

# GUIDE SPECIFICATIONS FOR TROWEL FINISH EPOXY FLOORS (INTERIOR USE ONLY)

(Revised 6/94 Supersedes all previous Specifications for Trowel Finish Epoxy Floors)

## SECTION 09

### TROWEL FINISH EPOXY FLOORS

1/4 inch nominal thickness-decorative or industrial-troweled epoxy flooring.

NOTE: MINOR TROWELING IRREGULARITIES MAY BE REFLECTED IN FINAL FLOOR FINISH. FLOOR SURFACING SHALL BE ONE OF THE FOLLOWING (SELECT TYPE DESIRED):

TYPE 1: FLOOR SURFACING CONSISTING OF EPOXY MATRIX MATERIAL AND GRADED CERAMIC OR OTHER WISE COATED AGGREGATE. GROUTED AND SEALED WITH A CLEAR BINDER TO ACHIEVE A NONPOROUS SURFACE.

TYPE 2: FLOOR SURFACING CONSISTING OF EPOXY MATRIX AND GRADED MARBLE OR GRANITE AGGREGATE. GROUTED AND SEALED WITH A CLEAR BINDER TO ACHIEVE A NON-POROUS SURFACE.

TYPE 3: FLOOR SURFACING CONSISTING OF COLORED EPOXY MATRIX MATERIAL AND GRADED SILICA, QUARTZ, OR OTHER HARD AGGREGATE. GROUTED AND SEALED WITH THE SAME COLOR BINDER TO ACHIEVE A NONPOROUS SURFACE.

#### PART 1-GENERAL

##### 1.01 RELATED WORK SPECIFIED IN OTHER SECTIONS

NOTE: DELETE NONAPPLICABLE ITEMS.

- A. Furnishing and/or installation of metal lath and scratch coat.  
Section \_\_\_\_\_
- B. Attachment of metal stairs, any welding and mesh reinforcing.  
Section \_\_\_\_\_
- C. Furnishing and setting of floor drains.  
Section \_\_\_\_\_
- D. Furnishing and setting surface hardware.  
Section \_\_\_\_\_
- E. Setting of metal base beads and wood ground,  
Section \_\_\_\_\_
- F. Backing for Troweled Epoxy Terrazzo base must be cement board or exterior grade plywood, concrete block, concrete or Cement plaster.
- G. Concrete subfloor,  
Section \_\_\_\_\_

NOTE: SUBFLOOR SHOULD NOT VARY MORE THAN 1/4" FROM A TRUE PLANE IN 10 FEET AND HAVE A STEEL TROWEL FINISHED SURFACE. NO CURING AGENTS OR OTHER ADDITIVES WHICH COULD PREVENT BONDING SHOULD BE USED. THE SLAB SHOULD HAVE AN EFFICIENT MOISTURE BARRIER UNDER THE CONCRETE SLAB WHEN PLACED DIRECTLY ON GRADE. SAW CUTTING OF CONTROL JOINTS MUST BE DONE BETWEEN 12-24 HOURS AFTER PLACEMENT OF STRUCTURAL CONCRETE.

- H. Broom clean area to receive epoxy flooring of loose chips, laitance and all foreign matter.
- I. Sufficient water, temporary heat and light, and adequate electric with suitable outlets connected and distributed for use within 100 feet of any working space.  
NOTE: AMBIENT FLOOR TEMPERATURE SHALL BE MAINTAINED AS PER MANUFACTURER RECOMMENDATIONS, MINIMUM 50 DEGREES FAHRENHEIT.

##### 1.02 QUALITY ASSURANCE

- A. Acceptable supplier:

- 1. Materials furnished shall meet NTMA Specifications.
- B. Installer qualifications:
  - 1. Installer shall be a contractor member of NTMA and shall perform all work in accordance with NTMA standards.
  - 2. If installer is not a contractor member of NTMA, they shall submit a list of completed projects of a similar magnitude and complexity.

##### 1.03 SUBMITTAL

- A. Samples:
  - 1. Submit a maximum of three samples, minimum 6" x 6" for each color and type of epoxy flooring.
  - 2. Submit two, 6" minimum lengths of each type and kind of divider strips.
- B. Maintenance Literature:
  - 1. Submit two copies of maintenance recommendations of NTMA or maintenance product members of NTMA.
- C. Certification:
  - 1. Suppliers shall furnish certification attesting that materials meet specification requirements.
  - 2. Suppliers shall furnish properly labeled material and Material Safety Data Sheets which comply to current state and federal requirements.
  - 3. Suppliers shall furnish complete instructions for any cautions or special handling of materials in order to comply with the Occupational Safety and Health Act.
  - 4. Submit two copies of NTMA maintenance recommendations.

##### 1.04 DELIVERY, STORAGE AND HANDLING

- A. Delivery of materials:
  - 1. Deliver materials in a manner to prevent damage to containers and/or bags.
- B. Storage of materials:
  - 1. Store materials in a clean, dry and heated (if necessary) location (50 -90 degrees Fahrenheit) furnished by others.

##### 1.05 GUARANTEE

One year from date of substantial completion of epoxy flooring installation.

#### PART 2-PRODUCTS

##### 2.01 MATERIALS

- A. Primer: As recommended by Epoxy resin supplier.
- B. Epoxy resin: Shall be suitable for application by trowel to a finished thickness of 1/4 " nominal thickness in a system approach. Material shall be pitched to a drain and form a vertical cove base where specified. Epoxy resin mixed according to manufacturer recommendations and tested without aggregate added. All specimens cured for 7 days at 75 degrees plus or minus 2 degrees Fahrenheit and 50% plus or minus 2% R.H. The product shall meet the following requirements.

PROPERTY	TEST METHOD	REQUIREMENT
HARDNESS	ASTM D-2240 using Shore D Durometer	70 min
TENSILE STRENGTH	ASTM D-638 run at 0.2" min. Specimen made using "C" die listed in ASTM D-412	3,000 PSI min.
TENSILE ELONGATION	ASTM-D-638 run at 0.2"/min. Specimen made using "C: die listed in ASTM D-412	5.0% min.
COMPRESSIVE STRENGTH	ASTM D-695, Specimen B Cylinder	12,000 psi min
CHEMICAL RESISTANCE	Federal test method standard 406 method 7011, 7-day immersion.	

*NOTE: CHEMICAL RESISTANCE LIST MAY BE MODIFIED TO CHANGE REQUIREMENTS AS SPECIFIED.*

Mineral oil - no effect  
ASTM No. 3 - no effect  
Lard - no effect  
Isopropanol - no effect  
Ethanol - no effect  
10% Hydrochloric Acid - no effect  
30% Sulfuric Acid - no effect  
5% Acetic Acid - no effect  
0.025% Detergent - no effect  
1% Soap Solution - no effect  
10% Sodium Hydroxide - no effect  
Distilled Water - no effect

## WATER

ABSORPTION     ASTM-D-570, 24 Hours     0.10% max

### C. Properties of formulated, trowel-applied material:

1. Color: Troweled epoxy surfacing shall have the aggregate color blend or solid color as specified.
2. Resistance to impact: Epoxy surfacing, when bonded securely to the concrete substrate, shall not show visible signs of chipping, cracking or lose bond from a 2 pound steel ball dropping vertically from the height of 8 feet. (16 foot pounds.)
3. Thermal coefficient of linear expansion: When tested in accordance with ASTM-D-696, The epoxy floor material will comply with the following value: 15 x 10<sup>-6</sup> inches per degree Fahrenheit maximum.
4. Bond strength: When tested in accordance with field test method for surface soundness and adhesion as described in ACI Committee No. 403 Bulletin Title No. 59-43 (pages 1139-1141) the epoxy flooring surface shall comply with the following value: 1005 concrete failure minimum with 200 PSI minimum tensile strength.
5. Chemical Resistance: The epoxy floor system shall exhibit no evidence of change in color, blistering, cracking, peeling, or loss of adhesion after 48 hours when tested in accordance with ASTM-C-267.
6. Abrasion resistance: The epoxy floor system shall not lose more than .030 grams per 1,000 cycles using a Taber Abraser with CS-17 wheels and a 1,000 gram load on each arm. (Federal Test Method 6192)
7. Porosity: The epoxy floor system shall gain not more than 8 percent in weight and shall exhibit no evidence of cracking, peeling, blistering, or loss of adhesion after submersion in distilled water for 24 hours when tested in accordance with ASTM-D-570.
8. Thermal shock resistance: The epoxy floor system shall not crack, peel, blister, spall, or lose adhesion after 5 cycles of immersion in chilled and boiling water at 24-hour intervals. (Modified ASTM-C-884)
9. Stain Resistance: The epoxy floor system shall not leave a permanent stain when exposed for 24 hours to staining agents testing in accordance with ASTM-D-1308.
10. Compressive strength: ASTM-C-579...10,000 psi min.

### D. Aggregate 1: As specified by material supplier for each type as specified.

1. TYPE 1: Shall be a ceramic coated translucent aggregate of graded size for good troweling and blending as specified. *NOTE: TROWELED SYSTEM CANNOT BE GROUND OR SEVERELY SANDED TO ELIMINATE TROWEL IMPERFECTIONS. GRINDING WILL CHANGE THE COLOR OF THE FINISHED FLOOR.*
2. TYPE 2: Shall be graded (size #0) marble or granite chip, properly blended for correct color blend, washed and dried

for minimum dust content. Common marble and granite (Not washed or dried) are not suitable.

*NOTE: TROWELED SYSTEMS CAN BE GROUND TO ELIMINATE MINOR TROWEL IRREGULARITIES WITH OUT CHANGING COLOR APPEARANCE.*

3. TYPE 3: Shall be grades silica, quartz or other hard aggregate as specified. Color is not determined by color of aggregate.

- E. Grout and seal coat: To be specified by the manufacturer to provide specific wear qualities, chemical and stain resistance, as specified.

*NOTE: SPECIFIC PERFORMANCE REQUIREMENTS REGARDING THE ABOVE QUALITIES MAY CHANGE DEPENDING ON REQUIREMENTS AS SPECIFIED.*

## 2.02 MIXES

- A. Color: Color and blends as selected, provided by material supplier.
- B. Proportions: In accordance with resin supplier recommendations.
- C. Blending: Troweled epoxy material and aggregate shall be mixed in accordance with manufacturer's instructions. Grout and sealer mixed in accordance with manufacturer's instructions.

## PART 3-EXECUTION

### 3.01 INSPECTION

- A. Examine areas to receive epoxy flooring for defects in existing work that work that affect proper execution of epoxy flooring.
  1. Defects in existing work that affect proper execution of epoxy flooring.

*NOTE: CRACKS IN SUBSTRATE WILL USUALLY BE TRANSMITTED THROUGH TOPPING TO SURFACE.*
  2. Deviations beyond allowable tolerance for the concrete slab work.

*NOTE: SUBFLOOR NOT TO VARY MORE THAN 1/4 INCH FROM TRUE PLANE IN 10 FEET. EPOXY SYSTEM, AS SPECIFIED, IS NOT INTENDED TO LEVEL SUBSTRATE AND WILL ONLY FOLLOW THE CONTOUR OF THE CONCRETE SLAB. IF, FOR ANY REASON, THE SUBCONTRACTOR QUESTIONS THE SUITABILITY OF THE SUBSTRATE FOR BONDING, ANY WORK REQUIRED TO ELIMINATE NONCONFORMITY OF SUBSURFACE SPECIFICATIONS IS THE RESPONSIBILITY OF OTHERS, ANY MATERIALS USED TO CORRECT NON-UNIFORMITY MUST BE COMPATIBLE WITH EPOXY SYSTEM SELECTED AND BE AP-PROVED BY THE FLOORING CONTRACTOR.*
- B. Start work only when all defects have been corrected by others.

### 3.02 INSTALLATION

- A. Subfloor:
  1. Prepare substrate to receive epoxy flooring in accordance with manufacturer's recommendations.
  2. Install control joints, if required, precisely above substrate joints.
  3. Install divider strips as shown on drawings.
- B. Placing Epoxy Flooring:
  1. Prime substrate as manufacturer's recommendations.
  2. Place mixture in strict accordance with manufacturer's instructions.
- C. Grout and seal coats: Apply in strict accordance with manufacturer's instructions.
- D. Protection:
  1. Upon completion, the work shall be ready for final inspection and acceptance by the owner or his agent.
  2. The General Contractor shall protect the finished work from the time that the flooring contractor completes the work.