

Specifier Note: This Specification has been created to assist in preparing a Project or Master Specification. In accordance with Construction Specifications Institute (CSI)'s MasterFormat®, this Specification can be used with most Master Specifications following simple editing.

Specifier Note: The enclosed requirements are intended for indoor installations over concrete (or in some cases wood). If the provisions described herein are adopted for installations outdoors or over asphalt, Mondo's Warranty will be null and void and the Specifier will be held liable.

Specifier Note: This Specification describes the resilient athletic flooring to be installed. The number and title of the section may be changed, if the Specifier deems necessary, but in any circumstance it will belong to the general CSI Section 09 65 00: Resilient Flooring.

SECTION 09 65 66

Resilient Athletic Flooring

1 PART 1 – GENERAL

1.1 SUMMARY

1.1.1 Products Supplied

- A. Resilient magnetic athletic tiles (hereinafter referred to as resilient athletic flooring).
- B. Accessories required for installation, athletics, maintenance and repair.

1.1.2 Related Requirements

Specifier Note: The following CSI sections serve as a guide to what is essential information needed to determine the acceptability of the site conditions required for the installation of resilient athletic flooring. The Specifier may choose to include other sections he/she deems necessary.

- A. Section 02 25 00 – Existing Material Assessment
- B. Section 03 05 00 – Common Work Results for Concrete
- C. Section 06 05 00 – Common Work Results for Wood, Plastics, and Composites
- D. Section 07 05 00 – Common Work Results for Thermal and Moisture Protection
- E. Section 07 10 00 – Dampproofing and Waterproofing

1.2 REFERENCES

1.2.1 ASTM International (ASTM)

- A. ASTM E1643: Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
- B. ASTM E1745: Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
- C. ASTM F386: Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces.
- D. ASTM F710: Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
- E. ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

- F. ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

1.2.2 European Committee for Standardization (CEN)

- A. EN 1081: Resilient floor coverings - Determination of the electrical resistance.
- B. EN 1516: Surfaces for sports areas - Determination of resistance to indentation.
- C. EN 1517: Surfaces for sports areas - Determination of resistance to impact.
- D. EN 1815: Resilient and laminate floor coverings - Assessment of static electrical propensity.
- E. EN ISO 2813: Paints and varnishes - Determination of gloss value at 20°, 60° and 85°.
- F. EN ISO 5470: Rubber (or plastics-coated fabrics) - Determination of abrasion resistance. Part 1: Taber abrader.
- G. EN 12235: Surfaces for sports areas - Determination of vertical ball behavior.
- H. EN 12667: Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance.
- I. EN 13501: Fire classification of construction products and building elements. Part 1: Classification using data from reaction to fire tests.
- J. EN 13893: Resilient, laminate and textile floor coverings - Measurement of dynamic coefficient of friction on dry floor surfaces.
- K. EN 14808: Surfaces for sports areas - Determination of shock absorption.
- L. EN 14809: Surfaces for sports areas - Determination of vertical deformation.
- M. EN 13036: Road and airfield surface characteristics. Test methods - Part 4: Method for measurement of slip/skid resistance of a surface: The pendulum test.

1.2.3 International Organization for Standardization (ISO)

- A. ISO 105: Textiles - Tests for colour fastness. Part B02: Colour fastness to artificial light: Xenon arc fading lamp test.
- B. ISO 4649: Rubber, vulcanized or thermoplastic - Determination of abrasion resistance using a rotating cylindrical drum device.
- C. ISO 7619: Rubber, vulcanized or thermoplastic - Determination of indentation hardness. Part 1: Durometer method (Shore hardness).
- D. ISO 9001: Quality Management Systems - Requirements.
- E. ISO 10140-3: Acoustics - Laboratory measurement of sound insulation of building elements. Part 3: Measurement of impact sound insulation.
- F. ISO 10874: Resilient, textile and laminate floor coverings – Classification.
- G. ISO 23999: Resilient floor coverings - Determination of dimensional stability and curling after exposure to heat.
- H. ISO 24343-1: Resilient and laminate floor coverings - Determination of indentation and residual indentation. Part 1: Residual indentation.
- I. ISO 24344: Resilient floor coverings - Determination of flexibility and deflection.
- J. ISO 26987: Resilient floor coverings - Determination of staining and resistance to chemicals.

1.3 SUBMITTALS

Specifier Note: The following are typical submittals. The Specifier may choose to include other submittals he/she deems necessary.

1.3.1 Action Submittals

- A. Provide current printed data sheets for all Products Supplied.
- B. Provide samples, 6 inches x 6 inches, for verification of such characteristics as color and surface texture of each specified resilient athletic flooring product.
- C. As necessary, provide shop drawings prepared for project illustrating layouts, details, dimensions and other data.

1.3.2 Informational Submittals

- A. Provide Manufacturer's current printed base surface preparation guidelines.
- B. Provide Manufacturer's current printed installation guidelines for Products Supplied.

1.3.3 Closeout Submittals

- A. Provide Manufacturer's current printed maintenance guidelines for Manufactured Product.
- B. Provide Manufacturer's current printed standard warranty for Manufactured Product.

1.3.4 Maintenance Material Submittals

- A. Provide extra stock materials from original dye lots, for use in facility operations and maintenance (approximately 2% of the total floor surface for each color, surface texture and format of Manufactured Product).

1.4 QUALITY ASSURANCE

- A. Manufacturer must be certified ISO 9001.
- B. Manufactured Product must have undergone a vulcanization process; factory lamination should not be accepted as equivalent.
- C. Manufacturer must have a minimum of fifteen (15) years of experience in the manufacturing of prefabricated rubber athletic flooring.
- D. Surfacing Contractor to be recognized and approved by the Manufacturer.
- E. Installer must be approved by the Surfacing Contractor and must have performed installations of the same scale in the last three (3) years.

Specifier Note: Specify mock-up dimensions as instructed by Owner or Architect.

- F. Installation of mock-up is highly recommended and must be deemed acceptable by Owner and Architect. Mock-up is to be installed following the same procedures and utilizing the same specified materials that will be used for the actual project.

- Mock-up size: [XX in x XX in (XX cm x XX cm)].

1.5 DELIVERY, STORAGE AND HANDLING

- A. Products Supplied must be delivered in Manufacturer's original, unopened and undamaged packaging with identification labels intact.
- B. Products Supplied must be protected from exposure to harmful weather conditions and must be safely stored on a clean, dry, flat surface. Store tiles of resilient athletic flooring on a flat surface, carefully protecting corners and edges.

- C. Climate controlled storage is recommended. Storage temperature must not be below 55°F (13°C) and must not exceed 100°F (38°C).
- D. Avoid storing resilient athletic flooring for extended periods of time or additional material trimming may be required.
- E. Products Supplied need not suffer damage during handling (i.e. dents/scratches, edge chipping, excessive warping, etc.).

1.6 SITE CONDITIONS

- A. The General Contractor or Construction Manager shall be responsible for ensuring all site conditions meet the requirements of the Manufacturer, as referenced herein at sections 3.2 and 3.3.
- B. Concrete slabs, on or below grade, must be installed over a permanent effective vapor retarder, respecting current versions of the standard practice ASTM E1643 and the standard specification ASTM E1745. The vapor retarder must be placed directly underneath the concrete slab, above the granular fill, as per Manufacturer's instructions. The vapor retarder must have a perm rating of 0.1 or less and must have a minimum thickness of 10 mil (0.010 in).
- C. No sealers or curing compounds are applied to or mixed into the concrete (refer to Section 03 05 00 – Common Work Results for Concrete of Division 3).
- D. Installation of the resilient athletic flooring to be carried out no sooner than the specified curing time of the concrete (normal density concrete curing time is approximately 28 days for development of design strength, having a minimum 3500 psi in compressive strength). Refer to current version of ASTM F710 for additional information.
- E. Concrete surface must be free of all contaminants that can inhibit bond (paint, wax, dust, oil or grease, sealer, curing compound, solvent, asphalt, old adhesive residues, etc.). All contaminants must be removed from the surface via mechanical abatement. Use of abatement chemicals is not recommended.
- F. Concrete must have a smooth finish, proper density and be highly compacted with a tolerance of 1/8th of an inch in a 10 foot radius (3.2 mm in 3.05 m radius). Floor Flatness (FF) and Floor Levelness (FL) numbers are not recognized.
- G. Moisture and alkalinity tests must be performed on all concrete substrates, under in-service conditions. It is recommended to turn on the HVAC unit prior to performing moisture testing, in order to ensure stable testing conditions and accurate results. The concrete's surface pH should be between 7 and 10. Relative humidity of the concrete slab must not exceed 85%, in accordance with ASTM F2170 (in situ probes). Moisture vapor emissions from the concrete slab must not exceed the tolerance of the adhesive specified, in accordance with ASTM F1869 (anhydrous calcium chloride).
- H. If installing over a wood base, ensure exterior grade plywood with at least one good side, such as: APA (Engineered Wood Association) Exterior grade plywood (A-A Exterior, A-B Exterior or A-C Exterior) and CANPLY (Canadian Plywood Association) Exterior certified plywood (Canada: Grade G2S A-A or G1S A-C. USA: G2S A-A, A-B, B-B, or G1S A-C, B-C). There must be proper underfloor ventilation, plywood must be dry and should have a moisture content ranging between 6 and 12%, when measured with a quality wood moisture meter (electronic hygrometer).
- I. Room and concrete temperature must be maintained within the recommended range of 65°F to 86°F (18°C to 30°C), 48 hours prior to installation, during the installation, and 48 hours after the installation. Recommended ambient humidity control level is between 35 to 55%.
- J. Installation of resilient athletic flooring will not commence until the building is enclosed and all other trades have completed their work. It is the General Contractor or Construction Manager's responsibility to maintain a secure and clean working area before, during and after the installation of the resilient athletic flooring.

1.7 LIMITED WARRANTY

- A. The resilient athletic flooring is warranted to be free from manufacturing defects for a period of one (1) year from the date of shipment from the Manufacturer.
- B. The resilient athletic flooring is warranted against excessive wear under normal usage for a period of ten (10) years from the date of shipment from the Manufacturer.
- C. Refer to current copy of Manufactured Product’s Limited Warranty for all terms and conditions.

2 PART 2 – PRODUCTS

2.1 MANUFACTURED PRODUCT

2.1.1 Manufacturer

- A. Mondo Luxembourg S.A.: Z.I. Foetz - Rue de l’Industrie, L-3895 Foetz, Luxembourg.

2.1.2 Description

- A. Zone-It is prefabricated multipurpose rubber athletic flooring with magnetic receptive properties, calendered and vulcanized, with a base of natural and synthetic rubbers, stabilizing agents and pigmentation, as manufactured by Mondo Luxembourg S.A. or approved equal.
- B. Health-Conscious Production: Zone-It is manufactured without BPA (bisphenol A), formaldehyde, halogen, heavy metal, isocyanate and phthalate.
- C. Manufactured in two layers which are vulcanized together. The shore hardness of the top layer will be greater than that of the bottom layer; shore hardness of layers to be recommended by the Manufacturer and the limits specified.
- D. Thickness: 0.236 in. (6 mm).
- E. Colors: Provided in standard grey color.
- F. Surface Texture: Smooth.
- G. Format: Available in tiles that are 36” x 36” (91.35 cm x 91.35 cm).

2.1.3 Performance

Specifier Note: Results may vary slightly between production runs, due to manufacturing tolerances and testing methods/equipment used by laboratories during analysis. However, Manufactured Product must meet the minimum requirements listed.

- A. Performance of Manufactured Product to conform to the following criteria:

Performance Criteria	Test Methods	Requirements	Results*
Thickness	ASTM F386	6 mm (±0.3 mm)	6 mm (±0.3 mm)
Vertical Electrical Resistance (R ₁)	EN 1081	-	≥10 ¹⁰ Ohm
Resistance to Indentation	EN 1516	-	0.05 mm
Resistance to Impact	EN 1517	-	≤0.5 mm (no damage)
Electrostatic Propensity	EN 1815	<2 kV (Antistatic)	In Conformity
Specular Gloss	EN ISO 2813	-	≤30%
Abrasion Resistance	EN ISO 5470-1 (H18 wheels, 1kg, 1000 cycles)	-	≤500 mg
Vertical Ball Behavior	EN 12235	-	≥98%

Performance Criteria	Test Methods	Requirements	Results*
Thermal Conductivity	EN 12667	-	0.26 W/mK
Thermal Resistance	EN 12667	-	0.023 M ² K/V
Fire Classification	EN 13501-1	-	Cfl-s2
Dynamic Coefficient of Friction	EN 13893	≥0.3	In Conformity (DS)
Shock Absorption	EN 14808		8 %
Vertical Deformation	EN 14809		≤0.5 mm
Slip/Skid Resistance (Dry)	EN 13036-4	-	85
Color Fastness to Artificial Light	ISO 105-B02 (met. 3)	Blue Scale ≥6 degree Grey Scale ≥3 degree	In Conformity
Abrasion Resistance	ISO 4649 (met. A, 5 N load)	≤250 mm ³	≤200 mm ³
Hardness	ISO 7619-1	≥75 Shore A	In Conformity
Improvement in Footfall Sound Absorption	ISO 10140-3	-	14.5 dB
Classification	ISO 10874	-	Class 21-23/31-34
Dimensional Stability	ISO 23999	≤0.4%	In Conformity
Residual Indentation (after static loading)	ISO 24343-1	≤0.20 mm	0.15 mm
Flexibility (20 mm diameter mandrel)	ISO 24344 (met. A)	No Fissuring	No Fissuring
Effects of Stains	ISO 26987	-	Not Affected**

*Results obtained from manufacturing controls can vary between production lots and do not constitute representations or warranties as to any particular production lot. Mondo reserves the right to modify product design and/or specifications at any time without notice.

**When tested by means of detergents specifically used for rubber flooring.

2.1.4 Limitations

- A. Unsuitable for use in areas where repeated heavy impacts to the surface are anticipated; consult the Technical Department at Mondo America, Inc. for recommendations in such areas.

2.1.5 Materials

- A. Provide Zone-It resilient athletic flooring manufactured by Mondo Luxembourg S.A. or approved equal.
- B. Provide resilient athletic flooring as specified in section 2.1.2 Description.

2.2 ACCESSORIES

Specifier Note: Accessories should be specified in accordance with the project requirements.

- A. Provide adhesive certified by Manufacturer: Mondo PU 105 (polyurethane). For suitability, recommendations and use, please refer to Manufacturer's current printed adhesive guidelines. In some cases, Mondo EP 55 (epoxy) may be used in areas that have not been specified to receive Everlay, and that will not be subject to surface impacts (such as falling free weights) or heavier dynamic loads (such as bleachers).
- B. Portland cement based patching or leveling compound to be supplied or recommended/approved by Manufacturer.
- C. When specified, Zone-It Magnetic Kit to be supplied or recommended/approved by Manufacturer.

3 PART 3 – EXECUTION

3.1 INSTALLERS

- A. Refer to section 1.4 of this document for information on installers.

3.2 EXAMINATION

Specifier Note: The following must be ensured prior to installation of resilient athletic flooring.

- A. Ensure that concrete slabs, on or below grade, are installed over a permanent effective vapor retarder, respecting current versions of the standard practice ASTM E1643 and the standard specification ASTM E1745. The vapor retarder must be placed directly underneath the concrete slab, above the granular fill, as per Manufacturer's instructions. The vapor retarder must have a perm rating of 0.1 or less and must have a minimum thickness of 10 mil (0.010 in).
- B. Installation of the resilient athletic flooring to be carried out no sooner than the specified curing time of the concrete (normal density concrete curing time is approximately 28 days for development of design strength, having a minimum 3500 psi in compressive strength). Refer to current version of ASTM F710 for additional information.
- C. Ensure that no sealers or curing compounds have been applied to or mixed into the concrete (refer to Section 03 05 00 – Common Work Results for Concrete of Division 3).
- D. Ensure that concrete surface is free of any contaminant that could inhibit bond (paint, wax, dust, oil or grease, sealer, curing compound, solvent, asphalt, old adhesive residues, etc.). All contaminants must be removed from the surface via mechanical abatement. Use of abatement chemicals is not recommended.
- E. Confirm concrete has a smooth finish, proper density and is highly compacted with a tolerance of 1/8th of an inch in a 10 foot radius (3.2 mm in 3.05 m radius). Floor Flatness (FF) and Floor Levelness (FL) numbers are not recognized.
- F. Moisture and alkalinity tests must be performed on all concrete substrates, under in-service conditions. It is recommended to turn on the HVAC unit prior to performing moisture testing, in order to ensure stable testing conditions and accurate results. The concrete's surface pH should be between 7 and 10. Relative humidity of the concrete slab must not exceed 85%, in accordance with ASTM F2170 (in situ probes). Moisture vapor emissions from the concrete slab must not exceed the tolerance of the adhesive specified, in accordance with ASTM F1869 (anhydrous calcium chloride).
- G. If installing over a wood base, ensure exterior grade plywood with at least one good side, such as: APA (Engineered Wood Association) Exterior grade plywood (A-A Exterior, A-B Exterior or A-C Exterior) and CANPLY (Canadian Plywood Association) Exterior certified plywood (Canada: Grade G2S A-A or G1S A-C. USA: G2S A-A, A-B, B-B, or G1S A-C, B-C). There must be proper underfloor ventilation, plywood must be dry and should have a moisture content ranging between 6 and 12%, when measured with a quality wood moisture meter (electronic hygrometer).
- H. Ensure room and concrete temperature are maintained within the recommended range of 65°F to 86°F (18°C to 30°C), 48 hours prior to installation, during the installation, and 48 hours after the installation. Recommended ambient humidity control level is between 35 to 55%.
- I. Installation of resilient athletic flooring will not commence until the building is enclosed and all other trades have completed their work. Ensure a secure and clean working area before, during and after the installation of the resilient athletic flooring.

3.3 PREPARATION

Specifier Note: The surface of the concrete (or wood when specified) is to be prepared according to Manufacturer's current printed guidelines; it is recommended that the Specifier review said guidelines. A copy of the base surface

preparation guidelines can be obtained from the Technical Department at Mondo America, Inc. The guidelines are considered common practice for the preparation and verification of base surfaces that will receive resilient athletic flooring, and as such should not be omitted or altered in any case.

- A. Prepare base surface in accordance with Manufacturer's current printed guidelines.

3.4 INSTALLATION

Specifier Note: Products Supplied are to be installed following their current printed guidelines; it is recommended that the Specifier review said guidelines. Copies of all installation guidelines for Products Supplied can be obtained from the Technical Department at Mondo America, Inc. Installation procedures may be altered to accommodate special project needs, as deemed necessary by the Specifier and after he/she has consulted the Technical Department at Mondo America, Inc. to ensure suitability.

- A. Install tiles of resilient athletic flooring following Manufacturer's current printed guidelines.
- B. Install all accessories following Manufacturer's current printed guidelines.

3.5 REPAIR

- A. Refer to section 1.3.4 for extra stock materials.
- B. Repair material must come from the same original dye lot as the Manufactured Product initially installed.
- C. Repairs are to be performed by Surfacing Contractor's qualified installers/technicians only.

3.6 CLEANING

- A. Always wait at least a minimum of 72 hours after the resilient athletic flooring has been completely installed before performing initial maintenance.
- B. Always maintain the resilient athletic flooring following Manufacturer's current printed guidelines.

3.7 PROTECTION

- A. As needed, protect resilient athletic flooring with 1/8" Masonite during and after the installation, prior to acceptance by the Owner.