

*Specifier Note: the following CSI (Construction Specifications Institute) section describes the resilient athletic flooring system to be installed over concrete, for the specific project. If the provisions described herein are adopted for installing over an asphalt base or for outdoor projects, Mondo's Warranty will be null and void and the Specifier will be held liable. 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. Adhesive and accessories required for installation, maintenance and repair.

1.1.2 Related Requirements

Specifier Note: the following CSI sections of the project manual are a guide to what is the essential information needed to determine the acceptability of the site conditions and details of the installation of MONDO products. 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 American Society for Testing & Materials (ASTM)

- A. ASTM D2047: Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as measured by the James Machine.
- B. ASTM E648: Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- C. ASTM E662: Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- D. 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.
- E. ASTM E1745: Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
- F. ASTM F710: Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

- G. ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- H. 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- Comité Européen de Normalisation*)

- A. EN 434: Resilient floor coverings. Determination of dimensional stability and curling after exposure to heat.
- 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 1569: Surfaces for sports areas. Determination of the behaviour under a rolling load.
- E. EN 12235: Surfaces for sports areas. Determination of vertical ball behaviour.
- F. 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.
- G. EN 13036-4: Method for measurement of slip/skid resistance of a surface - The pendulum test.
- H. EN 13501-1: Fire classification of construction products and building elements. Part 1: Classification using data from reaction to fire tests.
- I. EN 14808: Surfaces for sports areas. Determination of shock absorption.
- J. EN 14809: Surfaces for sports areas. Determination of vertical deformation.
- K. EN 14904: Surfaces for sports areas. Specifications for indoor surfaces for multi-sports use.

1.2.3 GREENGUARD Environmental Institute (GEI)

- A. GREENGUARD Indoor Air Quality Certified®.
- B. GREENGUARD Children and Schools Certified®.

1.2.4 International Organization for Standardization (ISO)

- A. ISO 2813: Paints and varnishes. Determination of specular gloss of non-metallic paint films at 20 degrees, 60 degrees and 85 degrees.
- B. ISO 5470-1: Rubber-or plastics-coated fabrics. Determination of abrasion resistance. Part 1: Taber abrader.
- C. ISO 7619-1: Rubber, vulcanized or thermoplastic. Determination of indentation hardness. Part 1: Durometer method (shore hardness).
- D. ISO 9001: Requirements for Quality Management Systems.
- E. ISO 16000-3: Indoor air. Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air. Part 3: Active sampling method.

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 Manufacturer's current printed data sheets on specified products (surfacing product, adhesives, accessories, etc.).
- B. Provide samples, 6 inches x 6 inches, for verification of such characteristics as color, texture and finish for each specified resilient athletic flooring product.

- C. As necessary, provide shop drawings prepared for project illustrating layouts, details, dimensions and other data.
- D. If game lines are specified, provide samples of paint colors for selection and approval.

1.3.2 Informational Submittals

- A. Provide current subfloor preparation guidelines, as published by the Manufacturer.
- B. Provide current installation guidelines, as published by the Manufacturer.
- C. If game lines are specified, provide current line painting guidelines, as published by the Manufacturer.

1.3.3 Closeout Submittals

- A. Provide current maintenance guidelines, as published by the Manufacturer.
- B. Provide current standard warranty, as published by the Manufacturer.

1.3.4 Maintenance Material Submittals

- A. Provide extra stock materials for use in facility operation and maintenance. Provide amount of approximately 2% of the total floor surface, of each type, color and dye lot.

1.4 QUALITY ASSURANCE

- A. Manufacturer must be certified ISO 9001.
- B. Manufacturer must have experience in the manufacturing of prefabricated resilient athletic flooring.
- C. Installer must have performed installations of the same scale in the last three (3) years.
- D. Installer to be recognized and approved by the resilient athletic flooring Manufacturer.
- E. If specified, game lines must be applied by professionals with proper experience and qualifications to effectively perform the work.

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" x XX" (XX cm x XX cm)].

1.5 DELIVERY, STORAGE AND HANDLING

- A. Materials must be delivered in Manufacturer's original, unopened and undamaged packaging with identification labels intact.
- B. Store sheet goods upright on a clean, dry, flat surface protected from all possible damage and from exposure to harmful weather conditions.
- C. Recommended environmental condition for storage is a minimum of 55°F (13°C).
- D. Avoid storing materials for extended periods of time or additional material trimming may be required.
- E. Material need not suffer damage during handling (i.e. 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 rubber flooring Manufacturer, as referenced herein at sections 3.2 and 3.3.
- B. Maintain a stable room and subfloor temperature prior to installation (before performing moisture tests), during the installation and a minimum of 48 hours after the installation. The recommended temperature range is 65°F to 86°F (18°C to 30°C), and ambient humidity control level is between 35 to 55%. It is recommended that the HVAC (Heating, Ventilating and Air Conditioning) unit be operational for accuracy and best results.
- C. Installation to be carried out no sooner than the specified curing time of concrete subfloor (normal density concrete curing time is approximately 28 days for development of design strength).
- D. Moisture and alkalinity tests must be performed. Relative humidity of the concrete slab must not exceed the tolerance of the adhesive specified, 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). The pH of the concrete slab must be between 7 and 10.
- E. Installation of resilient athletic flooring will not commence unless all other trades in the building are completed. 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. Provide Manufacturer's current standard warranty.
- B. The resilient athletic flooring is warranted to be free from manufacturing defects for a period of two (2) years from the date of shipment from the Manufacturer.
- C. The resilient athletic flooring is warranted against excessive wear under normal usage for a period of five (5) years from the date installation.

2 PART 2 – PRODUCT

2.1 MANUFACTURED PRODUCTS

2.1.1 Manufacturers

- A. **Mondo S.p.A.:**
Mondo S.p.A., Piazzale E. Stroppiana, 1, 12051 Alba, Fraz. Gallo – Italia.

2.1.2 Description

Specifier Note: specify colors to be used in project.

- A. MONDOFLEX II is prefabricated resilient athletic flooring; a composite made of three layers where the first and second layer are made of 100% vulcanized virgin rubber, a thermoset material, and the third layer (base) is made of a three-dimensional recycled polyurethane foam, as manufactured by MONDO AMERICA INC. or approved equal.
- B. Thickness: 0.295" (7.5mm).

- C. Colors: Provided in ten (10) standard colors; solid background colors with random marbleization throughout material.
- D. Texture: Smooth.
- E. Manufactured in three layers which are combined together during the manufacturing process. The shore hardness of the top layer will be greater than the remaining layers. Shore hardness of layers to be recommended by the Manufacturer.
- F. Material available in sheets: 6'2" (1.90m) wide and 59' (18m) long.

2.1.3 Performance

- A. Product tested in accordance to EN 14904.
- B. Performance of the prefabricated resilient athletic flooring to conform to the following criteria:

Performance Criteria	Test Method	Result
Coefficient of Friction	ASTM D2047-04	0.96
Critical Radiant Flux	ASTM E648-06	≥0.45 W/cm ² , Type I
Optical Density of Smoke	ASTM E662-06	<450, Class I
Dimensional Stability	EN 434	No appreciable variation
Resistance to Indentation	EN 1516	0.15mm
Resistance to Impact	EN 1517	≤0.5mm
Resistance to a Rolling Load	EN 1569	≤0.5mm
Vertical Ball Behaviour	EN 12235	≥98%
Thermal Performance:		
Thermal Resistance	EN 12667	0.095m ² K/W
Thermal Conductivity	EN 12667	0.079W/mK
Slip Resistance	EN 13036-4	80-110
Fire Classification	EN 13501-1	Class C _{fl} -s1 (polyurethane adhesive)
Shock Absorption	EN 14808	25.5% (type P1)
Vertical Deformation	EN 14809	1.1mm (type P1)
Specular Gloss	ISO 2813	≤30%
Abrasion Resistance	ISO 5470-1	≤1000mg
Shore Hardness	ISO 7619-1	85 Shore A
Indoor Air	ISO 16000-3	In conformity
GREENGUARD Certification	Indoor Air Quality	Yes
GREENGUARD Certification	Children and Schools	Yes

2.1.4 Limitations

- A. Resilient athletic flooring with foam backing may not be as resistant to heavier dynamic/static loads. Proper precautions should be taken to avoid any damage to the resilient athletic flooring that could be caused by heavier equipment such as bleachers, portable equipment, stages, etc. Loads greater than 200 pounds per square inch (PSI) could increase residual indentations.
- B. MONDOFLEX II is not recommended for use in areas that will be subjected to repeated and/or heavy surface impacts, such as designated "free weight" areas in fitness facilities.

2.1.5 Materials

- A. Provide MONDOFLEX II prefabricated resilient athletic flooring, as manufactured by MONDO AMERICA INC. or approved equal.
- B. Provide resilient athletic flooring as specified in section 2.1.2 Description.

2.2 ACCESSORY PRODUCTS

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

- A. Provide adhesive certified by resilient athletic flooring Manufacturer: MONDO PU 105 polyurethane adhesive. Refer to current guidelines on product mixing and use, as published by the Manufacturer. MONDO EP 55 epoxy adhesive may be used in areas that have not been specified for use with Mondo Everlay, and that will not be subject to surface impacts or dynamic loads such as bleachers.
- B. Patching or leveling compound to be supplied and/or recommended/approved by resilient athletic flooring Manufacturer.
- C. If game lines are specified, paint products are to be supplied and/or recommended/approved by resilient athletic flooring 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 the primary product.

- A. Concrete subfloors to be placed a minimum of twenty-eight (28) days prior to the installation of resilient athletic flooring.
- B. Concrete subfloors on or below grade must be installed over a permanent effective vapor retarder, as per current versions of ASTM E1643 and 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 mils.
- C. No concrete sealers or curing compounds are applied or mixed with the subfloors (refer to Section 03 05 00 – Common Work Results for Concrete of Division 3).
- D. If installing over wood subfloors, Mondo recommends 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).
- E. Ensure stable room and subfloor temperatures prior to installation (before performing moisture tests), during the installation and a minimum of 48 hours after the installation. The recommended temperature range is 65°F to 86°F (18°C to 30°C), and ambient humidity control level is between 35 to 55%. It is recommended that the HVAC (Heating, Ventilating and Air Conditioning) unit be operational for accuracy and best results, in order to reflect in-service conditions.
- F. Moisture and alkalinity tests must be performed. Relative humidity of the concrete slab must not exceed the tolerance of the adhesive specified, 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). The pH of the concrete slab must be between 7 and 10.
- G. Smooth, dense finish, highly compacted with a tolerance of 1/8" in a 10 ft radius (3.2 mm in 3.05 m radius). Floor Flatness (FF) and Floor Levelness (FL) numbers are not recognized.

3.3 PREPARATION

Specifier Note: subfloors are to be prepared according to Manufacturer's written instructions. It is recommended that the Specifier review the preparation process from the Manufacturer's printed recommendations given to him/her by the Technical Department of MONDO AMERICA INC. The following are considered common practice subfloor preparation to receive floor finishing products, and as such should not be omitted or altered in any case.

3.3.1 Subfloors

- A. Prepare concrete subfloor in accordance with Manufacturer's current printed Subfloor Preparation guidelines.

3.4 INSTALLATION

Specifier Note: all flooring products are to be installed according to Manufacturer's written instructions. It is recommended that the Specifier review the installation process from the Manufacturer's printed installation manual or from the installation procedures given to him/her by the Technical Department of MONDO AMERICA INC. The following procedures may be altered in special project cases, as deemed necessary by the Specifier, and after having consulted the Technical Department of MONDO AMERICA INC.

3.4.1 Installation of Sheet Goods

- A. Install resilient athletic flooring in accordance with Manufacturer's current printed Installation Manual.

3.5 LINE PAINTING (If Specified)

Specifier Note: If specified, line paint is to be applied according to Manufacturer's written instructions. It is recommended that the Specifier review the paint application process from the Manufacturer's printed installation manual or from the installation procedures given to him/her by the Technical Department of MONDO AMERICA INC. The following procedures may be altered in special project cases, as deemed necessary by the Specifier, and after having consulted the Technical Department of MONDO AMERICA INC.

3.5.1 Applying Game Lines

- A. All lines that are to be painted onto the resilient athletic flooring must be applied in accordance with Manufacturer's current printed Line Painting Application Instructions.

3.6 REPAIR

- A. Refer to section 1.3.4 for extra stock materials.
- B. Repair material must be from the same dye lot as material supplied for initial installation.
- C. Repairs are to be performed by qualified installers/technicians only.

3.7 CLEANING

- A. Initial cleaning should only be performed a minimum of 72 hours after the resilient athletic flooring has been completely installed. **NOTE: For surfaces with newly applied line paint, allow a minimum of 30 days before scrubbing the flooring.**
- B. Maintain resilient athletic flooring according to Manufacturer's current maintenance instructions for specified product.

3.8 PROTECTION

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