



**MCU-Coatings®**

**Advanced Coating Technology**

**“Best In Corrosion Protection”**

**Application Guide**

## Introduction

### Application - Key Features

- Single component
- No pot life.
- 15-month shelf life
- Can be applied in 6% to 99% relative humidity
- Apply in temperature range -20°C to 50°C
- Can be applied to steel up to 75°C
- No Dewpoint restrictions
- High Surface tolerance
- Excellent performance even with minimal surface preparation
- Recommended for UHP WJ, power tool cleaning, dry/wet blasting
- Tolerates flash rusting
- Wide DFT tolerance
- Can be applied to damp (not wet) substrates. Must be visibly dry
- Suitable for maintenance and new construction
- Compatible with most conventional and old coatings
- No maximum recoat window on zinc primers
- Cures fast, even at -20°C
- Good flow into pitting
- Higher tolerance to salts & chlorides
- 30 minutes recoat interval when using MCU-Quickcure®
- High resistance to blistering and mud cracking when using MCU-Zinc® and MCU-Miozinc® primers
- Overcoatable by itself, intermediates, or topcoats
- Resistant to moisture soon after application (Immersible after 30 minutes)
- VOC compliant.

### Teamwork & Dynamics

When working with the system for the first time it is a good idea to have an assistant. Their job will be to clean tools and apply the thinner float to any open product etc.

There is a lot to think about as you start spraying. An assistant enables the applicator to focus on the spray gun set up, mixing and test spray

Ensure you clean up as you are working. Having MCU-Thinners 25® or 2 x 2L open pots of xylene available before starting makes life a lot easier

## Product Storage & Preparation

Store off the ground in a dry, protected area in temperature between -5 °C to 30 °C.

Containers must be kept sealed when not in use. The product can cause cans to build pressure and bulge, leading to air penetrating the product and cause premature curing.

Do not use paint shakers to pre-mix the product, which can cause a chemical reaction, causing a gas build-up in the can. Rather use Gyro Shakers instead.

Try not to leave open products exposed. Start the agitating process as soon as a can is opened to avoid air penetrating the product in a shaded area away from direct UV, heat, and rain. The same as all coatings.

Ensure that unused containers remain sealed and unused products are properly sealed. Use a solvent float to reseal partial containers. It is always advisable to decant leftover product into new, clearly marked containers that are properly sealed, with a MCU-Thinners 25® float applied.

Be well prepared when you start a project. Keep thinners, stirring stick, mixers, rags, decanting cans/hoppers, and spray equipment at hand before opening cans.

## Material Handling – Ancillaries

Flat mixing stick



Pliers



Putty knife



Mixing/Agitating equipment



Spiral mechanical agitator/mixer



Thinners



Drop Sheets



Bag of Rags



## How to open the can

Ideally material temperature should be 3°C above the dew point before opening and agitating, however if the product is being used immediately this is not a concern.

The dew point is the temperature to which air must be cooled to become saturated with water vapour. When cooled further, the airborne water vapour condenses to form liquid water – that is when air cools and contacts a surface that is colder than the air and water condense on the surface.

### Step 1



Remove safety seal on ring seal

### Step 2



Remove ring seal – Be careful when removing the seal as gasses might pop the lid.  
Remove the lid carefully and allow gasses to vent.

### Step 3



Remove the lid carefully and allow gasses to vent.  
Use pliers to carefully lift the edge of the lid.

### Step 4



Use a sharp object such as a screwdriver and knock it between the can rim /lid & lift the lid upwards.

If the lid or the rim of a can is damaged during the opening, decant into a new can, followed by a MCU-Thinner 25® float and seal immediately.

Never use any thinners or cleaning solvents other than MCU-Thinner or Xylene.

## Inspection prior to Mixing

If a skin forms on top of the product, cut the skin around the side of the can, remove and discard. Add a small amount of MCU-Thinner 25® if the product is thicker than normal until normal consistency have been acquired. Mix as per the mix instructions.

## Mixing/Agitating

MCU-Coatings are a single-component urethane. As the products separate and settle out over time they need to be thoroughly mixed for a maximum of 3-4 minutes, or until the product is completely homogeneous, before they can be applied.

Power mix thoroughly prior to application - MCU-Coatings react with atmospheric moisture therefore if you are working slowly or will only partially use the material in the can, it is important to limit the exposure time after opening the container.

**Step 1**



Generally, the urethane will float on the top except for the MCU-Mastic® and MCU-Miomastic®, which will be in a soft paste-like state

**Step 2**



MCU-Zinc®, MCU-Miozinc®, MCU-Topcoat®, MCU-Miotopcoat®, MCU-Aluprime®, and -MCU-Alutopcoat® solids will settle to the bottom and will not be visible under the urethane floating on top.

**Step 3**



Use a wooden or plastic mixing stick to unsettle the solids at the bottom by using a twist motion all around the perimeter of the can and then work

**Step 4**



Insert the mechanical mixing agitating paddle and slowly start agitating the product to mix the solids with the solvents. Be careful not to over-agitate

your way to the centre and scrape the side of the cans to remove any solids sticking to the sides of the can. This should take no longer than 30 secs.

and aerate the product whilst mixing the product. This should take no longer than 2 – 3 ½ minutes.

In case of the Mastics, insert the mixing agitating paddle directly into the product without using the mixing stick & agitate the product until it liquefies. This should take no longer than 4 minutes.

## Mixing/Agitating..... Ctd.

### Step 5



We recommend using gyro-mixers and avoiding paint shakers.

Product older than 6 months may require a little more effort to loosen the solids that have settled on the base of the base of the container (max 30 seconds). Work quickly to loosen the solids with a flat spatula before power agitating and be sure to avoid over-mixing the product. (If the product looks like it could have any lumps it is sometimes advisable to sieve the product using a normal cooking sieve with a handle.)

Do not over-mix MCU-Coatings® as continuous agitation aerates the product & can cause premature gelling.

Insert the mixing agitating paddle directly into the product without using the mixing stick and stirring it until it liquefies, which should take no longer than 4 minutes.

Prevent a vortex from forming whilst agitating the product as this insert's moisture laden air into the product, which will set-off the curing reactions and reduce the pot-life.

### Step 6



### Step 7



Decant mixed product into a spray hopper and if necessary, add a MCU-Thinner 25<sup>®</sup> float on top of the product.

If necessary for your application, add a MCU-Thinner 25<sup>®</sup> “float” over the surface of the coating before resealing the storage container to prevent moisture intrusion - just enough to cover the product.

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1. Do not over-mix MCU-Coatings<sup>®</sup>. Continuous agitation aerates the product and may cause premature gelling due to moisture being drawn into the product during prolonged mixing in humid conditions.
2. Prevent a vortex from forming while mixing, leading to excessive air penetrating the product causing premature curing if material is not used within an hour or 2.
3. Once the product is mixed to satisfactory and decanted, if necessary, add an MCU-Thinner 25<sup>®</sup> float on top and replace the lid. Failing to protect the top of the coating with a thinner float layer will allow the product to cure with any moisture in the can and cause a skin to form on top. Ideally place a piece of plastic covering the rim of the can to prevent the lid from sticking to the can due to spillage on the edge, which will make it difficult to open later.

If a skin has been formed on top of the product when opened, cut it around the can's side, then remove and discard. Add a small amount of MCU-Thinner 25<sup>®</sup> if the product is thicker than usual until normal consistency is achieved. Mix as per instruction.

Agitate the remaining product until it is homogeneous, adding 5% MCU-Thinner<sup>®</sup> if necessary.

Filtering the product through a fine filter may also be required prior to applying the product.

Once thoroughly mixed, the pigments will stay in suspension for up to 4 hours.

### **Reducing Viscosity / Thinning**

Generally, it is not necessary to add any thinners.

If needed only use MCU-Thinner<sup>®</sup>, MCU-Thinner 25<sup>®</sup> and MCU-Thinner 50<sup>®</sup>. In most ambient conditions MCU-Thinner 25<sup>®</sup> will be used.

If thinner is applied to thickened product:

- Add in increments of 5% at a time until application consistency is achieved.
- Do not add more than 20% thinner to the product.

A thinner float is the best way to preserve product. Add just enough to cover the top of the product. No more!

When adding MCU-Quickcure<sup>®</sup> and thinners, first add the thinner to achieve the desired consistency before adding MCU-Quickcure<sup>®</sup>.

After product has been mixed properly add the MCU-Quickcure<sup>®</sup> per volume of product.

Standard usage is 3% - 7% by volume of the paint, but this may be changed according to the needs and ambient conditions. See product datasheets for specific mixing tables.

Agitate the product for 30 seconds to allow the MCU-Quickcure® to mix thoroughly into the product. Do not overmix.

Add a thinner float to the product to prevent it from curing the top of the surface, which will ensure a decent pot life.

MCU-Quickcure® can be used for all methods of applications. MCU-Quickcure® will accelerate the curing process by up to 10 times (e.g. From 10 minutes to 2-3 minutes or even 1 minute for film applications <50µm DFT)

Quickcure can be tailored to the application - add 1-2% by volume at first and increase as needed:

- 3% to 5%: MCU-Zinc® / MCU-Miozinc®
- 5%: MCU-Miomastic® / MCU-Ferroguard®
- 5% to 7%: MCU-Aluprime® / MCU-Mastic® / MCU-Topcoats®

As a rule of thumb, we suggest the amount of MCU-Quickcure® to be added should also be based on the relative humidity reading. As a guideline we suggest (product type dependent):

- adding only 1-5% if the humidity is above 70% and or if the temp is higher than 25°C
- add up to 5-7% if the humidity is below 70% and or if the temp is lower than 25°C

### MCU-Quickcure® effect on Cure Times

The following cure times are approximate times required before recoating and are based on 60% to 70% relative humidity. Actual curing times vary depending on ambient temperature, substrate temperature, relative humidity and film thickness. Thicker films may also require longer cure times.

Addition rates by volume:

| MIXING RATIO           | Add 3% MCU-Quickcure per volume |            | Add 5% MCU-Quickcure per volume   |            | Add 6% MCU-Quickcure per volume |            | Normally not needed, but if wanted add 5% |            | Add 5% MCU-Quickcure per volume |            |
|------------------------|---------------------------------|------------|-----------------------------------|------------|---------------------------------|------------|---|------------|---------------------------------|------------|
|                        | NO                              | YES        | NO                                | YES        | NO                              | YES        | NO  | YES        | NO                              | YES        |
| COATING                | MCU-Zinc**<br>MCU-Miozinc*      |            | MCU-Miomastic*<br>MCU-Ferroguard* |            | MCU-Aluprime                    |            | MCU-Topcoat                               |            | MCU-Mastic                      |            |
| MCU-Quickcure (YES/NO) | NO                              | YES        | NO                                | YES        | NO                              | YES        | NO  | YES        | NO                              | YES        |
| -4 °F / -20 °C         | 48 hours                        | 10 hours   | 48 hours                          | 10 hours   | 72 hours                        | 12 hours   | 72 hours                                  | 12 hours   | 48 hours                        | 10 hours   |
| 14 °F / -10 °C         | 20 hours                        | 4 hours    | 24 hours                          | 6 hours    | 24 hours                        | 8 hours    | 24 hours                                  | 8 hours    | 24 hours                        | 6 hours    |
| 32 °F / 0 °C           | 12 hours                        | 1,5 hours  | 12 hours                          | 1,5 hours  | 18 hours                        | 2 hours    | 18 hours                                  | 2 hours    | 12 hours                        | 1,5 hours  |
| 50 °F / 10 °C          | 4 hours                         | 45 minutes | 4 hours                           | 1 hour     | 10 hours                        | 1,5 hours  | 10 hours                                  | 1,5 hours  | 4 hours                         | 1 hour     |
| 77 °F / 25 °C          | 3 hours                         | 45 minutes | 3 hours                           | 45 minutes | 5 hours                         | 1 hour     | 5 hours                                   | 1 hour     | 45 minutes                      | 45 minutes |
| 104 °F / 40 °C         | 3 hours                         | 30 minutes | 3 hours                           | 45 minutes | 3 hours                         | 45 minutes | 3 hours                                   | 45 minutes | 4 hours                         | 45 minutes |

\*Increase 50% of the curing times when DFT is above 125 microns (5 mils)

\*\*Increase 100% of the curing times when build up to a DFT of 175 microns (7 mils). Increase 50% of the curing times when DFT is above 125 microns (5 mils)

The cure times listed are approximate times required before recoating and are based on 60 to 70% relative humidity and a dry film thickness of 75µm. Actual curing times vary depending on ambient temperature, substrate temperature, relative humidity and film thickness. Higher film builds will extend cure times.

## Preserving Product after Mixing

Decant mixed product into the hopper or pot and if required add a MCU-Thinner 25® float.

If only using part of a can, decant enough for use and add an MCU-Thinner 25® float on the remaining product.

To preserve left-over product for later use, add a layer of plastic over the can, refit the lid and clamp the ring seal on again. This will make the opening of the can very easy when the product needs to be applied at a later stage.

Interestingly, MCU-Quickcure® will not accelerate the curing process within the hopper/can if not exposed to moisture/water as the float protects the product.

## Set-up Procedures for Airless Spray Equipment

Inspect all air/liquid hoses for cracks, leaks, etc., and replace as necessary.

We recommend using new hoses to eliminate potential clogging from previous materials and prevent cross-contamination. Given time, MCU-Thinner 25® and xylene have a tendency to unsettle old product which will move when the resin flows and tends to block up inline filters.

Adjust to appropriate pressure – refer TDS.

Ensure spray gun is clean and properly functioning. Change or clean filters prior to use. Check the correct size spray tip is fitted, preferably reversible spray tips. Refer to the recommended Pressure and Tip Sizes chart in this section. Check valves and gauges for proper operation and replace, as necessary.

Flush MCU-Thinner 25® through the system to clean all hoses and flush out condensate. Never allow old thinner in the paint lines to enter the coating which could cause cross-contamination. Xylene could be used as an alternative for general hose and equipment clean followed by an MCU-Thinner 25® flush of the system.

Follow mixing instructions, if required apply an MCU-Thinner 25® float, and cover the pail as mentioned above.

### General Specifications

|              |  |
|--------------|--|
| Pump Ratio:  | 28-40 : 1  |
| Hose:        | 1/4" to 3/8" (5mm – 10mm)  |
| Filter Size: | 60 mesh (250 µm)   |
| Reduction:   | Typically, not required. If necessary, reduce with MCU-Thinner 25® |

### Equipment - Product Pressures and Tip Sizes

|                  |                          |
|------------------|--------------------------|
| MCU-Aluprime RG® | 1800-2000 psi - 011-015" |
| MCU-Zinc®        | 2400-2800 psi - 015-023" |
| MCU-Miozinc®     | 2400-2800 psi - 015-023" |
| MCU-Mastic®      | 2400-2800 psi - 013-019" |

|                 |                          |
|-----------------|--------------------------|
| MCU-Miomastic®  | 2400-2800 psi - 013-019" |
| MCU-Alutopcoat® | 2100-2800 psi - 011-013" |
| MCU-Clearcoat®  | 2400-2800 psi - 007-013" |
| MCU-Topcoat®    | 2400-2800 psi - 011-021" |
| MCU-Miotopcoat® | 2100-2800 psi - 011-021" |

## Set-up Procedures for Conventional Spray Equipment

All MCU-Coatings® products are supplied ready to mix and spray using standard commercial type spray equipment. As always, it is important that the air supply has an effective moisture trap.

### Equipment - Specifications:

|                 |  |
|-----------------|--|
| Fluid Nozzle:   | E Fluid Tip  |
| Air Cap:        | 704 or 765   |
| Tip Size:       |  |
| Atomizing:      | Air: 45-75 lbs. (20 – 35kg)                                      |
| Fluid Pressure: | 15-20 lbs.   |
| Hose:           | ½" ID; 50' Max (25mm ID; 15m MAX)                                |
| Reduction:      | Typically, not required. If necessary, reduce with MCU-Thinner®. |

## Set-up Procedures for Roller or Brush Application

Use a natural fibre brush or a natural or synthetic fibre roller cover with a ¼ - ⅜ inch (5mm – 10mm) nap, and a phenolic core.

Pay special attention when brush-applying primer to avoid brush stroke valleys, which may produce holidays in the film.

Use MCU-Thinner 25® as required when reduction is required. Addition will extend cure times.

### Equipment - Specifications:

|            |  |
|------------|--|
| Brush:     | Natural Fiber  |
| Roller:    | Natural or synthetic fibre cover                                   |
| Nap:       | 1/4" to 3/8" (5mm – 10mm)  |
| Core:      | Phenolic   |
| Reduction: | Typically, not required. If necessary, reduce with MCU-Thinner 25® |

## Clean-up Equipment Procedures

Like most industrial protective coating's spontaneous combustion\* can occur. Therefore, it is crucial to discard rags, paintbrushes, and rollers by immersing them in water after exposure to the product and left overnight in a safe place. Drain water and discard appropriately.

Clean all spray equipment with MCU-Thinner 25® or Xylene. Don't leave paint in the pump, lines, and gun.

Do not use any thinner except MCU-Thinner® or Xylene to clean equipment. Cross-contamination may cause coating failure when foreign solvents are used for cleaning purposes. If MCU-Coatings®

thinners are not available for clean-up, use MEK, MIBK, Xylene, a 50:50 blend of Xylene and MEK or MIBK, or acetone for clean up only.

Do not use oil-based degreasers to clean the substrate, such as Brake-clean or solvent-based cleaners. Use MCU-Ecocleaner Gel® or MCU-Eco Degreaser® or any water-soluble degreaser for cleaning purposes. If unsure of the substrate's cleanliness, use MCU-Thinner 25® or Xylene to wipe the surface before applying the coating.

Do not add unauthorised solvents to any MCU-Coatings® products.

*\*Spontaneous combustion or spontaneous ignition is a type of combustion which occurs by self-heating (increase in temperature due to exothermic internal reactions), followed by thermal runaway (self-heating which rapidly accelerates to high temperatures) and finally, auto-ignition. It is therefore extremely important to discard rags, brushes, and rollers by submerging them into water after exposure to the product and left overnight in a safe place after which the water can be drained, and the content being discarded appropriately.*

### **Application - Surface Preparation - Good Practice**

The surface to be coated must be dry, clean, dull, and free from dirt, grease, oil, rust, mill scale, salts, or any other surface contaminants that interfere with adhesion.

Ensure welds, repair areas, joints, and surface defects exposed by surface preparation are properly cleaned and treated prior to coating application.

Areas of oxidation after surface preparation and prior to coating application, should be prepared to a specified standard.

Consult the referenced standards, SSPC-PA1 and AS/NZS 2312.1:2014 and your MCU-Coatings® Representative for additional information or recommendations.

Do not allow any water droplets from dew, rain, sweat or mist to enter the product.

Do not apply the product onto a wet surface.

Do not leave open product exposed to the atmosphere for longer than a few minutes without adding an MCU-Thinner 25® float on top of the surface.

Test the spray pattern before applying product to a substrate.

Do not overcoat areas that have flashed off. This may cause solvent entrapment. Adhere to overcoating intervals stated in the TDS's. Note: this is different to a mist/tack coat which can be overcoated after only 20-30 seconds.

## Application – Spraying Guidelines

The idea when you are spraying is to create a **thin film layer**, MCU-Coatings® products are different. They are applied thinner than many traditional coatings.

MCU-Coatings® have a silk finish when cured. The angle (wetting) of the spray action and distance you are from the surface is important if you are looking to ‘wet’ the surface. Apply a closed wet film – however you will notice that it will rapidly dry. This wet look is so momentary (and is even shorter if you are using MCU-Quickcure®) we advise applicators not to look for the product to ‘wet-out’ as this may cause the product to be applied at a higher film build than recommended.

Work quickly, particularly if you have added MCU-Quickcure®. Time is of the essence

Multiple thin coats are preferable than applying too much material in 1 application. Over-application may cause the film to out gas, which will leave pinholes and a volcano effect on the coating surface as the curing reaction generates excessive CO<sub>2</sub> gases that may become trapped. When that happens, all is not lost. Abrade the surface lightly if required and apply a light coat to fill the pinholes.

When spraying it is recommended to apply the first light flash/tack coat @ 20-30µm dft. This will change colour shade and tack off within 30 seconds assisting with subsequent film builds. Remember, when this coat has cured it will not be included in wet-film checks.

## Health and Safety

These guidelines must be read in conjunction with the relevant Safety Data Sheet (SDS). Do not apply in confined spaces without appropriate PPE and ventilation. Ensure all work areas are well ventilated and, where required employ extraction fans for additional airflow. It is advisable to use half or full-face masks and eye protection.

As with any coating application, including waterborne or solvent-free coatings, we recommended having suitable protection such as coveralls, gloves, safety shoes, half-face or full-face mask with vapor filter, and airline respirators during confined space applications.

Face mask vapour filters are designed to keep out urethane monomers. Cartridge filters however have a finite life. Make sure to use the correct, interchangeable, manufacturer specified cartridges. Charcoal or textile vapour type cartridges are recommended.

Replace cartridges often or in regular intervals. An indicator that they are spent is when the solvent smell is noticed with the mask on your face. It is then time to change filters.

It is recommended that masks be cleaned after use and then placed in a zip-lock plastic bag to keep the filter from being spent for extended periods.

Apply barrier cream on your face before placing the mask on your face, and it will help create a better seal between the mask and your face and protect your skin from over-spray.

Use appropriate eye protection. If product gets into the eyes, flush the eyes for several minutes under clean water. Seek medical attention if the eyes have a burning sensation after water flushing.

Avoid exposure to the product onto your skin. Being a moisture-curing product, it will adhere to your skin.

- Use Nitrile gloves for hand protection. The solvents will dissolve any type of glove other than Nitrile, and the product will contaminate hands.
- Always wear long sleeve shirts or cover-all for protection. It is advisable to use disposable coveralls to prevent skin contamination.
- Use disposable boot protectors if necessary to prevent contamination of the safety boots and prevent the product from penetrating through tears, seams, and holes in the shoes and, in return, allow the product to get onto your feet.

MCU-Thinner 25<sup>®</sup> can be used to clean or remove paint from your skin followed by a soap wash and apply any cream or lotion to prevent the skin from becoming dry.

### Material Handling – PPE Requirements

**Gloves – Nitrile**



**Disposable Paint Overalls**



**Wrap-around Chemical Safety Goggles**



**Reusable Half-face Mask**



**Respirator fitted with 8053-P100 Organic Vapor Cartridges Full-face Mask 6900L**



**Air-fed Breather Respirator**



**Replacement Vapor Cartridges P100**



**Safety Boots**



**Disposable Slip Resistant Boot Covers**

