

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 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 16.33
Rubber Sheet Flooring
and/or
SECTION 09 65 19.33
Rubber Tile Flooring

1 PART 1 – GENERAL

1.1 SUMMARY

1.1.1 Products Supplied

- A. Resilient 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 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 German Committee for Health-Related Evaluation of Building Products (AgBB)

- A. AgBB. Evaluation of volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC) from building products.

1.2.2 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 Floor 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 E648: Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- F. ASTM E662: Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- 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 Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
- I. ASTM F386: Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces.
- J. ASTM F710: Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
- K. ASTM F925: Standard Test Method for Resistance to Chemicals of Resilient Flooring.
- L. ASTM F970: Standard Test Method for Static Load Limit.
- M. ASTM F1344: Standard Specification for Rubber Floor Tile.
- N. ASTM F1514: Standard Test method for Measuring Heat Stability of Resilient Flooring by Color Change.
- O. ASTM F1515: Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change.
- P. ASTM F1859: Standard Specification for Rubber Sheet Floor Covering Without Backing.
- Q. ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- R. ASTM F2055: Standard Test Method for Size and Squareness of Resilient Floor Tile by Dial Gage Method.
- S. ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
- T. ASTM F2199: Standard Test Method for Determining Dimensional Stability of Resilient Floor Tile after Exposure to Heat.
- U. ASTM F3010: Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings.
- V. ASTM F3311: Standard Practice for Mat Bond Evaluation of Performance and Compatibility for Resilient Flooring System Components Prior to Installation.

1.2.3 State of California (CA)

- A. CA Section 01350. Standard Method for the Testing and Evaluation of Volatile Organic Compound Emissions from Indoor Sources Using Environmental Chambers.

1.2.4 Grenelle Environment Forum

- A. Decree № 2011-321. French decree on labeling requirement for construction materials, wall and floor coverings, and paint and varnishes, as it pertains to their emissions of volatile pollutants.

1.2.5 GREENGUARD Environmental Institute (GEI)

- A. GREENGUARD Certification. Compliant with stringent emission levels for over 360 VOCs, plus a limit on the total of all chemical emissions combined (TVOC).
- B. GREENGUARD Gold. Compliant with safety factors to account for sensitive individuals (such as children and the elderly) and ensures that a product is acceptable for use in environments such as schools and healthcare facilities.

1.2.6 International Organization for Standardization (ISO)

- A. ISO 9001: Quality management systems – Requirements.
- B. ISO 10140-3: Acoustics. Laboratory measurement of sound insulation of building elements - Part 3: Measurement of impact sound insulation.
- C. ISO 14001: Environmental management systems – Requirements with guidance for use.
- D. ISO 16000-9: Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method.

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.mondocontractflooring.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. Provide current printed technical data sheet (TDS) and guide specification from manufacturer 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 Manufactured Product.
- C. If the heatwelding of seams (sheets) has been specified, provide samples of welding thread for color match verifications with each specified Manufactured Product.
- 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 the Manufactured Product installed, per the current printed 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 and ISO 14001.
- B. Manufacturer must have a minimum of fifteen (15) years of experience in the manufacturing of prefabricated resilient rubber flooring.

- C. Manufactured Product must have undergone a vulcanization process; factory lamination should not be accepted as equivalent.
- D. In accordance with ASTM E648, the Manufactured Product must have a critical radiant flux ≥ 0.45 W/cm² (Class 1).
- E. In accordance with ASTM E662, the Manufactured Product must have an optical density of smoke ≤ 450 .
- F. Flooring Contractor to be recognized and approved by the Manufacturer.
- G. 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.
- H. Installer must be approved by the Flooring Contractor and must have performed installations of the same scale in the last three (3) years.

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 rolls of Resilient Flooring upright; store tiles of Resilient Flooring on a flat surface, carefully protecting corners and edges.
- C. Climate controlled storage is recommended. Storage temperature must not be below 40°F (4°C) and must not exceed 100°F (38°C). Materials must be delivered to site a minimum of 24 hours before work is scheduled to begin so that they may acclimate.
- D. Avoid storing Manufactured Product for extended periods of time or additional material trimming may be required.
- 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 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 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. Refer to section 3.2 Examination for all moisture and alkalinity requirements.
- 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 Flooring installation, during the Resilient Flooring installation, as well as a minimum of 48 hours after the Resilient 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 Flooring installation and for 72 hours post-installation.
- J. Installation of Resilient 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 Flooring.

1.7 WARRANTY

- A. The Resilient Flooring is warranted to be free from manufacturing defects for a period of one (1) year from the date of invoice from Mondo, per the terms and conditions of Mondo's current Limited Material Warranty.
- B. For standard applications, the Resilient Flooring is warranted against excessive wear under normal usage for a period of fifteen (15) years from the date of invoice from Mondo, per the terms and conditions of Mondo's current Limited Material Warranty.
- C. Refer to current copy of Mondo's Limited Material Warranty for all terms and conditions, which shall be obtained directly from Mondo. 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: Artigo S.p.A., 17014 Cairo Montenotte (SV), Loc. Carpeneto – Italia.

2.1.2 Description

Specifier Note: Specify required color(s) and format(s).

- A. Dharma is prefabricated resilient rubber flooring, calendered and vulcanized with a base of synthetic rubber, stabilizing agents and pigmentation, as manufactured by Mondo.
- B. Health-Conscious Production: Dharma is free from red listed ingredients (LBC Red List v4.0) and is manufactured without bisphenol A (BPA), formaldehyde, halogens, heavy metals, isocyanates, phthalates and polyvinyl chloride (PVC). HPD (Health Product Declaration) available. Dharma is manufactured using 100% renewable electric energy sources: water, wind and solar.
- C. Thickness: 0.079" (2 mm).
- D. Colors: Provided in standard, solid background colors with randomly dispersed colored micro-granules throughout its surface.
- E. Surface Texture: Smooth.
- F. Surface Treatment: Factory applied low-gloss surface treatment, cured by ultraviolet (UV) processing.
- G. Vulcanized, single layer construction. Shore hardness to be recommended by the Manufacturer and to respect limits specified.
- H. Formats: Available in sheets that are 6'2" (1.90 m) wide and 45'11" (14 m) long [min. 19'8" (6 m)/max. 59' (18 m)]; available in tiles that are 24" x 24" (61 cm x 61 cm).

2.1.3 Performance

- A. Manufactured Product tested following standard specifications ASTM F1344 (rubber tile flooring) and ASTM F1859 (rubber sheets flooring without backing).
- B. Performance of the Manufactured Product to conform to the following criteria:

Performance Criterion	Test Method	Requirement**	Result*
Modulus at 10% Elongation	ASTM D412	≥300 psi	≥300 psi
Static Coefficient of Friction (neolite heel)	ASTM D2047	≥0.50 (dry)	≥0.80 (dry)
Durometer Hardness (Shore A)	ASTM D2240	≥85	90
Abrasion Resistance (H18 wheel, 1000g, 1000 cycles)	ASTM D3389	≤1.0 g	0.05 g
Critical Radiant Flux	ASTM E648	≥0.45 W/cm ²	≥0.45 W/cm ² (Class 1)
Optical Density of Smoke	ASTM E662	≤450	≤450
Thickness	ASTM F386	2 mm (±0.15 mm) 0.079" (±0.006")	Compliant
Resistance to Chemicals	ASTM F925	≤Slight Change	Compliant ***
Static Loading (Tested at 250psi)	ASTM F970	≤0.005 in	0.000 in
Static Loading (Tested at 800psi)	ASTM F970	-	0.002 in
Heat Resistance	ASTM F1514	ΔE ≤8.0	Compliant
Light Resistance	ASTM F1515	ΔE ≤8.0	Compliant
Tile Size	ASTM F2055	±0.45 mm	Compliant
Tile Squareness	ASTM F2055	≤0.254 mm	Compliant
Dimensional Stability of Tiles	ASTM F2199	≤0.15%	Compliant
Impact Sound Insulation	ISO 10140-3	-	≈6 dB (ΔL _w)
Indoor Air Quality: CA Section 01350	CDPH: V1.2-2017	-	Compliant
Indoor Air Quality: Greenguard Gold	UL 2821/UL 2818	-	Compliant
Indoor Air Quality: Greenguard Certification	UL 2821/UL 2818	-	Compliant
Indoor Air Quality: AgBB	ISO 16000-9	-	Compliant
Indoor Air Quality: French Decree № 2011-321	ISO 16000-9	-	Compliant (Class A+)

*Result from manufacturing controls 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.

**Specified product must meet the minimal requirement for the characteristic listed.

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

2.1.4 Materials

- A. Resilient Flooring: Dharma 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(s) certified by Manufacturer: Mondo MP 1000 (acrylic), Mondo PU 105 (polyurethane) or Mondo EP 55 (epoxy). For suitability, recommendations and use, please refer to Manufacturer's current printed adhesive data sheets. Use of Mondo MP 1000 in areas with heavy rolling and static loads is not recommended.
- B. Portland cement based patching or leveling compound to be recommended/approved by Manufacturer.
- C. If the heatwelding of seams (sheets) has been specified, welding thread 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 Resilient Flooring installation.

- A. Prior to Resilient Flooring installation, Flooring Contractor must ensure that the substrate is ready to receive Resilient 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 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 flooring installation, during the flooring installation, as well as a minimum of 48 hours after the 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 flooring installation and for 72 hours after the flooring 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 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 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: Select appropriate installation guidelines for Resilient Flooring format required for the project. 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 sheets of Resilient Flooring following Manufacturer's current printed guidelines.
- B. Install tiles of Resilient Flooring following Manufacturer's current printed guidelines.
- C. Install all accessories following Manufacturer's current printed guidelines.

3.5 REPAIR

- A. Refer to section 1.3.4 Maintenance Material. Repair material must come from the same original dye lot as initially installed Resilient Flooring.
- 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 Flooring has been completely installed before performing initial maintenance. Always maintain the Resilient Flooring following Manufacturer's current printed guidelines.

3.7 PROTECTION

- A. As needed, protect Resilient 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.