



# MADISON CHEMICAL INDUSTRIES INC.

## APPLICATION INSTRUCTION BULLETIN

Form No. AP SF 1997-04

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### **1:1 RATIO FAST SET POLYURETHANE COATINGS**

#### **SCOPE**

This application instruction bulletin applies to all Madison two-component 1:1 ratio polyurethane coating systems, both aromatic and aliphatic. Long Form Application Instructions of a more specific nature are available in some cases; please inquire when deemed necessary. The polyurethane material consists of a poly-isocyanate resin and a polyol resin which are mixed at the time of application. This includes, but is not limited to, the following Madison Chemical products: CorroCote II Classic, CorroCote Plus, CorroCote II PW, TufSheen II, Flexcel II, CorroCote Ultra, CorroPipe II TX-15, CorroPipe II Omni, CorroPipe II PW and CorroPipe Zinc Rich Primer.

For further reference, please see Madison's "Approved Applicator Manual" for operating specifics and Madison's "Plural Component Equipment Manual" for equipment details.

#### **STORAGE AND HANDLING OF PRODUCT**

These products are not paints. They consist of resins which will react with humidity and moisture. Store materials in a warm, dry and well ventilated enclosed area, out of direct sunlight. Care should be taken in handling of coating containers to prevent puncture, freezing, inappropriate opening or other action which may lead to product contamination. Material should be stored above 50°F (10°C). The recommended shelf life of the material is 6 months, but some products may remain acceptable for up to two (2) years. Should the material be stored beyond 6 months, a Madison Representative should be consulted to determine usability.

#### **APPLICATION EQUIPMENT**

The polyurethane should be applied by a two-component, 1:1 mix ratio, heated airless spray unit capable of heating the resins up to 140°F(60°C) at the gun nozzle at spray pressures of up to 3000 psi. The operator of the equipment should be trained as per Madison's Approved Applicator Training Program. For further details on the required configuration of the heated airless spray unit, please consult a Madison Representative or see Madison's "*Plural Component Coatings Equipment Basic Configuration Guide*" Brochure for specialized application equipment, such as that needed for lining the internal surface of pipe sections or for the automatic external coating of pipe, please contact a Madison Representative.



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## **MATERIAL PREPARATION**

Make sure the individual “A” and “B” products are homogeneous prior to use, either by power agitation (preferred) or rolling drums or recirculating product. If color of applied product is non-uniform or streaky, this may indicate inadequate pre-mixing. Do not add anything to either the “A” or the “B” and do not mix them with each other.

The individual “A” and “B” materials should be preheated to between 80°F (27°C) and 100°F (38°C) to avoid pump cavitation. This can be accomplished with band heaters on the drums of product or by recirculating as above. More detailed application temperatures and equipment configuration requirements can be sourced through to Madison’s “Operating Specifications” pamphlet for required temperatures, filter sizes, and spray tips. The use of a recirculation unit is highly recommended in any event.

Many material application problems are related to the foregoing. In the event that applied product is sub-optimal, ensure compliance with above. If problems persist, consult Plural Component Equipment Manual or contact a Madison Representative. Details of equipment operation and troubleshooting are beyond the scope of this document, but are available from a Madison Representative.

## **SURFACE PREPARATION**

### ***General***

Before blast cleaning, visible deposits of oil, grease or other organic contaminants should be removed by using a solvent wash. All surfaces to be coated should be completely dry, free of moisture, dust, grit, oil, grease, or any other contaminants at the time the polyurethane is applied.

The temperature of the substrate must be at least 5°F (3°C) above the dew point temperature. High humidity may cause conditions which may affect the performance of the polyurethane. Caution should be exercised if relative humidity exceeds 85%. A humidity level greater than 85% may cause a dull finish on the coating, but will not affect the performance of the coating. Heating of surfaces may be used to raise the substrate temperature beyond the dew point temperature range. Dehumidification may also be used.

### ***Metal Substrates***

On metal surfaces exposed to atmospheric service, a commercial blast (SSPC PC 6, NACE No. 3) and 2.0 mil profile (50 microns) are recommended. Where buried conditions will occur, a near-white blast (SSPC PC10, NACE No. 2) and 2.5 mil profile (63 microns) are recommended. For deep burial or continuous immersion conditions, a 3 mil profile (75 microns) is recommended. In all cases, the blasting medium should be clean, dust-free, hard, sharp and angular (sand, aluminum oxide, garnet or steel grit, G40 or coarser). DO NOT use steel shot or other non-angular products or slag-based media. Less surface preparation or other surface preparation methods such as chemical cleaning may give initial success, but will lead to inconsistent results, often within a few weeks or months.

For welds, corners and other hard-to-coat areas, an extra pass of coating from each direction is suggested. Welds or other sharp protrusions should be ground smooth prior to blasting. Avoid blind spots and skip welds.

## **Concrete Surfaces**

Please refer to the section, **Surface Preparation, General**.

Madison's 100% solids polyurethane coatings are equally suited for coating poured-in-place, precast, wet cast and dry cast concrete. Each surface will require different surface preparation techniques. All concrete, despite its manufacturing process, must be fully cured before it is coated. Each concrete type should be tested with a test spray to determine the best surface preparation methods or surface preparation needs.

With poured-in-place concrete, precast concrete structures and wet cast concrete pipe, fill defects and bug eyes larger than 1/16<sup>th</sup> inch with a cementitious grout/filler. Let cure. Sweep blast the entire surface. Dry cast products (e.g. dry cast concrete water pipe and prestressed concrete cylinder pipe) may not need rendering but more blasting may be required to provide a rough porous substrate.

Seal concrete with MG-201 penetrating epoxy sealer, applied by brush, roller or trowel. On rougher concrete, MG-220 is a higher viscosity product that can fill larger pinholes and similar defects. On rare occasions, the 1:1 Madison topcoat can be applied directly to concrete without a sealer. To determine this, spray a test area; if surface exhibits pinholes or other defects, sealer must be used.

## **APPLICATION PROCEDURES**

A multi-pass, one coat application is suggested. Proceed in a cross-hatch pattern. Start and stop off target. Check coating thickness; if low, add additional material provided that allowable recoat time has not been exceeded (check individual Technical Data Sheet). When the material has cured beyond the recoat time or "window", the surface of the cured coating should be brush blasted or thoroughly sanded, followed by blow-off cleaning using clean, dry, high pressure compressed air.

Application equipment may be configured for either manual or automatic spray, depending on the situation. Application techniques will vary from substrate to substrate. Madison 1:1 products are intended to be applied only by trained applicators. Madison offers extensive in-house and field training programs for applicators. These programs cover specific details on the equipment, the coating systems, application techniques, and different substrates. If the applicator is unfamiliar with the coating, the equipment, or the substrate to be coated, contact a Madison Representative.

## **CLEAN UP**

### ***Unreacted Coating Components***

Products of this type will react with humidity and moisture. Keep containers tightly sealed. For clean up, use only Madison VR-1 or VR-2 Reducer as any other solvents may react with the resins and damage equipment.

### ***Reacted Coating***

Reacted coatings are inert and non-toxic. Overspray and other reacted coating can be disposed of in a regular landfill. Check with local officials.

## HEALTH AND SAFETY

Please refer to individual material safety and technical data sheets for specific information. Proper safety precautions should be observed to protect against the potential toxicity and flammability of polyurethane materials. Safe handling and application practices are required and should include, but not be limited to the provisions of:

|              |                                      |
|--------------|--------------------------------------|
| SSPC-PA3     | Guide to Safety in Paint Application |
| SSPC-PS17.00 | Section 8 - Safety                   |

Fresh air respirators are necessary for sprayers and for assistants in any enclosed spray area. For occasional use, or for assistants outside the spray area, a cartridge-type air mask is required. If unsure of requirements, all health and safety steps should default to the higher level of precaution.

## COATING INSPECTION

The finished polyurethane coating should be generally smooth and free of sharp protrusions. A minor amount of sagging and dimpling on a coating which otherwise meets specification requirements does not cause the coating to be classified as a failure.

Holiday inspection may be conducted at any time after the polyurethane material has reached initial cure. This time will vary depending on the coating, but generally should be after 2 hours.

## REPAIRS OR TOUCH-UPS

The repair material specified for use with the coating system should be used. For detailed repair and touch up application instructions, refer to the Touch-Up Application Instruction Set.

## WARRANTY

A warranty is available where the product is installed by an Approved Applicator. Refer to Technical Data Sheet or consult with Madison for details.

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