

This MANU-SPEC^a utilizes the Construction Specifications Institute (CSI) *Manual of Practice*, including *MasterFormat*«, *SectionFormat*« and *PageFormat*«. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets []; delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies resinous flooring, specifically electrostatic discharge (ESD) systems. These products are manufactured by Garland Floor Company. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

SECTION 09677
RESINOUS FLOORING
(ELECTROSTATIC DISCHARGE SYSTEMS)

PART 1 GENERAL

1.01 SUMMARY

Specifier Note: This MANU-SPEC specifies electrostatic discharge (ESD) systems, including solvent or water based, low odor epoxy (EP), urethane (UR), vinyl ester (VE) and novolac (EN) floor coatings, resurfacers and decorative systems as manufactured by Garland Floor Company.

- A. Section Includes: Resinous flooring, including 100% solids, solvent or waterborne, low odor epoxy (EP), urethane (UR), vinyl ester (VE) and novolac (EN) floor coatings, resurfacers and decorative systems.

Specifier Note: Revise paragraph below to suit project requirements. Add section numbers and titles per CSI *MasterFormat* and specifier's practice.

- B. Related Sections: Section(s) related to this section include:
1. Concrete Substrates: Division 3 Concrete Sections.

1.02 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide resinous flooring which has been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor either before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.

1.03 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA^a product sheet, for specified products, and manufacturer's installation instructions.
- C. Samples: Submit selection and verification samples for finishes, colors and textures.
- D. Quality Assurance Submittals: Submit the following:
1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

Specifier Note: Coordinate paragraph below with Part 3 Field Quality Requirements Article herein. Retain or delete as applicable.

3. Manufacturer's Field Reports: Manufacturer's field reports specified herein.
- E. Closeout Submittals: Submit the following:
1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

2. Warranty: Warranty documents specified herein.

Specifier Note: Article below should include prerequisites, standards, limitations and criteria which establish an overall level of quality for products and workmanship for this section.

1.04 QUALITY ASSURANCE

A. Qualifications:

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.
 - a. Installer shall be an established company regularly engaged in the installation of polymer flooring systems.
 - b. Contractor shall demonstrate the ability to undertake and complete the required work and furnish documentation regarding the successful completion of projects of similar size and complexity.

Specifier Note: Retain paragraph below to suit project requirements; otherwise, delete paragraph below.

- c. Certificate: When requested, submit certificate indicating qualification.
2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General statements to comply with a particular code are typically addressed in Conditions of the Contract and Division 1 Regulatory Requirements Section. Repetitive statements should be avoided.

B. Regulatory Requirements: [Specify applicable VOC requirements of regulatory agencies.].

Specifier Note: Consult manufacturer for specific information on approvals by code bodies, agencies and other industry entities. Building code and product compliance information may be obtained from Garland technical support specialists. Installation must comply with the requirements of applicable local, state and national code jurisdictions.

Specifier Note: Retain paragraph below for erected assemblies (either onsite or offsite) required for review of construction, coordination of work of several sections, testing or observation of operation. Mock-ups, when accepted or approved, establish standards by which work will be judged. Coordinate below with Division 1 Quality Control (Mock-Up Requirements) Section.

- C. Mock-Ups: Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color, texture, pattern and workmanship standard. Comply with Division 1 Quality Control (Mock-Up Requirements) Section.

Specifier Note: Edit paragraph below for specifying mock-up size.

1. Mock-Up Size: [Specify mock-up size.].
2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.

Specifier Note: If mock-up may be incorporated in the work, retain paragraph below and delete last clause in paragraph above. If mock-up may not be incorporated in the work, delete paragraph below

3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.

Specifier Note: Coordinate paragraph below with Division 1 Project Management and Coordination (Project Meetings) Section.

- D. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.
- E. Preinstallation Testing: Conduct preinstallation testing as follows: [Specify testing.].

Specifier Note: Article below should include special and unique requirements. Coordinate article below with Division 1 Product Requirements Section.

1.05 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.

1. Handle and store product according to Garland Flooring Company recommendations. In general, products should be stored in cool, dry areas out of direct sunlight.

1.06 PROJECT CONDITIONS

Specifier Note: The temperature of the floor, surrounding air and level of humidity affect the drying and curing time of these products. Comply with the requirements of the Material Safety Data Sheet (MSDS) shipped with product. Apply with adequate ventilation. Use special care in handling and applying solvent based products, which can be extremely flammable.

- A. Environmental Requirements/Conditions: Substrate and ambient air temperature shall be in accordance with manufacturer's requirements.
- B. Temperature Requirements: Maintain air temperature in spaces where products will be installed for time period before, during and after installation as recommended by manufacturer.

Specifier Note: Coordinate article below with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty) Section.

1.07 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.
 1. Resurfacers Warranty: Furnish a written warranty covering materials and labor against loss of adhesion and other defects resulting from normal wear and use. The technical data and other printed information furnished is true and accurate to the best of the manufacturer's knowledge. The products are warranted pursuant to acceptance of "limited warranty," a copy of which can be obtained from the Garland Floor Company which is the exclusive warranty with respect to the sale of this product. The modification of any component or uses not outlined in this bulletin nullifies the warranty unless advance written confirmation is obtained from the Garland Floor Company. No other warranties expressed or implied shall apply. Garland Floor Company assumes no responsibility for coverage, performance or injuries resulting from use. Liability, if any, shall be to supply replacement materials as set forth in the "limited warranty."
 2. Warranty Period: [Specify term.] years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

2.01 RESINOUS FLOORING

Specifier Note: Garland's polymer, epoxy, urethane, vinyl ester and novolac coatings and resurfacers meet the needs of new and renovation flooring projects. They provide outstanding appearance, durability, safety and low maintenance. They are ideal for plant settings, including automotive, food processing, industrial manufacturing, chemical processing, electronics, transportation, food and beverage, light manufacturing and textiles. They are also used in commercial and institutional facilities, warehouses and cleanrooms.

- A. Manufacturer: Garland Floor Company.

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete paragraph below per project requirements and specifier's practice.

1. Contact: 4500 Willow Parkway, Cleveland, OH 44125; Telephone: (800) 321-2395, (216) 883-4100; Fax: (216) 883-9076; E-mail: sales@garlandfloor.com; website: www.garlandfloor.com.

Specifier Note: The Garland Floor Company Chemi-Cote Floor Coatings line of 100% solids, low odor or solvent borne coatings, resurfacers and decorative systems provides exceptional strength, stain and chemical resistance, long-term abrasion resistance and easy maintenance. These VOC compliant coatings, resurfacers and decorative systems are suitable for use on new and existing concrete, previously coated floors and steel. Low odor epoxy (EP), urethane (UR), vinyl ester (VE) and novolac (EN) floor products offer excellent adhesion and a finish resistant to tow motor and pedestrian traffic, chemicals, acids and corrosion. They are high gloss, reflective to satin finish products in clear, standard and custom colors. Complete physical property and test result data is available from the manufacturer.

2.02 ESD FLOOR COATING MATERIALS

Specifier Note: Below Garland ESD coatings and resurfacers are formulated to eliminate electrostatic discharge. They offer outstanding electrostatic control with less than 15 V body voltage generation. ESD coatings and resurfacers are available in epoxy, polyurethane, vinyl ester and novolac formulations for excellent wear, stain and chemical resistance. Garland Floor offers the most extensive and complete ESD product line on the market today, with over 10 systems from which to choose.

- A. Garland ESD-Epoxy Systems:

Specifier Note: Below Garland ESD Epoxy Systems include semigloss and high gloss coatings that are VOC compliant, 100% solids, or waterborne

thin-film epoxy coatings.

1. Garland Crystal-Stat ESD: 100% solids, transparent, non-odor epoxy coating with decorative flake or colored quartz aggregates used on existing non-ESD surfaces.
 2. Chemi-Cote high gloss ESD EP1000 100% solids, thin-film epoxy coatings applied at 10 - 20 wet mil (0.254 - 0.508 mm).
 3. Garland ESD EP-3000: Chemi-Cote high gloss ESD EP-3000, VOC compliant, thin-film epoxy coatings applied at 5 - 6 wet mil (0.127 - 0.152 mm); 2 coat installation.
 4. Chemi-LDR 610 ESD Self-Leveler Epoxy: High gloss, low odor, high solids, 60 mil (1.52 mm), self-leveling coating applied over a primer.
- B. Garland Thick-Film ESD Epoxy Coatings: Chemi-Cote ESD EN 7000 epoxy novalac: high solids, low odor, epoxy Novalac applied at 15 wet mil (0.381 mm).
- C. Garland ESD Thin-Film Polyurethane Coatings: Chemi-Cote ESD UR 5000 polyurethane, ESD WBUR 7000 waterborne urethane.

Specifier Note: Below Garland ESD waterborne urethane semigloss ESD WBUR-7000 is a VOC compliant, thin-film polyurethane coating applied at 4 wet mil (0.102 mm); it is designed to provide low odor during installation, good wear, UV light resistance, and stain and chemical resistance. Chemi-Cote ESD WBUR-7000 can be roller or spray applied to provide ESD controlled flooring, walls and ceilings. Chemi-Cote ESD WBUR-7000 is an aliphatic polyurethane that offers good light stability, stain (tire and ink) and chemical resistance.

1. Garland ESD WBUR-7000: VOC compliant, thin-film urethane coating, applied at 4 wet mils (0.102 mm).

Specifier Note: Below Garland ESD solventborne polyurethane ESD UR-5000 is a VOC compliant, thin-film polyurethane coating, applied at 4 wet mil (0.102 mm); it is designed to provide excellent wear, UV light resistance, and stain and chemical resistance. Chemi-Cote ESD UR-5000 offers excellent light stability, stain (tire and ink) and chemical resistance.

2. Garland Chemi-Cote ESD UR-5000: VOC compliant, thin-film polyurethane coating, applied at 4 wet mil (0.102 mm).

Specifier Note: Edit article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section.

2.03 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

2.04 MIXES

- A. Mixing: Mix proprietary materials in accordance with manufacturer's instructions, including product data and product technical bulletins.

2.05 SOURCE QUALITY

- A. Source Quality: Obtain resinous materials from a single manufacturer.

PART 3 EXECUTION

Specifier Note: Article below is an addition to the CSI *SectionFormat* and a supplement to MANU-SPEC. Revise article below to suit project requirements and specifier's practice.

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.02 EXAMINATION

- A. 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.
1. Before applying materials, inspect surfaces to receive new materials and report any unsatisfactory conditions. Absence of any such report shall constitute installer's acceptance of surfaces as satisfactory for installing materials.

3.03 PREPARATION

- A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.
- B. Surface Preparation:
1. Chipping and Filling: Holes, cuts, joints and enlarged cracks shall be filled and leveled with an epoxy fill material as recommended by coating manufacturer before resurfacing.
 2. Resurfacing Surface Preparation:
 - a. Keying: Where epoxy resurfacing does not extend continuously from wall to wall, a key 1/2" (12.7 mm) wide 1/2" (12.7 mm) deep shall be cut around perimeter of area to be resurfaced. Keying shall also be performed at doorways.
 - b. Mechanical Cleaning: Concrete floor surfaces receiving epoxy overlayment shall be thoroughly cleaned and prepared by shotblasting. Areas not accessible shall be mechanically scarified.

3. Coating Surface Preparation:

- a. Mechanical Cleaning: Concrete floor surfaces receiving epoxy coatings shall be thoroughly cleaned and prepared by shotblasting or sanding.
- b. Acid Etch: Surface preparation using acid etching procedures shall be performed under controlled conditions.

Specifier Note: Coordinate article below with manufacturer's recommended installation details and requirements. Complete installation recommendations are available from the manufacturer and depend on product uses. Product application method may include squeegee, spray, roller or brush. Resurfacers may require hand-trowel or power-trowel application. Working time and recoating time limits vary with the product. Mixing and application equipment should be cleaned immediately after use. Excess or waste material must be disposed of in accordance with federal, state and local regulations. See product technical data sheets.

3.04 INSTALLATION

Specifier Note: Preparation requirements vary with product. See product technical data sheets. Oil, grease and chemicals should be removed from the area of application by scraping or detergents prior to shotblasting, sanding or buffing. Some products require a calcium chloride moisture test before application to determine water vapor transmission compliance of the concrete slab.

A. Resinous Flooring Installation:

1. Resurfacing Application:

- a. Priming: Apply primer to prepared concrete substrate at a rate sufficient to result in a complete wetting-out and sealing of concrete with no dry areas.
- b. Filling: Fill chuckholes and low spots and power trowel smooth. Allow to cure until fills are firm enough to support a person's weight.
- c. Resurfacing: Apply to primed surfaces within 24 hours of application of primer. Large areas shall be raked at 3/8" (9.5 mm), while smaller, tight areas shall be hand troweled at 3/16" (4.8 mm). Both areas are then power troweled in 2 passes to a minimum thickness of 3/16" (4.8 mm) above highest point on floor.
- d. Finish: Surfaces of epoxy topping shall be ground with a power grinder to eliminate imperfections. Finish coat shall consist of an epoxy or polyurethane complying with specified performance requirements.
- e. Coving: Epoxy based coving extending 2" - 6" (51 - 152 mm) up the wall shall be installed in conjunction with application of resurfacing if required.
- f. Expansion and Control Joints: Joints shall be saw-cut through fill and resurfacer material and filled with a urethane modified epoxy, semi-flexible joint material that is pigmented to match finish coating.

2. Coating Application:

- a. Priming: Apply primer to prepared concrete substrate at a rate sufficient to result in a complete wetting-out and sealing of concrete with no dry areas.
- b. Finish: Finish coat shall consist of an epoxy or polyurethane complying with specified performance requirements.
- c. Expansion and Control Joints: Joints shall be saw-cut and filled with a urethane modified epoxy, semi-flexible joint material that is pigmented to match finish coating.

B. Related Products Installation: Refer to other sections listed in Related Sections paragraph herein for related products installation.

3.05 FIELD QUALITY REQUIREMENTS

- A. Site Tests [Installation and post-installation testing]: [Specify applicable test requirements to be performed during and/or after product installation.].
- B. Inspection: [Specify applicable product inspection requirements to be performed after product installation.].

Specifier Note: Edit paragraph below. Establish number and duration of periodic site visits with Owner and manufacturer, and specify below. Consult with manufacturer for services required. Coordinate paragraph below with Division 1 Quality Assurance Section and Part 1 Quality Assurance Submittals herein. Delete if manufacturer's field service not required.

C. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

1. Site Visits: [Specify number and duration of periodic site visits.].

3.06 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.

Specifier Note: Coordinate article below with Division 1 Execution Requirements Section.

3.07 PROTECTION

- A. Protection: Protect installed product and finish surfaces from damage during construction.

END OF SECTION