

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- .1 Comply with requirements of Division 1.

1.2 RELATED WORK

- .1 Section 04 04 99: Masonry – Minor Works.
- .2 Section 07 92 00: Joint Sealing.
- .3 Section 09 91 00: Painting.

1.3 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C307, Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing.
 - .2 ASTM C413, Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing.
 - .3 ASTM C579, Standard Test Method for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing and Polymer Concretes.
 - .4 ASTM C580, Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - .5 ASTM C882, Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear.
 - .6 ASTM D638, Standard Test Method for Tensile Properties of Plastics.
 - .7 ASTM D1044, Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion.
 - .8 ASTM D1308, Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.
 - .9 ASTM D2047, Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
- .2 Health Canada / Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).

1.4 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Manufacturer's Instructions: provide information to indicate special handling criteria, installation sequence, cleaning procedures and other information pertinent to installation and maintenance of material.

1.4 SUBMITTALS (continued)

- .3 Provide product data in accordance with Section 01 33 00 – Submittal Procedures.
 - .1 Submit WHMIS MSDS - Material Safety Data Sheets acceptable to Labour Canada and Health and Welfare Canada for Epoxy Flooring. Indicate VOC content and VOC's during application and curing.
- .4 Samples: Submit samples of epoxy flooring for colour selection by Departmental Representative from manufacturer's standard colours. One colour will be selected by Departmental Representative.
- .5 Quality Assurance Submittals: submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Test Reports: submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.
 - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .3 Instructions: submit manufacturer's installation instructions.
- .6 Provide maintenance data for epoxy flooring for incorporation into manual specified in Section 01 78 00 – Closeout Submittals.

1.5 QUALITY ASSURANCE

- .1 Strictly comply with epoxy flooring manufacturer's latest printed installation instructions. Keep a copy of installation instructions on site during installation.

1.6 PRE-APPLICATION SITE MEETING

- .1 Prior to start of epoxy flooring application, epoxy flooring manufacturer's technical representative shall review installation procedures with applicator on site.
- .2 Manufacturer's representative shall examine all conditions affecting the installation, including maximum moisture content of substrate(s), and maximum and minimum temperature and humidity levels permitted, with installer and to certify in writing, acceptance of conditions prior to commencement of installation.
- .3 Strictly comply with epoxy flooring manufacturer's latest printed installation instructions. Keep a copy of installation instructions on site during installation.

1.7 MOCK-UP

- .1 Construct mock-up in accordance with Section 01 45 00 – Testing and Quality Control.
- .2 Applicator to provide mock-up of minimum 10 m² of each type of epoxy flooring application in areas as directed by Departmental Representative.

1.7 MOCK-UP (continued)

- .3 Allow 48 hours for review of mock-up by Departmental Representative before proceeding with epoxy flooring Work. Manufacturer's technical representative shall attend review of mock-up.
- .4 Upon review and acceptance by Departmental Representative, mock-up will demonstrate minimum standard of acceptance for this work. Accepted mock-up will be considered part of the finished work.

1.8 DELIVERY, HANDLING AND STORAGE

- .1 Deliver and store materials in accordance with Section 01 61 00 – Common Product Requirements and in accordance with manufacturer's written instructions.
- .2 Deliver materials in manufacturer's original, unopened, undamaged wrapping and containers with manufacturer's labels and seals intact until used.
- .3 Prevent damage or contamination of materials during handling and storage.
- .4 Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- .5 Identify "best before date" for all packaged epoxy materials and notify Departmental Representative of delivered materials are approaching stipulated expiry date.
- .6 Protect work of others from damage resulting from Work of this Section.

1.9 ENVIRONMENTAL REQUIREMENTS

- .1 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials.
- .2 Ventilation:
 - .1 Provide ventilation continuously during and for 7 days after completion of installation of epoxy flooring installation.
- .3 Temperature:
 - .1 Maintain ambient temperature in accordance with manufacturer's written instructions.
 - .2 Do not apply coating systems unless uniform substrate surface temperature is between 16°C minimum and 30°C maximum at installation area for 24 hours prior to and during application and for a minimum of 48 hours after completion of installation of epoxy flooring.
- .4 Moisture:
 - .1 Ensure substrate is within moisture limits prescribed by epoxy flooring manufacturer.
 - .2 Concrete substrate shall have cured a minimum of 28 days prior to application. Moisture content of substrate shall not exceed 14%.

1.9 ENVIRONMENTAL REQUIREMENTS (continued)

- .5 Relative Humidity:
 - .1 Maintain relative humidity in accordance with manufacturer's written instructions.

1.10 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Building Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard and packaging material in appropriate on site bins for recycling in accordance with Waste Management Plan.
- .4 Do not dispose of unused epoxy flooring materials into sewer system, onto ground or in other location where it will pose health or environmental hazard.
- .5 Dispose of unused epoxy flooring materials at official hazardous material collections site approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- .1 Epoxy flooring materials from same manufacturer.
- .2 Ensure compatibility for epoxy flooring materials including primers, resins, hardening agents, finish coats and sealer coats.

2.2 MATERIALS

- .1 Epoxy Flooring (EF): 6 mm thick, seamless, slip resistant epoxy floor base and 2 component, chemical-resistant, epoxy protective coating with troweled mortar base. Acceptable material:
 - .1 "CPD CIPADOR E-100", by CPD Construction Products.
 - .2 or equal product by Stonhard, Sika, Ureco Powerblast Canada or other approved manufacturer.
- .2 Primers: as recommended by epoxy flooring manufacturer.
- .3 One colour as selected by Departmental Representation from manufacturer's standard colours.

2.3 CRACK ISOLATION MEMBRANE

- .1 Crack isolation membrane: 2 part epoxy, 100% solids, 283 g/0.836 m² fibreglass fabric reinforcing.
 - .1 Elongation at break of flexible epoxy binder: to ASTM D638-10, 90%.
 - .2 Tensile strength of fibreglass fabric: 68.947 MPa.

2.4 JOINT FILLER

- .1 Joint filler: self leveling, two-component sealant based on a flexible epoxy resin and a blended polyamide curing agent.
 - .1 Hardness: to ASTM D2240-05(2010), Shore A Durometer 50.
 - .2 Tensile Strength: to ASTM C-307, 1.7 MPa.
 - .3 Elongation: to ASTM D638-10, 450%.
 - .4 Joint Movement Capability: to TT-S-00227E, +/- 25%.

2.5 MIXES

- .1 Mix crack isolation membrane, joint filler, grout, floor base coat mortar and top coat sealer in accordance with manufacturer's written instructions.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with epoxy flooring manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions and datasheets.

3.2 EXAMINATION

- .1 Prior to start of Work of this Section examine all conditions affecting installation of epoxy flooring.
- .2 Verify substrate conditions are acceptable for product installation in accordance with epoxy flooring manufacturer's instructions.
- .3 Do not start Work of this Section until any unsatisfactory conditions have been rectified. Report any deficiencies to Departmental Representative in writing prior to proceeding. Commencement of Work will be deemed acceptance of conditions.

3.3 PREPARATION

- .1 Clean and prepare substrate surfaces in accordance with epoxy floor coating material manufacturer's instructions, as required to ensure satisfactory installation conditions.
- .2 Remove by mechanical means (ie shot blasting) surface of concrete substrate as required to completely remove substances which would adversely affect installation of new work by method approved by epoxy flooring manufacturer and Departmental Representative.
- .3 Patch cracks and other openings in substrate using an epoxy filler.
- .4 Complete work penetrating substrate before installing coating.
- .5 Grind down uneven joints, rough areas, projections and foreign matter from surfaces to receive flooring and base.
- .6 Apply crack isolation membrane minimum 0.762mm (30 mils) thick, lay reinforcing and saturate surface in accordance with manufacturer's written instructions.

3.4 INSTALLATION

- .1 Comply with epoxy flooring manufacturer's instructions. Apply each component of epoxy flooring system in strict accordance with manufacturer's directions to produce a uniform, monolithic wearing surface.
- .2 Prime clean concrete substrates as recommended by epoxy flooring manufacturer.
- .3 Apply epoxy sub-floor filler to cracks, depressions and low spots to achieve floor level to a tolerance of 1:500; allow to cure.
- .4 Prime subfloor filler substrate surfaces as recommended by manufacturer.
- .5 Mask adjacent surfaces and apply seamless epoxy flooring.
- .6 Trowel apply flooring to nominal thickness indicated, tightly compacted and free from surface holes and depressions.
- .7 Allow aggregate, grout and glaze coats to dry touch between coats. Do not apply more than two coats per day.
- .9 Cure epoxy flooring in accordance with manufacturer's directions and prevent contamination during stages of application to completion of curing process.

3.5 CLEANING

- .1 Proceed in accordance with Section 01 74 11 – Cleaning.
- .2 Clean installed epoxy floor surfaces in accordance with epoxy flooring manufacturer's printed instructions prior to Departmental Representative's acceptance. Use cleaning materials and procedures recommended by epoxy flooring manufacturer.
- .3 Repair or replace damaged or unacceptable epoxy flooring installations.
- .4 Upon completion of Work, remove all surplus materials, rubbish, tools and equipment from project site and legally dispose of debris.

3.6 PROTECTION

- .1 Protect epoxy flooring from damage and wear during construction to project completion.
- .2 Provide temporary covering in compliance with manufacturer's recommendations for protective materials and method of application.
- .3 Remove protective coverings and clean epoxy floors in accordance with manufacturer's written instructions following correction of deficiencies as accepted by Departmental Representative.

END OF SECTION