
Partie 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 03 30 00 – Poured-in-place Concrete.
- .2 Section 05 50 00 – Metal Fabrications.
- .3 Section 09 91 23 – Interior Paint.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM D570-98 (2010) e1, Standard Test Method for Water Absorption of Plastics
 - .2 ASTM D624-00 (2007), Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
 - .3 ASTM D638-10, Standard Test Method for Tensile Properties of Plastics
 - .4 ASTM D2240-05 (2010), Standard Test Method for Rubber Property—Durometer Hardness
 - .5 ASTM D4060-10, Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
 - .6 ASTM D4541-09e1, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
 - .7 ASTM E96/E96M-10, Standard Test Methods for Water Vapor Transmission of Materials
- .2 Underwriters' Laboratories of Canada (ULC).
 - .1 CAN/ULC-S102.2-03, Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies.
- .3 International Concrete Repair Institute (I.C.R.I)
 - .1 Guideline No. 03732P-97: Selecting and Specifying Concrete Surface Preparation for Coatings, Sealers and Polymer Overlays.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit product data sheets in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Submit Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Material Safety Data Sheets (MSDS) for epoxidic coatings must comply with Health Canada and Employment and Social Development Canada. VOC content must be specified.

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- .5 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit duplicate 200 x 200 mm samples of selected coating system, indicated colours and textures, applied to cementitious panels.
 - .6 Submit epoxidic coating maintenance data for incorporation into manual indicated in Section 01 78 00 – Closeout Submittals.

1.4 QUALITY ASSURANCE

- .1 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .2 Pre-installation meeting: hold meeting to examine work requirements, and manufacturer's installation and equipment instructions.
- .3 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
 - .1 Apply coating to 10 m² of surface to be coated to illustrate specified finish.
 - .2 Allow 24 hours for inspection of mock-up before proceeding with work.
 - .3 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.
- .4 Health and Safety:
 - .1 Comply with requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials and labelling and supply of Material Safety Data Sheets (MSDS).

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Keep products in their original containers until installation.
- .3 Follow manufacturer's storage and handling instructions.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Packaging Waste Management: remove for reuse and return by manufacturer of pallettes, crates, padding and other packaging materials as specified in Construction Waste Management Plan and Section 01 74 21 Construction/Demolition Waste Management and Disposal.

1.7 SITE CONDITIONS

- .1 Environmental Requirements:
 - .1 Temperature: minimum temperature of substrate 10 degrees C. Minimum temperature of air during and for 48 hours before and after coating is applied 15 degrees C.
- .2 Ventilation:

- .1 Provide continuous ventilation during and after work for 4 days.
- .3 Relative humidity:
 - .1 Maintain humidity under 40% for 7 days prior to the beginning of work and 2 days after work is completed.
- .4 Substrate humidity: maximum 4% by weight of concrete, unless otherwise indicated on product data sheets of system manufacturer.

1.8 ACCEPTABLE PRODUCTS AND MATERIALS

- .1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products

Partie 2 Products

2.1 MATERIALS

- .1 Liquid hardener to densify and seal concrete (**PE1**):
 - .1 One part liquid surface hardener, sodium silica base.
 - .1 Colour: Colourless
 - .2 Water vapour transmission (ASTM E96): n/a
 - .3 pH: 11,7
 - .4 Density: 1.2kg/L
 - .2 Coloured resin epoxy self-smoothing skid-resistant coating (**PE2**):
 - .1 2 part coloured epoxy coating (component A and transparent component B) self-smoothing, 2 mm thick.
 - .1 Compressive strength (to EN 196-1): 60N/mm²
 - .2 Flexural strength (to EN 196-1): 30N/mm²
 - .3 Bond strength: minimum 1.5N/ mm²
 - .4 Shore D hardness: 76
 - .5 Abrasion resistance: 70 mg
 - .6 Standard colour selected by Departmental Representative.
 - .7 Acceptable product:
 - .1 Sikafloor-261 by Sika.
 - .2 Replacement materials and products: approved by addendum to Instructions to Bidders.
 - .3 Transparent clear finish: (**PE3**):
 - .1 Superior performance two part epoxy finish, high solids content, superior resistance and gloss.
 - .1 Shore D hardness (to ASTM D2240): 85
 - .2 Elongation (to ASTM D638): 4%
 - .3 Tensile (to ASTM D638): 28 MPa
 - .4 Compressive strength (to ASTM D579): 70 Mpa

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| .5 | Flexural strength (to ASTM C580): | 83 Mpa |
| .6 | Modulus of elasticity (to ASTM C580): | 1287 Mpa |
| .7 | Water absorption (to ASTM D570): | < 0.36% |
| .8 | Colour selected by Departmental Representative. | |
| .9 | Acceptable product: | |
| | .1 Sikafloor 2002 by Sika | |
| | .2 Replacement materials and products: approved by addendum to Instructions to Bidders. | |
- .4 Resin, aggregate filled self-levelling coating (**PE4**):
- .1 Resin, aggregate filled self-levelling coating 3 mm, and finish coating, solid wear and skid resistant:
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| .1 | Self-levelling 3mm: | |
| | .1 Shore D (to ASTM D2240) | 76 |
| | .2 Compressive strength (to ASTM C579) | 56MPa |
| | .3 Abrasion resistance (to ASTM D4060) | 0.11g |
| | .4 Water absorption (to ASTM C413) | 0.3% |
| | .5 Resistance to mould
(to ASTM D3273) | Rated 10 |
| | .6 Colour selected by Departmental Representative. | |
| .2 | Epoxy finish coating: | |
| | .1 Transparent, satin textured finish. | |
| .3 | Acceptable products: | |
| | .1 Sikafloor Morritex Self-Levelling and Sikafloor Duochem 5206 by Sika | |
| | .2 Replacement materials and products: approved by addendum to Instructions to Bidders. | |
- .5 Accessories: as recommended by coating manufacturer.

Partie 3 Execution

3.1 INSPECTION

- .1 Ensure that items penetrating coating are placed before application of coating.
- .2 Ensure maximum moisture content of substrate does not exceed maximums recommended by manufacturer, based on product data sheets.
- .3 Ensure negative alkalinity of substrate before application of coating.

3.2 PREPARATION

- .1 Prepare surfaces in accordance with manufacturer's instructions.
- .2 Surface must be clean and sound. Remove any dust, laitance, grease, oil, dirt, curing agents, impregnations, wax, foreign matter, coatings and detritus.

- .3 Blast clean new and existing concrete, base coats and finish coats as recommended by coating manufacturer. Remove detritus and dust generated by mechanical preparation; vacuum. Surface texture as recommended by coating manufacturer.
- .4 Mask surrounding surfaces to provide neat, clean juncture lines.
- .5 Protect adjacent surfaces and equipment from damage by overspray.
- .6 Cracks: fill cracks and cavities 1.5 mm or more in poured in place concrete with crack filler recommended by coating manufacturer.

3.3 APPLICATION

- .1 Apply coating in strict compliance with manufacturer's procedure and application rate and as follows.
- .2 Mix components as indicated by manufacturer.
- .3 Apply coating to produce smooth surface, uniform in sheen, colour and finish, free from marks, dirt, particles, runs, crawls, curling, holes, air pockets and other defects, identical to approved mock-ups.
- .4 Apply each coat as recommended by manufacturer and as follows:
 - .1 Liquid hardener to densify and seal concrete:
 - .1 Apply directly from container using a sprayer.
 - .2 Scrub material into the surface with a stiff-bristle broom within 30 minutes of initial application and before the product begins to gel or become slippery.
 - .3 Once the product begins to gel, wet the material lightly with a water spray and rework into surface.
 - .4 Rinse the floor and remove any excess material with a squeegee and wet vacuum.
 - .5 PE1 finish is for technical areas near shipping dock. Refer to schedule of finishes.
 - .2 Coloured resin epoxy self-smoothing skid-resistant coating:
 - .1 Use products from same batch to avoid colour variations.
 - .2 Spread uniformly using serrated trowel.
 - .3 Remove entrapped air with a spiked roller, and then back-rolled (crosswise) while still wet.
 - .4 For skid resistant surface, broadcast with quartz sand after 15 minutes but within 30 minutes of application.
 - .5 PE2 finish is for technical spaces and basement mechanical rooms. Refer to schedule of finishes.
 - .3 Transparent clear finish:
 - .1 Mix components mechanically following manufacturer's indications.
 - .2 Apply by squeegee or flexible steel trowel, then back-rolled with roller to smooth surface.
 - .3 Apply additional coat to obtain texture and finish required.

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- .4 PE3 finish is for new and existing concrete surfaces in public spaces such as cloakrooms and washrooms in West wing basement stairs 5B and 5C in multifunctional room. Refer to schedule of finishes.
 - .4 Resin, aggregate filled self-levelling coating:
 - .1 Mix coatings mechanically according to manufacturer's instructions.
 - .2 Apply primer using squeegee or roller, to ensure even thickness. Avoid puddling.
 - .3 Apply self-smoothing coating using squeegee or serrated trowel, to level and remove entrapped air with spiked roller.
 - .4 Apply finish coat using squeegee, to ensure even thickness. Avoid puddling.
 - .5 PE4 is for new concrete surfaces in kitchen are. Refer to schedule of finishes.

3.4 FIELD QUALITY CONTROL

- .1 Inspection and testing of coating application will be carried out by testing laboratory designated by Departmental Representative.

3.5 CLEANING

- .1 Clean surfaces as indicated by written instructions of manufacturer of products.
- .2 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.6 PROTECTION

- .1 Allow coating to cure following manufacturer's instructions, preventing contamination during installation steps until curing of final coat.

END OF SECTION