

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

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

Specifier Note: This Guide 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 Athletic Flooring.
- B. Accessories required for installation, 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 D412: Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.
- B. ASTM D2047: Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as measured by the James Machine.
- C. ASTM D2240: Standard Test Method for Rubber Property—Durometer Hardness.
- D. ASTM D3389: Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform Abrader).

- E. ASTM E492: Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine.
- F. ASTM E648: Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
- G. 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.
- H. ASTM E1745: Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
- I. ASTM E2179: Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors.
- J. ASTM F386: Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces.
- K. ASTM F710: Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
- L. ASTM F925: Standard Test Method for Resistance to Chemicals of Resilient Flooring.
- M. ASTM F1514: Standard Test Method for Measuring Heat Stability of Resilient Flooring by Color Change.
- N. ASTM F1515: Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change.
- O. ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- P. ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
- Q. ASTM F2772: Standard Specification for Athletic Performance Properties of Indoor Sports Floor Systems.
- R. ASTM F3010: Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings.
- S. ASTM F3311: Standard Practice for Mat Bond Evaluation of Performance and Compatibility for Resilient Flooring System Components Prior to Installation.

1.3 SUBMITTALS

Specifier Note: The following are typical submittals. The Specifier may choose to include other submittals he/she deems necessary. Technical and warranty information is available for download at www.mondoworldwide.com or may be obtained from the Technical Department at Mondo America, Inc. (United States 1-800-361-3747 • Canada 1-800-663-8138).

1.3.1 Action Submittals

- A. Upon Owner's request, provide a copy of Original Equipment Manufacturer (OEM)'s ISO 9001 certificate.
- B. Provide Manufacturer's current printed technical data sheet (TDS) and guide specification for Products Supplied.
- C. Provide one (1) sample of each specified Manufactured Product, 6 inches x 6 inches, for verification and approval of such characteristics as its surface color and texture.
- D. As necessary, General Contractor to provide shop drawings prepared for the project that illustrate layouts, details, dimensions and other pertinent data useful to the Flooring Contractor.

1.3.2 Informational Submittals

- A. Provide Manufacturer's current printed substrate 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 registered (numbered) warranty certificate for Manufactured Product installed, per the current terms and conditions printed in Manufacturer's Limited Material Warranty (refer to section 1.7).

1.3.4 Maintenance Material Submittals

- A. It is highly recommended to purchase extra stock material from the original dye lot used, for the purpose of facility operations and maintenance (approximately 2% of the total floor surface for each color of Manufactured Product specified).

1.4 QUALITY ASSURANCE

- A. Manufacturer must be certified ISO 9001.
- B. Manufacturer must have a minimum of fifteen (15) years of experience in the manufacturing of prefabricated resilient rubber flooring for indoor sports.
- C. Flooring Contractor to be recognized and approved by the Manufacturer.
- D. Flooring Contractor shall be fully acquainted with the existing facility and utilities and shall fully understand the difficulties and restrictions attending the execution of the work under contract. Flooring Contractor is responsible for immediately advising the Owner, in writing, of any restrictions or anticipated difficulty.
- E. Installer must be approved by the Flooring Contractor and must have performed installations of the same scale in the last three (3) years.
- F. Upon Owner's request, specify materials needed for mock-up installation; always follow the same procedures and use the same materials that have been specified for the actual project. The Owner will be responsible for deeming the mock-up acceptable.

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. Avoid storing Manufactured Product for extended periods of time or additional material trimming may be required.
- D. Climate controlled storage is recommended. Storage temperature must not be below 40°F (4°C) and must not exceed 100°F (38°C). Acclimate all materials before use, ensuring they are delivered to the project site a minimum of 24 hours before work is scheduled to begin.
- E. Products Supplied need not suffer damage during delivery, storage and handling (i.e. dents/scratches, excessive compression or warping, chipped edges, 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. Refer to current version of ASTM F710 for additional information.
- 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 or 25 MPa in compressive strength).
- E. Substrate 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. Concrete substrates must be free of any hydrostatic and/or moisture problems. Moisture and alkalinity tests must be performed on all concrete substrates, under in-service conditions, prior to Resilient Athletic Flooring installation. It is highly recommended to turn on the heating, ventilation and air-conditioning (HVAC) unit 7 days prior to performing tests, in order to ensure stable testing conditions and accurate results. A functional HVAC system is also recommended during flooring installation. For all moisture and alkalinity requirements, refer to section 3.2 Examination.
- H. If the installation has been specified over a wood substrate, use 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 must have a moisture content range of 6 to 12% when measured with a quality wood moisture meter (electronic hygrometer).
- I. Maintain stable room and substrate temperatures prior to moisture tests and Resilient Athletic Flooring installation, during the Resilient Athletic Flooring installation, as well as a minimum of 48 hours after the Resilient Athletic Flooring has been completely installed. Recommended ambient temperature range is between 65°F and 86°F (18°C and 30°C) and recommended ambient humidity range is between 35% and 55%. Substrate temperature must always remain a minimum of 5°F (3°C) above dew point for the duration of the Resilient Athletic Flooring installation and for 72 hours post-installation.
- 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 WARRANTY

- A. The Resilient Athletic Flooring is warranted to be free from manufacturing defects for a period of one (1) year, starting on the date which is the earliest of ninety (90) days from Manufacturer's shipment date or Owner/Contractor requested date (the "Warranty Start Date"), per the terms and conditions of Manufacturer's current Limited Material Warranty.
- B. For standard applications, the Resilient Athletic Flooring is warranted against excessive wear under normal usage for a period of ten (10) years, starting on the date which is the earliest of ninety (90) days from Manufacturer's shipment date or Owner/Contractor requested date (the "Warranty Start Date"), per the terms and conditions of Manufacturer's current Limited Material Warranty.
- C. Refer to current printed copy of Manufacturer's Limited Material Warranty for all terms and conditions, which shall be obtained directly from Manufacturer. In no event shall any warranties provided by any third parties (including distributors, insurance and/or private label providers) be considered as valid.

2 PART 2 – PRODUCTS

2.1 MANUFACTURED PRODUCT

2.1.1 Manufacturer

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

2.1.2 Description

Specifier Note: Specify required color(s).

- A. Valor Strength is a resilient rubber athletic flooring system, consisting of a prefabricated dual durometer rubber performance layer (6 mm) made from high quality natural and synthetic rubbers, stabilizing agents and pigments, calendered and vulcanized for durability and performance, factory laminated to a prefabricated rubber shock absorbing underlayment (12 mm), as manufactured by Mondo.
- B. Triple durometer construction. The shore hardness of the performance layer (top layer) will be greater than that of the other layers. Shore hardness of layers to be recommended by the Manufacturer and to respect limits specified.
- C. Thickness: 18 mm (0.709”).
- D. Colors: Provided in standard solid colors, with a dual tone effect from embossing. Custom colors available on order; minimum quantity required.
- E. Surface Texture: Valor Embossing.
- F. Format: Available in tiles that are 122 cm x 61 cm (48” x 24”).

2.1.3 Performance

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

Performance Criterion	Test Method	Requirement**	Result*
Elongation at Break	ASTM D412	≥70%	>150%
Tensile Strength	ASTM D412	≥175 psi	>250 psi
Static Coefficient of Friction (neolite heel)	ASTM D2047	≥0.50 (dry)	>0.90 (dry)
Durometer Hardness	ASTM D2240	80 ± 5	80
Abrasion Resistance (H18 wheel, 1000 g, 1000 cycles)	ASTM D3389	≤1.0 g	<0.6 g
Impact Sound Transmission	ASTM E492	-	61 dB (IIC)
Critical Radiant Flux	ASTM E648	≥0.22 W/cm ² (Class 2)	≥0.22 W/cm ² (Class 2)
Impact Sound Transmission Reduction	ASTM E2179	-	24 dB (ΔIIC)
Thickness	ASTM F386	18 mm (±0.4 mm) 0.709” (±0.015”)	Compliant
Resistance to Chemicals	ASTM F925	≤Slight Change	Compliant ***
Heat Resistance	ASTM F1514	ΔE ≤8.0	Compliant
Light Resistance	ASTM F1515	ΔE ≤8.0	Compliant
Athletic Performance – Force Reduction	ASTM F2772	≥22% (Class 2)	27.9% (Class 2)
Athletic Performance – Vertical Deformation	ASTM F2772	<3.5 mm	2.2 mm

Performance Criterion	Test Method	Requirement**	Result*
Athletic Performance – Ball Rebound	ASTM F2772	≥90%	95.2%
Athletic Performance – Surface Finish Effect	ASTM F2772	80-110 BPV	101 BPV

**Manufactured product is only required to meet the minimum listed requirement in the Requirement column.

***Reported result listed in the Results column, from manufacturing controls and/or third-party testing, can vary between production lots, laboratories, methods and/or equipment, and as such 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.

****For the complete list of chemicals tested, concentrations and contact time, please communicate with Mondo’s Technical Department.

2.1.4 Limitations

- A. For areas subject to surface impacts, such as designated free weight areas, it is recommended to adhere the Resilient Athletic Flooring directly to the concrete substrate for optimal performance. Whenever possible, avoid installing Resilient Athletic Flooring on weaker surfaces that may offer less resistance to continuous impacts.

2.1.5 Materials

- A. Resilient Athletic Flooring: Valor Strength manufactured by Mondo as specified in section 2.1.2 Description.

2.2 ACCESSORIES

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

- A. Adhesive certified by Manufacturer: Mondo PU 105 (polyurethane) or Mondo PU300 (epoxy-polyurethane) for installations over concrete and wood substrates. For suitability, recommendations and use, please refer to the specified adhesive’s current printed technical data sheet. For acceptable installations over a Mondo Everlay product (where surface impacts and heavier dynamic loads are not a concern), default to Mondo PU 300 or communicate with Mondo’s Technical Department for assistance.

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 Resilient Athletic Flooring installation.

- A. Prior to Resilient Athletic Flooring installation, Flooring Contractor must ensure that the substrate is ready to receive Resilient Athletic Flooring and that it has been effectively prepared according to Manufacturer’s current substrate surface preparation guidelines. Refer to current version of ASTM F710 for additional information.
- B. 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).

- C. Ensure that no concrete 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. 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 or 25 MPa in compressive strength).
- E. 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.
- F. 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 a 3.05 m radius). Floor Flatness (FF) and Floor Levelness (FL) numbers are not recognized.
- G. Concrete substrates must be free of any hydrostatic and/or moisture problems. Moisture and alkalinity tests must be performed on all concrete substrates, under in-service conditions. For accurate test results, ensure that the HVAC unit has been operational for 7 days and that the ambient conditions are stable, prior to performing any moisture and alkalinity tests. The concrete's surface pH must be between 7 and 10. Relative humidity of the concrete slab must not exceed the tolerance of the adhesive specified, in accordance with the current version of ASTM F2170 (in situ probes). Moisture vapor emissions from the concrete slab must not exceed the tolerance of the adhesive specified, in accordance with the current version of ASTM F1869 (anhydrous calcium chloride). Where tolerances are exceeded and a moisture mitigation system will be specified, refer to ASTM F3010. Moisture and alkalinity test results must be recorded and copies must be kept for a minimum of 3 years or for the duration of the warranty period.
- H. If the installation has been specified over a wood substrate, 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 must have a moisture content range of 6 to 12% when measured with a quality wood moisture meter (electronic hygrometer).
- I. Ensure room and substrate temperatures are maintained prior to moisture testing and Resilient Athletic Flooring installation, during its installation, as well as a minimum of 48 hours after the Resilient Athletic Flooring has been completely installed. Recommended ambient temperature range is between 65°F and 86°F (18°C and 30°C) and recommended ambient humidity range is between 35% and 55%. Ambient temperature must always remain a minimum of 5°F (3°C) above dew point for the duration of the Resilient Athletic Flooring installation and for 72 hours after its completed installation.
- J. Installer to perform bond tests with specified products to confirm suitability and strong adhesion to the substrate, per ASTM F3311 (mat bond evaluation). Special attention should be paid to any area where a contaminant was removed, in order to confirm removal effectiveness. Refer to Manufacturer's current printed substrate preparation manual for additional notes on bond tests.
- K. 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 ensure that a secure and clean working area is maintained 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 Manufacturer's substrate surface preparation manual can be obtained from the Technical Department at Mondo

America, Inc. (United States 1-800-361-3747 • Canada 1-800-663-8138). The guidelines are considered common practice for the preparation and verification of substrates that will be receiving resilient flooring, and as such should not be omitted or altered in any case.

- A. Prepare substrate 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 manuals for Products Supplied can be obtained from the Technical Department at Mondo America, Inc. (United States 1-800-361-3747 • Canada 1-800-663-8138). 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 Maintenance Material Submittals. Repair material must come from the same original dye lot as the Manufactured Product initially installed.
- B. Repairs are to be performed by Flooring 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. 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 its acceptance by the Owner.
- B. Preserve the integrity of the installation and protect against direct sunlight/UV exposure; always ensure that windows and glass doors have inherent UV protection and/or are fitted with blinds/UV film.