**ALTRO TUNGSTEN**

**Resilient PVC-Free Slip Resistant Flooring**

SECTION 09657

**PART 1 GENERAL**

1.1 SUMMARY

1. Section Includes: This section includes labor, materials and other services necessary to complete resilient sheet flooring, slip resistant sheet vinyl flooring systems and accessories work. Conform with requirements of all Sections of Division 1, General Requirements, as it applies to the work of this Section, including but not limited to the following:
2. Coordination of start date and timeframe.
3. Coordination of substrate preparation.
4. Coordination of moisture and pH testing.
5. Coordination with moisture mitigation if required.
6. Coordination of proper plumbing fixtures for connections with flooring.
7. Floor installation and heat welding of all seams, horizontal and vertical.
8. Related Sections:
9. Section 03300 - Cast-in-Place Concrete: Concrete finishing.
10. Section 06100 - Rough Carpentry: Plywood floor sheathing.
11. Division 7 - Thermal and Moisture Protection.
12. Division 15 - Mechanical.

1.2 REFERENCES

1. **ASTM D 2047**, Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
2. **ASTM E 648/NFPA 253**, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
3. **ASTM E662**, Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
4. **ASTM F710**, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
5. **ASTM F 970**, Standard Test Method for Static Load Limit.
6. **ASTM F1482**, Standard Guide to Wood Underlayment Products Available for Use Under Resilient Flooring.
7. **ASTM F1303**, Standard Specification for Sheet Vinyl Floor Covering with Backing.
8. **ASTM F2170**, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
9. **(RFCI)** Resilient Floor Covering Institute
10. RFCI Standard Slab Moisture Test Method (Calcium Chloride Method) as a supplementary test method to ASTM F2170.
11. **Underwriters Laboratories of Canada (ULC)**
12. CAN/ULC-S102.2, Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies
13. **ASTM F 3010 Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings**
14. **DIN 51130 Slip Resistance Test**
15. **ACI 302.2R-06 Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials**
16. **RFCI Recommended Work Practices for Removal of Resilient Floor Covering**

1.3 SUBMITTALS

1. Product Data: Submit manufacturer’s current printed product literature, specifications, installation instructions, and field reports in accordance with Section 01330 - Submittal Procedures.
2. Shop Drawings: Submit shop drawings to indicate materials, details, and accessories in accordance with Section 01330 - Submittal Procedures including but limited to the following:
3. Submit a cut diagram indicating seam locations and roll direction. Use mitered seam layouts for corners when changing directions 180 degrees (e.g. when running material down corridors which bisect at a right angle), unless approved otherwise.
4. Samples: Submit duplicate 6" x 9" (152 mm x 228 mm) sample pieces of sheet material, 6" (152 mm) long [gulley edge] [cap strip] [joint cover strip] [cove former] in accordance with Section 01330 - Submittal Procedures.
5. Closeout Submittals: Submit the following:
6. Operation and Maintenance Data: Submit manufacturer’s operation and maintenance data for incorporation into manual specified in accordance with Section 01780 – Closeout Submittals. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.4 QUALITY ASSURANCE

1. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
	1. Training: Installer who has attended an Altro flooring installation training clinic or who has successfully installed Altro previously.
	2. Awarded flooring contractor must use in-house installers.
	3. Awarded flooring contractor must be able to provide recent Altro references with contacts.
2. Mock-ups: Install at project site a job mock-up using acceptable products and manufacturer approved installation methods, including concrete substrate testing.
	1. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
	2. Incorporation: Mock-up may be incorporated into final construction upon Owner’s approval.
3. Pre-installation Meeting: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer’s installation instructions, manufacturer’s warranty requirements, and installer qualifications.
4. Bond Test: Install multiple bond tests using 3’ x 3’ pieces of material adhered with the appropriate adhesive to verify quality of adhesion. Remove half of each piece after 24 hours, then the other half after 48 hours. To help assess resistance to indentation, place end user equipment onto a sample for 72 hours. Document all results.
5. Regulatory Requirements: Provide slip resistant sheet vinyl safety flooring in compliance with the following:
	1. Americans with Disabilities Act Architectural Guidelines (ADAAG)
	2. Occupational Safety and Health Administration (OSHA)

1.5 SITE CONDITIONS

1. Temperature Requirements: If storage temperature is below 65F (18C) or the floor temperature is below 50F (18C), the Altro Tungsten flooring product must be moved to a warmer place and allowed to reach this temperature before unrolling or installation. For further information, refer to current Altro Installation Practices and Quick Facts.
2. Maintain air temperature and structural base temperature at flooring installation area between 68F (20C) and 80F (26C) for 48 hours before, during and 24 hours after installation.

1.6 DELIVERY, STORAGE AND HANDLING

1. Ordering: Comply with manufacturer’s ordering instructions and lead time requirements to avoid construction delays.
2. Deliver, store and handle resilient flooring materials in accordance with Section 01610 - Basic Material Requirements.
3. Deliver materials in manufacturer’s original, unopened, undamaged containers with identification labels intact.
4. Store materials protected from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer.
5. Store rolls in dry locations. Stand rolls on end. Protect and secure rolls from falling.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Deposit all packaging materials in appropriate container on site for recycling or reuse.

.2 Avoid using landfill waste disposal procedures when recycling facilities are available.

.3 Keep all discarded packaging away from children.

1.8 WARRANTY

1. Warranty period for Altro Tungsten shall be 10 years commencing on date of substantial completion.

**PART 2 PRODUCTS**

2.1 SLIP RESISTANT SHEET FLOORING

.1 Resilient PVC-Free Slip Resistant Sheet Manufacturer: Tungsten by Altro.

1. CANADA: 6221 Kennedy Rd, Unit 1, Mississauga ON L5T 2S8

 Toll Free: 800.565.4658 Tel: 905.564.1330 Fax: 905.564.0750

.2 **Acceptable material:** Altro Tungsten (measurements and product weights given below are approximate): Slip Resistance .78/D .80/W, Thickness: 0.08” (2 mm); Roll Width: 6' 7" (2 m); Roll Length: 66' (20 m); Roll Weight: 220 lb (100 kg).

 **COLOUR**

Colour to be selected from current range found at [www.altrofloors.com](http://www.altrofloors.com)

1. **TUN** **(insert numeric colour code) (insert colour name)**

2.2 ACCESSORIES

 Including but not limited to:

1. **Vinyl welding rod**: Acceptable material:

.1 Altro Weld Rod

1. **Cove former**: Acceptable material, sized to suit application:

.1 Altro Cove former [20R - 24 mm (1") radius] [38R - 45 mm (1.75") radius].

1. **Gulley edge**: Acceptable material, vinyl, sized to suit application:

.1 Altro Gulley Edge [GA 35/25] [GE 35RE] [GE 25RE].

1. **Cap strip**: Acceptable material, sized to suit application, [Vinyl] [stainless steel]:

.1 Altro Cap Strip [C4] [C5] [C8] [C11].

1. **Subfloor Filler and Leveler**: Use only gray Portland cement-based “moisture tolerant” underlayments, and patching compounds. Use for filling cracks, holes or leveling. White gypsum materials are not acceptable.
2. **Metal edge strips**:

 .1 Aluminum extruded, smooth, [mill finish] stainless steel with lip to extend over flooring.

1. **Adhesives:**
	1. **Leveling and Patching Compounds**: Latex-modified, moisture resistant, silicate free, Portland cement based or blended hydraulic-cement-based formulation.
	2. **Adhesives**:
		1. Ecofix 20- Hard set for heavy rolling loads
		2. Ecofix 25- Acrylic general adhesive
		3. Altrofix 30- 2-part polyurethane for areas prone to moisture
		4. Altrofix 31- 2-part polyurethane fast set adhesive

**PART 3 EXECUTION**

3.1 EXAMINATION

* + - 1. Compliance: Comply with manufacturer’s product data, including product technical bulletins, product catalog, installation instructions found at [www.altrofloors.com](http://www.altrofloors.com).
			2. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer’s instructions.

3.2 PREPARATION

1. Remove substrate paint, coatings and other substances that are incompatible with adhesives or contain soap, wax, oil, solvents, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
2. Permanent and non-permanent markers, pens, crayons, and paint shall not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and stain the flooring material.
3. Slip Resistant flooring shall be installed over subfloors conforming to ASTM F710 for concrete and other monolithic floors or ASTM F1482 for wood subfloors.
4. Always conduct moisture tests per ASTM F-2170 on all concrete slabs regardless of age or grade level. ASTM F-2170 Internal Relative Humidity (IRH) test results must not exceed 90%. Alkalinity Testing per ASTM F710 with an acceptable range of 7-9.9 pH.
5. Do not proceed with work until results of moisture condition tests are acceptable.
6. When patching, a ***moisture tolerant*** patching compound must always be used.
7. Contingency for High Moisture Readings in Concrete:
	1. If at the time of installation the moisture readings are in excess of Altro’s recommendations, the General Contractor shall employ a means of Moisture Mitigation. This includes, but is not limited to, the following methods:
8. Application of a Moisture Reduction Barrier (MRB)
9. Temporary use of dehumidification equipment.

.3 Postponing of the flooring installation start time.

.4 A budget should be provided to the general contractor for use of an MRB

1. Wood Subfloors: Confirm wood subfloors meet the following requirements.

Must conform to ASTM F-1482 Standard Guide to Wood Substrates.

Wood subfloors shall have a minimum 18 inch (45.7 cm) of cross-ventilated space beneath the bottom of the joist. The floor must be rigid, free of movement.

Single wood and tongue and groove subfloors shall be covered with a minimum 1/4 inch (6.4 mm), 3/8 inch (9mm) or 1/2 inch (12.7 mm) APA approved underlayment plywood as follows.

Use 1/4 inch (6.4 mm) thick underlayment panels for boards with a face width of 3 inches (76 mm) or less.

Use 1/2 inch (12.7 mm) thick underlayment panels for boards with a face width wider than 3 inches (76 mm).

Do not install directly on OSB (Oriented Strand Board), particleboard, chipboard, luan or composite type panels unless specifically designed and approved by the panel manufacturer for use as a resilient flooring underlayment.

3.3 INSTALLATION

1. Installation: Install Altro Tungsten in accordance with the current posted Altro Installation Practices at [www.altrofloors.com](http://www.altrofloors.com), Downloads, Technical Documents, Installation Guides. All Seams shall be heat welded with Altro Weldrod™ only. Failure to install Altro Tungsten flooring in accordance with recommended procedures will void the Altro Limited Product Warranty.
2. Drains: Fit Altro Safety and Altro Slip Resistant Flooring and mechanically fasten to drain outlets to ensure a permanent, watertight installation. The installation of Altro flooring in a wet environment is a system installation. All circular drain covers must be modified in the field or specified by the architect to be Surface-Membrane Clamping Style Drains and installed per the instructions in the Altro Flooring installation guide. The Gulley Edge/Angle, AltroMastic, Cove Former, and Cap Strip Accessories are necessary accessories for a water-tight and manufacturer-compliant installation.
	1. **New Round Drains**: Install round flash clamping ring type drains to accommodate Altro safety flooring. Install drains to fit flush with surrounding floor surface. Acceptable drain manufacturers and drain types include Zurn Z 415-H, Mifab F1100-FC, Wade 1100-FC, Josam 30000-AD, Watts FD 100-FC and Smith 2051. Please refer to Altro’s current Installation Guide for approved drain manufacturers and styles, [www.altrofloors.com](http://www.altrofloors.com), Downloads, Technical Documents, Installation Guides. If Surface-Clamping Style Drains are not utilized, the Flooring Sub-Contractor MUST modify the drain covers to mechanically fasten flooring to drain outlet.
	2. **Existing Drains:** When existing drains are to be used, provide mechanically fastened stainless steel drain rings over all-round drain outlets. Fit rings over slip resistant sheet vinyl and permit inside diameter that will allow clean-out plate to be removed after installation. Drill into concrete to accommodate lead or plastic anchors. Screw drain rings to create a tight seal with beveled head stainless steel screws.

* 1. **Square and Rectangular Drains and Floor Sinks**: Install Altro Gully Edge GE25RE or GE35RE around perimeter of drain which has been set in concrete in accordance with Altro Installation Guide. Do not use Altro Gully Edge around drains set in wood floors. Provide stainless steel strips, mechanically fastened with stainless steel screws. Use stainless steel strips in other areas where it is not practical to use Altro Gully Edge.
1. Coved Installation: Where Altro flooring is coved up wall surfaces and other abutments, installation shall be in accordance with Altro Installation Practices using the following accessories:
	1. At standard wall finishes: Use Altro C5 vinyl cap strip to accommodate sheet vinyl to a height as indicated; adhere with contact tape.
	2. At ceramic tile, Altro Whiterock semi-rigid wall cladding or FRP paneling: Use Altro C8 Vinyl Cap Tile Strip or C4 cap, respectively.
	3. When coving up the wall; at juncture of vertical and horizontal surfaces: Use Altro Vinyl Cove Former 901: install with contact tape.
	4. Top set cove base: Install in accordance with manufacturer’s instructions.

3.4 CLEANING

**Specifier Note: Altro Tungsten flooring is unaffected by surface water and most chemicals which do not have a solvent action on vinyl. Certain organic solvents and chemicals, including asphalt, can cause staining, as might some antioxidants found in certain types of rubber used in mats, wheels and tires. Acids and dyes may affect the color, which should be selected accordingly. Contact Altro for information about the effect of chemicals on Altro flooring.**

1. Cleaning: Remove temporary coverings and protection of adjacent work areas.
2. Repair or replace damaged installed products.
3. Clean installed products in accordance with manufacturer’s instructions prior to Owner’s acceptance.
4. Current recommended maintenance procedures can be found on the Altro website at [www.altrofloors.com](http://www.altrofloors.com), Downloads, Technical Documents, Maintenance Guides; including the Illustrated Cleaning Guide.

.2 Protection:

1. Sweep or vacuum all construction debris and dust first, then clean the flooring with AltroClean 44 /AltroClean 44 Plus using an auto scrubber.
2. Cover and protect finished installation from damage from other trades using a non-staining, temporary floor protection system, such as reusable textured plastic sheeting.
3. Never use tapes on the surface on the finish flooring, Sharpies, pens, crayons or construction markers on either the finish flooring or the substrate.
4. No traffic for 24 hours after installation, unless approved by Altro technical.
5. No heavy traffic, rolling loads, or furniture placement for 72 hours after installation.
6. Wait 72 hours after installation before performing initial cleaning. Start a regular maintenance program after the initial cleaning as recommended by manufacturer

3.5 PROTECTION

1. Cover and protect finished installation from damage from other trades using a non-staining, temporary floor protection system, such as a reusable textured plastic sheeting.
2. Altro Tungsten should be covered and protected from all other trades during construction with a suitable non-staining protective covering without taping to the surface of the flooring.

END OF SECTION