



# GUIDE SPECIFICATION

## M-C-QUARTZ SYSTEM "S" \*

### DECORATIVE, EPOXY RESIN, SEAMLESS FLOORING

#### 1. GENERAL

**1.1 Scope:** This specification covers the installation of decorative, epoxy seamless flooring which consists of a 100% solids, two-component epoxy resin binder and seal coats that are blended with multi-colored ceramic coated quartz aggregates to form an average 1/16 inch thick flooring system. M-C-QUARTZ SYSTEM "S" is an aesthetic, chemical resistant and durable wearing surface which is intended for institutional, light industrial and commercial use.

**1.2 Work Included:** Furnish and install the M-C-QUARTZ SYSTEM "S" seamless flooring consisting of UI-7051 Epoxy Binder and UI-7127 Clear Cycloaliphatic Amine-Epoxy Top Coat. The flooring is to be installed to an average 1/16 inch thickness and shall be installed as a coved base to the height specified. Apply in accordance with the architectural drawings and room finish schedules as specified and the latest instructions supplied by Urethane Polymers International, Inc. (UPI).

**1.3 Work Not Included:** Work under this section shall not include finishing and corrective work in connection with surfaces to receive the epoxy flooring system. Nor does it include furnishing and installation of on-grade vapor barriers, metal flashing, curbs, drains, vents, or any other penetration through the floor.

#### 1.4 Condition of Plywood Substrate:

1.41 The plywood shall be in accordance with American Plywood Association specifications. Double layer construction over joists, with both layers being a minimum of 3/4 inch exterior grade plywood nailed thoroughly to the joists. The plywood should be grade B/C or better. The layers of plywood should be placed so that the top layer sheets bridge the seams of the lower layer.

1.42 The top layer of plywood should be nailed at 4 inch intervals at the seams and 6 inch spacing throughout body of the sheet. Nails should be ring shanked or screw type underlayment nails.

1.43 All plywood floors shall be designed and installed to eliminate any vertical deflection.

1.44 The plywood shall have a variation in plane of not more than 1/8 inch in 10 feet in any direction. Proper slope to drain must be maintained.

#### 1.5 Condition of Concrete Substrate:

1.51 Concrete shall be of sufficient thickness and designed and installed to minimize random cracking and slab deflection and to provide sufficient control joints and isolation joints.

1.52 Variation in plane shall not be greater than plus or minus 1/8 inch in 10 feet in any direction. Proper slope to drain must be maintained.

1.53 A power steel trowel followed by a fine broom finish is preferred for best results and to minimize surface preparation.

1.54 Concrete shall be clean, crack free, sound and durable (3,000 psi compressive strength recommended) and dry (7% maximum moisture content). Concrete shall be free of fins, ridges, voids or air-entrained holes.

1.55 Concrete must be free of hydrostatic and/or capillary moisture pressure and should not be in direct contact with the ground unless there is an effective vapor barrier and properly engineered soil. If in doubt, a rubber mat test in accordance with ASTM D-4263 or a RMC Calcium Chloride Moisture Test must be conducted and results evaluated.

1.56 Allow new concrete slabs to cure 28 days minimum before applying the seamless flooring.

1.57 Sealers, wax or resinous curing compounds shall not be used on concrete surfaces which are to receive this flooring system.

**1.6 Temporary Services by General Contractor:** Temporary electrical service, adequate hoisting where necessary, and water for installer's use shall be provided at no cost by the General Contractor to the installer. Adequate heat, without flame, to maintain a room temperature of not less than 70° F shall be provided 24 hours prior, during and after completion of the work at no cost to installer.

#### 1.7 Protection:

1.71 During work, protect all surfaces of other trades against damage from work specified in this Section. Warn installation mechanics against breathing of vapors and avoiding contact of materials with skin or eyes.

1.72 No smoking, gas flames, or sparking from electrical outlets, telephones or electrical motors shall be allowed in area of application.

1.73 Allow no light traffic on the seamless flooring for 24 hours after completion. The General Contractor shall be responsible for installing and maintaining protection of surfaces after final coats and until final acceptance.

#### 2. QUALIFICATIONS

##### 2.1 Professional Installer:

2.11 Shall be experienced in successfully applying the same or similar materials.

2.12 Shall be financially responsible and be able to submit any required project warranty.

2.13 Shall submit to the General Contractor and the building owner necessary certificates of insurance prior to starting the project.

**2.2 Sample Submittals:** Submit samples not less than 2 1/2 X 4" in size, showing the approximate applied thickness, texture and color. The submittal shall also include the manufacturer's application-information and a list of materials by name and quantity to be used on this project in order to demonstrate compliance with these specifications.

#### 3. MATERIALS

All materials used under this specification, including primers, aggregate, binders, thickeners, solvents and reinforcing materials, shall be furnished or approved by UPI. The components shall be delivered to the job site in factory-sealed containers clearly marked with identifying labels.

**3.1 Epoxy Resin Primer & Binder:** Shall be UI-7051, a low viscosity, two component, 100% solids, unfilled epoxy resin and shall meet or exceed the following typical performance properties:

##### UI-7051 Epoxy Binder

PROPERTY	TYPICAL VALUE	TEST METHOD
Tensile Strength	6,500 psi	ASTM D-638
Tensile Elongation	2.5%	ASTM D-638
Hardness (Shore D)	80	ASTM D-2240
Compressive Strength Binder	10,900 psi	ASTM C-579
Compressive Strength, Mortar	9,200 psi	ASTM C-579
Water Absorption	0.2%	ASTM C-413
Impact Resistance, Mortar	Passes	MIL D-24613
Bond Strength	350 + psi	ASTM C-882
Abrasion Resistance, CS-17 wheels	0.1 gms loss	ASTM D-4060
Coefficient of Friction, With Aggregate	0.60 min.	ASTM D-2047
System Flammability	Self Extinguishing	ASTM D-635

**3.2 Epoxy Seal Coat:** Shall be UI-7127 Clear, a self-leveling, two component, 100% solids, chemical resistant and abrasion resistant cycloaliphatic amine modified epoxy resin system and shall meet or exceed the following typical performance properties.

## UI-7127 Clear Epoxy Top Coat

PROPERTY	TYPICAL VALUE	TEST METHOD
Tensile Strength	7,500 psi	ASTM D-638
Tensile Elongation	2.1%	ASTM D-638
Hardness (Shore D)	83	ASTM D-2240
Compressive Strength	11,200 psi	ASTM D-695
Compressive Strength, Mortar	10,000 psi	ASTM C-695
Water Absorption	0.2%	ASTM C-413
Flexural Strength	9,400 psi	ASTM D-790
Flexural Modulus	305,000 psi	ASTM D-790
Bond Strength	350 + psi	ASTM C-882
Abrasion Resistance, CS-17 wheels	0.035 gm loss	ASTM D-4060

**3.3 Chemical Resistance:** For details on specific chemical resistance for M-C-QUARTZ SYSTEM "S", please contact the UPI Technical Service Department.

**3.4 Aggregate:** Shall be properly sized, ceramic colored, inorganic quartz granules as approved by UPI. The granules shall be dry, graded or sized, dust free and shall be hard and stable to the anticipated traffic conditions. There shall be a minimum selection of six standard solid colors from which to create decorative aggregate blends.

## 4. SUBSTRATE PREPARATION

### 4.1 Concrete Surfaces:

4.11 The concrete surface must be thoroughly cleaned by shot blasting, acid-etching or mechanical grinding, followed by the complete and thorough removal of the resulting residue.

4.12 If Acid-etching is used, apply a solution of 1:1 muriatic acid and water at the rate of 2 gallons solution per 100 square feet. Scrub with a stiff broom or mechanical scrubber. Neutralize with a solution of ammonia or TSP in water and give a final rinse by flushing with fresh water using a high pressure washer (2500 psi minimum).

4.13 Cracks or non-moving control joints shall be routed out to ¼ inch minimum in width and depth and filled flush with high hardness elastomeric caulking or epoxy mortar.

4.14 Surfaces to receive coves or base shall be strong, durable, dry and free of contaminants. Surfaces with weak backings, such as drywall or plaster, are not acceptable unless reinforced with lath.

### 4.2 Plywood Surfaces:

4.21 The plywood surface must be broom clean and free of all paint, grease, oil, spackle and foreign materials.

4.22 Damaged plywood panels shall be repaired or replaced prior to installing the epoxy flooring system. All cracks, joints and rough areas shall be filled flush with an epoxy mortar. High spots and other surface projections must be ground smooth.

## 5. APPLICATION

Application shall be in strict accordance with the latest printed instructions of UPI. The epoxy flooring system shall be installed when the temperature of the concrete floor is above 50° F and the ambient temperature is not less than 70° F. Areas to receive the primer and epoxy flooring shall be well ventilated. Installation mechanics shall wear rubber gloves and goggles or face shields should be used during mixing operations.

5.1 Most substrate conditions will require priming with one light coat of UI-7051 Epoxy Primer. For priming, the UI-7051 may be thinned up to 10% with toluene (or as local regulations allow). Apply at a rate of 300-400 square feet per mixed gallon.

5.2 Mix the UI-7051 at the ratio of two gallons of Part A to one gallon of Part B. Immediately spread all of the mixed UI-7051 Epoxy Binder onto the designated area of the properly prepared floor with a 1/16 inch notched trowel or squeegee. Backroll with a short nap roller. Apply at the approximate rate of 80 square feet per gallon of mixed material.

5.3 Allow the UI-7051 Epoxy Binder to briefly level and immediately sprinkle the colored quartz reinforcing aggregate into the wet binder at the approximate rate of 50 lbs. per 100 square feet. Carefully sprinkle the

aggregate until the binder is completely covered and no wet binder is visible.

5.4 NOTE: Wear spiked shoes during this operation. Do not mix size of aggregate granules. Sprinkle at least one foot back from areas where there will be adjoining pours of binder.

5.5 Allow the epoxy resin flooring to cure until firm. Sweep or vacuum excess granules. Scrape floor firmly with edge of trowel to remove projecting or loose granules. Re-sweep or vacuum to remove debris. (Smoother floors can be obtained by using a floor disc sander to mildly and lightly remove high spots. Selected hand sanding should be employed at base and tight spots. Remove all sanding dust by vacuuming.)

5.6 Apply a seal coat of UI-7127 Clear Epoxy Seal Coat. Thoroughly mix the UI-7127 Epoxy Sealer and spread uniformly over the entire floor surface with flat trowels, squeegees, or rubber grouting-floats. Keep a puddle or "head" of sealer in front of the tool. Draw or pull sealer down tight. Always re-roll wet sealer with short napped rollers, rolling in all directions to insure even application. Coverage of the sealer coat will vary due to finishing techniques, porosity, and also will be dependant upon the degree of texture that is desired. Typical installations will average 100 square feet per gallon.

5.7 If a second seal coat is desired, allow the first seal coat to cure 6 hours minimum and 24 hours maximum. Apply a second seal coat of UI-7127 Epoxy Sealer. Apply each seal coat at a rate of 150-225 square feet per gallon, depending upon the degree of texture that is required. Light sanding may be employed between coats to remove rough spots or aggregate clumps.

## 6. MAINTENANCE

The epoxy seamless floor should be cleaned with a free-rinsing, non-abrasive detergent as often as necessary following recommended practices of the maintenance industry. Spot remove tar and scuff marks with a clean rag wet with xylene or isopropyl alcohol. When greater slip-resisting characteristics are needed, increasing the textured qualities in the M-C-Quartz floor also increases the maintenance efforts. It is more difficult to get the dirt and film residue from between the non-skid additives than it is to get them off the slightly textured surface.

## 7. GUARANTEE / WARRANTY

When this Epoxy Flooring System is installed by a Professional Installer, is inspected and approved in accordance with these specifications, and after receipt of the final payment, the Professional Installer shall issue the Installer's standard installation guarantee covering defects in material and workmanship.

Urethane Polymers International (UPI) warrants its products to be free of defects in workmanship and materials only at the time of shipment from our factory. If any UPI materials prove to contain manufacturing defects that substantially affect their performance UPI will, at its option, replace the material or refund the purchase price.

The dollar value of UPI's liability and buyer's remedy under this limited warranty shall not exceed the purchase price of the UPI materials in question.

\*Manufactured under license from MCP Chemicals International, Inc.

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