

Application guide & recommendations for Concrete surfaces

product storage & handling

All MCU-coatings should be stored in a covered shelter. Care should be taken to ensure that unused containers remain sealed and leftover, partial containers are properly resealed.

Storage temperature can range from -18°C to 38°C and should be kept constant. The material temperature must be brought to 3°C above the dew point temperature before opening and agitating the material to prevent condensation from entering the coating. **TIP:** Store the paint in the same temperature as the application temperature for 10 – 12 hours.

Since MCU coatings react with atmospheric moisture, it is important to limit the time the container is open. Mix and pour out only what is needed, then apply a solvent “fl oat” of approximately 100 – 150 ml of MCU’s thinner over the surface of the coating before resealing the container.

When in an extreme high humidity – rain or fog – place a plastic sheet over any opened cans of paint that can be exposed to water drips.

If it is not possible or practical to reseal the container during spray application, pour an MCU solvent “fl oat” over the coating to prevent moisture intrusion.

If a skin forms on the surface of the coating in a new, sealed container or a resealed partial container, remove it by cutting the edge of the skin at the skin/container interface, and discard. Agitate the remaining material until it’s homogeneous, adding MCU’s thinner as necessary. Filter the coating through a fine filter and proceed with the application.

mixing & thinning

MCU-coatings are single-component coatings. There is no mixing “Part A with Part B”; however, the coating should be mixed using power agitation for 3 minutes or until it’s completely homogeneous.

Do not use on paint shaker, and avoid repeated boxing.

Aged MCU-coatings (6 months or older) may develop significant settling.
Mix using power agitation until the coating is completely homogeneous.

Do not subject MCU-coatings to agitation during application. Once thoroughly mixed, the pigments will stay in suspension for up to 4 hours. Continuous agitation can cause premature gelling.

Thinning: Use only MCU-Thinner or MCU-Thinner 25. Make no exceptions, substitutes, or assumptions about using other reducers. Most industrial solvents contain water, or alcohol. Even a very small amount of water, alcohol or other hydroxyl bearing solvent can contaminate and destroy the moisture-cure reaction without any apparent indication or gelling. Substitutions may also jeopardize application and performance properties and will void any product warranty. Consult ‘MCU-Coatings’ Technical Service for thinning recommendations when MCU’s thinner is not available.

concrete cure times

ASTM C150 concrete types will vary in rate of cure. ‘MCU’ recommends a minimum cure of 7 days for non-immersion service and 14 days for immersion service. Test the concrete for moisture content using mechanical or digital methods. Proceed with surface preparation and coating application when the moisture content of the concrete is not in excess of 14%.

ASTM D4263-83: The plastic sheet method is used to indicate the presence of capillary moisture in concrete. Tape 457 by 457 mm

(18” by 18”), 100µm (4-mil) thick, clear plastic sheet tightly to the surface making, sure that all edges are sealed. Keep the taped sheet in place for a minimum 16 hours, then remove it and visually inspect the underside of the sheet and the concrete for the presence of moisture.

If ASTM D 4263-83 test shows darker (damp, but not visually wet) concrete the coatings application can commence. Refer to SSPC-TU2, SSPC Guide 11 and ACI 308 for additional information.

----- pre-surface preparation -----

Any curing agents or hardeners, oil, grease, dirt and other contaminants must be removed prior to surface preparation and coating application. Various methods of pre-surface preparation are available as referenced in SSPC-SP13/NACE No. 6 and the following ASTM Standards. Consult 'MCU-Coatings' for further recommendations whenever the following ASTM designations do not meet your project requirements

ASTM D 4258-83 (Reapproved 1999) Standard Practice for Surface Cleaning Concrete for Coating: This practice is primarily recommended for light-duty service. Where protective coating systems are used for continuous or intermittent immersion, mechanical loading and for systems needing optimum bond, this standard should be used as pre-surface preparation in conjunction with ASTM D4259 and ASTM D4260..

ASTM D4259-88 (Reapproved 1999) Standard Practice for Abrading Concrete: This practice is intended to alter the surface profile of the concrete, remove foreign materials and weak surface laitance..

This standard will effectively remove curing compounds, form release materials, and concrete hardeners. Use this standard in conjunction with ASTM D4258

ASTM D4260-88 (Reapproved 1999) Standard Practice for Acid Etching Concrete: This practice is primarily used on horizontal surfaces, and is intended to alter the surface profile of the concrete. It aids in removing foreign materials and weak surface laitance but is not effective in removing curing compounds, form release agents and hardeners. Use this standard in conjunction with ASTM D4258.

If a concrete floor is below grade, a moisture barrier should be present under the slab. This eliminates the possibility of hydrostatic pressure build-up under the coating, which can cause blisters and delamination..

----- surface preparation -----

Follow Pre-Surface Preparation recommendations in Section 4.0, and refer to SSPC-SP13/NACE No. 6 Surface Preparation of Concrete for complete surface preparation procedures prior to protective coating application. Consult 'MCU-Coatings' for further recommendations whenever the following SSPC-SP13 NACE No. 6 methods do not meet your project requirements.

Surface preparation methods should achieve adequate surface profile and porosity to ensure optimum mechanical coating adhesion to the substrate. In most cases, the desired profile is similar to that of medium grade sandpaper.

Abrasive Blasting Methods, either wet or dry, can be used to remove contaminants, loose paint, laitance, and weak concrete, to expose surface voids and to produce a sound concrete surface with adequate profile and porosity. Vacuum or air blast cleaned surface to remove all sand and dust.

High-Pressure Water Cleaning Methods described in SSPC-SP12/NACE No. 5 using manually operated high-pressure water jetting equipment may be used to remove contaminants, loose paint, laitance, and weak concrete, to expose surface voids and to produce a sound concrete surface with adequate profile and porosity.

Impact Tool Methods include scarifying, planing, scabbling, and rotary peening to remove existing coatings, laitance, and weak concrete. Impact-tool methods may fracture concrete surfaces or cause micro-cracking that may need supplemental cleaning with Abrasive Blasting or High Pressure Water Cleaning to produce a sound concrete surface with adequate profile and surface porosity. The soundness of an impact-tool prepared surface should be verified by testing the surface tensile strength after cleaning.

Power-tool Methods include circular grinding, sanding, and wire brushing to remove existing coatings, laitance, protrusions, loose paint and weak concrete. These methods may require Abrasive Blasting or High-Pressure Water Cleaning to produce a sound concrete surface with adequate profile and surface porosity.

Chemical Surface Preparation or Acid Etching as described in ASTM D4260 may be used on horizontal surfaces to remove some surface contaminants, laitance, and weak concrete, and may provide sufficient surface profile on concrete. This method requires the complete removal of all reaction products and pH testing to ensure neutralization of the acid. Acid etching is not recommended on vertical surfaces or on areas where curing compounds and sealers have been used. Acid etching with hydrochloric acid is not for use where corrosion of metal in the concrete is likely to occur.

Inspect the surface for soundness, moisture content, and cleanliness. Ensure all contaminants, form release agents, and hardeners are removed. Repair or remove any surface irregularities and loose concrete. Use an approved crack filler on holes and cracks. When the surface is clean, sound, and dry proceed with coating application.

If a previous coating system exists, test its adhesion to verify that it withstands 200 psi (1.38 Mpa) using ASTM D4541 Pull-off Adhesion Test. Remove the old system if it fails, and feather abrupt edges on any sound coating that remains. Clean the surface as recommended and scuff-sand any existing gloss. Perform a spot test application of the new system over the prepared existing coating. System incompatibility may be evident within 30 minutes. If after 30 minutes no sign of incompatibility presents itself, wait five days and perform either ASTM D4541, or ASTM D3359 to check adhesion of the new system over the existing system.

----- **equipment & set-up procedures for airless and conventional spray** -----

Inspect all air/liquid hoses for cracks, leaks, etc., and replace as necessary. Use a set of clean hoses exclusively for MCU and PU coatings to avoid blocking guns.

Inspect the spray apparatus and its components. Insure spray guns are clean and properly functioning. Change or clean filters prior to use. Check for proper tips and tip sizes, and use a reversible spray tip. Refer to the recommended Pressure and Tip Sizes chart in this section. Check valves and gauges for proper operation, and replace as necessary. Adjust to proper pressure.

Flush MCU's thinner through the system to clean the hose and flush out condensate. Never allow old thinner in the paint lines to enter the coating.

Filter the paint if the gun is blocking and clean hoses are used. Double check the pumps and filters. If a skin has formed on top of the paint

i.e. from transport, make sure and remove entirely before mixing in with the paint.

It is a good idea and recommended by "the Good Painting Practises" – SSPC to box the paint. This means; after mixing to filter the paint though a 500 mesh sieve into a clean uncontaminated can to remove unwanted particles

Stage large pails (10, 15 or 20lt) away from paint pump to prevent relief valve moisture from contaminating the product.

All MCU coatings are supplied ready to mix and spray. Use standard production type spray equipment. Air supply must have an effective moisture trap. Use air pressure at gun of 20 – 34 kg (45 - 75 pounds). Use 7 – 9 kg (15 - 20 pounds) pot pressure. Do not agitate in pressure pot. Use professional pumps 28-40:1.

----- **recommended pressure & tip sizes** -----

<i>product</i>	<i>pressure</i>	<i>tip size</i>
mcu-	2400-	015-021
miozinc	2800	
mcu-	1800-	011-015
aluprime	2000	
mcu-	2100-	017-021
miomastic	2800	
mcu-	2100-	013-019
mastic	2800	
mcu-	2400-	011-015
topcoat	2800	
mcu-	1800-	011-013
alutopcoat	2000	

----- **roller or brush set-up** -----

Use a natural fiber brush or a natural or synthetic fiber roller cover with a 6.3 to 9.5 mm (1/4 - 3/8 inch) nap, and a phenolic core. Pay special attention when brush-applying primer to avoid brush stroke valleys, which may produce holidays in the film. MCU-Thinner 25 is the solvent of choice for brush and roll applications when reduction is desired.

When painting by roller or brush, don't use the same paint for too long. This is typically no more than 3 to 4 hours in a humid environment.

When the paint starts to increase in viscosity and becomes difficult to paint, the paint is saturated with moisture and the max. pot life is reached. Excessive amounts of moisture in the paint will cause bubbling, pinholing, lower tolerance to high DFT, reduced tolerance to moisture on the substrate, poor wetting and increase in viscosity. It is better to use small quantities and to refresh frequently. Poor a smaller quantity of paint out of the mixed 5, 10, 15 or 20lt can into your paint bucket and refresh once all the paint is used. Don't poor small leftovers back into the fresh paint. It is best to remove small leftovers.

----- system application -----

MCU-coatings spray FAST. Painters that use MCU coatings for the first time are often using more paint than they would expect, certainly when they spray the paint like an epoxy, without monitoring the WFT. MCU coatings have very little over spray and build up to the min. DFT faster than typical 2C epoxy or PU paints. The MCU paint is coming out of the spray gun faster. Where the epoxy has to do i.e. 3 to 4 passes to reach the min. DFT, MCU coatings only have to do 2. When the spray painter is spraying average too thick, slight dilution of the paint helps. Once the spray painter is used to using MCU coatings, he will be able to spray faster and reduce the project completion time.

Primer/Sealer: Apply one coat at the recommended DFT, thinned up to 30% as needed for penetration and adhesion, which will maximize coverage of the succeeding coats. Do not use QuickCure in this coat.

Intermediate and Topcoat: Apply one or two coats of the specified coating at the recommended DFT, thinned up to 10% as needed to achieve desirable application characteristics.

Optional Clear Finish Coat: Use ClearShield in one or two coats at the recommended DFT, thinned up to 10% as needed to achieve desirable application characteristics.

Allow approximately 4-8 hours, @ 21°C (70°F), minimum cure between coats (refer to MCU's QuickCure Product Guide for

temperature/cure-time chart), 2-4 days minimum cure @ 22°C (70°F) for light traffic; 7-10 days for heavy vehicular traffic; 72 hours minimum for chemical exposures. Recoat and cure times are based on recommended dry film thickness.

For non-skid surfaces, lightly broadcast 40-80 grit abrasive (aluminum oxide or crushed quartz) into wet intermediate prior to final colored coat application.

QuickCure Accelerator is a 100% solids, proprietary additive designed to accelerate any 'MCU' coating when reduced cure and recoat times are desired. QuickCure Accelerator comes premeasured in a 0.25lt can for addition to a 5 liter pail or premeasured in a 1lt can for addition to a 20lt pail of 'MCU' coating. Review the QuickCure Product Guide for more details.

NOTE: Follow minimum recoat times as stated per coat at the recommended dry film thickness on MCU's Product Guides. Additional recoat time is required when films are applied in excess of the recommended range. As a guideline, at 21°C (70°F) and RH of 60-90%, add 40 minutes per additional 25µm WFT or wet mil (or 1 hour per 25µm DFT or dry mil). Excessive films may also cause poor adhesion, blistering, pinholing, and solvent entrapment and may require remedy. Consult your 'MCU-Coatings' Technical Rep

----- clean up -----

Use MCU-Thinner or MCU-Thinner 25. If MCU's thinners are not available, use MEK, MIBK, Xylene, a 50:50 blend of Xylene and MEK or MIBK, or acetone for clean up only. Be careful not to add unauthorized solvents to a 'MCU' coating.

Always flush equipment, hoses and tips clean after use. Any remaining paint residue will cure and become insoluble. Thoroughly clean brushes and rollers after use. Submerging used brushes and rollers in solvent overnight will not prevent the coating from curing. Avoid contact with skin or clothing. Any coating not removed within 15 minutes will begin to cure and become difficult to remove.

----- good practices -----

Always prevent rain, mist, or any other form of moisture from falling directly into open can.

It is not necessary or required to keep 'MCU' coatings under constant agitation while spraying. Prolonged agitation can introduce moisture into the coating.

Avoid opening and agitating 'MCU' coatings if the paint temperature is below the dew point temperature. To avoid potential, premature gelling, warm the paint to match the ambient temperature if possible.

Always pour a 'MCU' solvent "float" over the exposed material in the can when spraying or over any remaining material when resealing partial cans for storage.

Use only MCU-Thinner or MCU-Thinner 25.

Do not add QuickCure to the primer/sealer applications on bare concrete.

----- **mcu-coating advantages** -----

- ◇ **Single component:** No catalyst mixing errors, or pot life concerns.
- ◇ **Application:** Can be applied in humidity up to 99%, in low temperatures - to below freezing (avoid frozen surfaces), and subjected to rain, fog, or condensate within 30 minutes; however, variations in sheen and/or finish look may appear.
- ◇ **Durability:** Superior performance and corrosion resistance with extended service life for protective coating and maintenance projects.
- ◇ **Recoat:** Most 'MCU' coatings have no outer recoat window on a clean surface.
- ◇ **Time:** Use QuickCure as recommended to increase output and reduce recoat times.