll material with a 3 section, 100 lb. roller within 15 minutes after installation of each tile section, crossing in a perpendicular direction after initial roll. Use a hand roller in areas that cannot be reached with larger roller. Do not wait until completing the entire installation before rolling the adhesive; may surpass the open time and cure. Roll and cross roll a second time approximately 30 minutes after the initial rolling.

Visually inspect installation to ensure that material has not shifted and that adhesive has not been squeezed out of joints or compressed onto surface. Clean excessive adhesive or adhesive residue from the surface of the material per adhesive recommendations. Do not apply abrasive or solvent based cleaners directly to flooring material.

8. ICE RINK INSTRUCTION

Tuflex Force may be installed in and around ice rinks; however, certain precautions must be followed to ensure successful installation. Ensure substrate is clean, dry, and flat and sound prior to installation – give standing water or condensation time to dry prior to installation. Ensure substrate temperature is above 40° F (4° C) to allow adhesive to properly cure. Do not fill voids between the concrete slab and the ice slab, as this void is necessary for expansion and contraction. When butting directly to ice rink walls or boards, the Tuflex Force may

be used to bridge these voids. Due to the oval shape of most ice rinks and arenas, there may be several small cut tiles around the perimeter – ensure all small cut tiles are well adhered.

In areas where skate traffic is expected, ensure skate guards are worn to prevent damaging the tile.

9. INITIAL MAINTENANCE

It is required that initial maintenance is performed on Tuflex® Force® before use.

Ensure that adhesive has cured for recommended period of time prior to conducting initial maintenance. Remove any protective coverings prior to cleaning. Use dust mop and/or vacuum to remove any dirt, dust or debris from flooring.

Mix 2-4 ounces of Excelsior NC-900 Neutral Cleaner per gallon of clean, potable water. Use a clean mop to apply cleaning solution to floor and let stand for 5-10 minutes.

Using a low-speed Rotary floor machine (175 – 350 RPM) scrub floor while still wet using a 3M 5300 Blue Cleaning Pad. If flooring is heavily soiled, an additional cleaning may be required. Use an auto-scrubber, wet vacuum or clean mop to remove any and all excess cleaning solution. Rinse area with clean, cool water and allow floor to dry entirely. Ensure flooring area is clean and that all cleaning residue has been removed (this may require additional rinsing).

Do not use detergents, abrasive cleaners or “mop and shine” type products; these will damage, soften or discolor the flooring material. Do not use vacuums that have a beater bar or electric brooms with hard plastic bottoms or no padding, as this may cause discoloration, scratching and loss of sheen.

For further information regarding daily or routine maintenance, please consult the product care & maintenance document.

10. FINISH APPLICATION

If Tuflex Force will be installed in an area where regular maintenance procedures will not be performed, a floor finish must be applied. Ensure that initial maintenance has been conducted prior to applying floor finish. Flooring area must be free of dust, dirt, debris, adhesive or cleaning residues, mold release agents and any potential contaminants.

Apply Excelsior PF-960 Performance Finish per the installation instructions in 3-4 coats. If more of a semi-gloss appearance is desired apply 1-2 additional coats. Allow each coat to dry completely before applying additional coats.

For further information regarding finish application, please consult the product care & maintenance document.

11. FLOORING PROTECTION

Protect newly installed flooring with construction grade paper or protective boards, such as Masonite or Ram Board, to prevent flooring damage, especially by other trades. Limit usage and foot traffic according to the adhesive's requirements (see chart on page 2).

When moving appliances or heavy furniture, protect flooring from scuffing and tearing using temporary floor protection.

All furniture casters must be made of a soft material and must have a contact point of at least 1" in width to limit indentation and flooring damage. All rolling chairs or seating must have a resilient flooring chair pad installed over the finished floor to protect floor covering. All fixed furniture legs must have permanent felt or soft rubber floor protectors installed on all contact points to reduce indentation. Floor protectors must have a flat contact point of at least 1" in width and must cover the entire bottom surface of the furniture leg.

Ensure all furniture castors and chair legs are clean and free of any and all dirt and debris. Routinely clean chair castors and furniture legs to ensure that dirt or debris has not built up or become embedded in castors or floor protectors. Replace chair castors and floor protectors at regular intervals, especially if they become damaged or heavily soiled.

Place walk-off mats at outside entrances. Ensure mats are manufactured with non-staining backs to prevent discoloration.

12. WARRANTY

Flexco provides a 10 Year Limited Warranty along with a Lifetime Delamination Warranty.

For additional information, see associated warranty documents.

FOR PROFESSIONAL USE ONLY

PLEASE CONSULT ALL ASSOCIATED TECHNICAL DATA SHEETS, SAFETY DATA SHEETS, MAINTENANCE DOCUMENTS, AND WARRANTY INFORMATION PRIOR TO INSTALLATION.