

HUMIDUR® FP FAST SPRAY



APPLICATION GUIDE



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HUMIDUR FP FAST SPRAY APPLICATION GUIDE

This guide has been developed to outline the instructions needed to provide care and handling at the time equipment is released for shipment. This procedure will ensure no further equipment is shipped / dispatched without the required documentation.

- Fast spray gun set up, application and storage
- A pre and post shipping inspection of each drum heater blankets shall be conducted to ensure that the blankets are received in a suitable condition for use. The dispatch and receiving entity will supply a copy of the following inspection sheet to salesmct@matrixengineered.com within 24 hours of dispatch or receipt of the blankets.

The DRUM HEATER JACKET instructions are outlined in 'Appendix A' as specified by the manufacturer. At all times the operator must follow these instructions carefully to ensure the blankets are not damaged when folding, placing into storage or prepared for shipping.

PRODUCT DESCRIPTION

Humidur FP® Fast Spray is a Pneumatic Spray Dual Cartridge Dispensing system. The cartridges contain Humidur FP an anti-corrosion coating with excellent barrier properties. Humidur FP® is a two-component, solvent-free, liquid, modified polyamine cured epoxy coating. It is a single coat systems (no primer required). If required, multiple coats can be applied wet-on-wet or after curing indefinitely.

The base or A-component contains non-crystallisable epoxy resins, high-tech modifying agents, elastifiers, lamellar abrasion and impact resistant fillers and colouring pigments. The B component contains the polyamine hardener complex.

For more information we refer to the technical datasheets and the product overview tables which can be found on www.humidur.be

Training for Humidur FP Fast Spray is provided in the Matrix Humidur Brush training course. A video focusing on the application can be found on www.matrixengineered.com. For the right product choice, contact your Matrix Corrosion Technologies representative.

PACKAGING

The Fast Spray products are delivered in a complete pre-dosed cartridge kit with two parts (Part A resin and part B hardener). Standard packaging supplied is a 1Kg kit. Each Kit supplied will contain 2 static mixers and 2 Atomising nozzles. Sold in 6 pack quantities.

SURFACE PREPARATION

Before coating application, all surfaces shall be free of oil, grease, dirt or any other contamination.

STEEL

Optimal preparation

- Remove fouling, dirt and salts by power wash 1.
- 2. Degrease the surface (acetone or another suitable solvent)
- 3. Grit blast the surface by abrasive blasting to Sa 21/2 (ISO 8501) (Abrasive media shall be checked to ensure that there is no contamination of oil).

Wet abrasive blasting and hydro-blasting to HB2 1/2 are alternatives.

4. The roughness shall be > $60 \,\mu m$ medium or coarse in accordance with ISO 8503-2

- 5. Remove dust
- 6. Check surface preparation
 - a. Check for salts< 60 mg/m2 ISO 8502-6, ISO 8502-9
 - b. Check roughness > 60 um ISO 8503-2
 - c. Check for dust ISO 8502-3 (max Q = 3, max C = 3)

Minimal surface preparation

- 1. Power wash remove fouling and salts
- 2. Degrease the surface (acetone or isopropanol)
- 3. Roughen up the surface by grinding disc, wire brush, needle gun or bristle blaster 80 grit sanding disk
- 4. The cleanliness should be grade St 2 or 3 in accordance with ISO 8501-1
- 5. 25 um surface profile for mnimal preparation
- 6. Solvent wash with suitable solvent (acetone or isopropanol)

Before coating application, check if the surface temperature is at least 3°C above dew point and Surface temp does not exceed 50°C. Make sure that the surface is dry (no condensation) and free of contamination.

Humidur may be applied on steel surface temperatures above 50 °C Humidur only after consulting your Matrix Corrosion Technology technical support team for additional application advice.

COMPONENT MIXING

There is no mixing requirement for Humidur FP Fast Spray. The correct pre dosed quantities are supplied in the cartridge kit. Humidur FP requires heating before use to thin the produce for spraying.

There are NO Thinners to be used with any Humidur Products. Ensure thinners are not introduced into the application process via surface cleaning or attempts to reuse static mixers.

Mixing occurs in the supplied static mixer and only occurs when the dispensing system is engaged. The pot life of product in the static mixer is reduced should spraying be discontinued. In the case of the cartridge not being fully consumed in a spray session discharge the static mixer and reinsert the cartridge plugs and cap. This means that any unused product can be stored, reheated and used when required

Humidur FP Fast Spray cartridges can be safely warmed using a number of methods and only cure when mixed via the static mixer

Refer to the application section below heating and dispensing of the cartridge.

Attention: Once the components have been mixed, the exothermic reaction starts and the temperature may increase quickly reducing the pot life. No extra safety measures should be taken against heat.



COATING APPLICATION

Before coating application, check temperature is at least 3°C above dew point and surface temp does not exceed 50°C. Make sure that the surface is dry (no condensation) and free of contamination.

All Humidur systems are intended to be single coat systems. They are applied straight to the steel or concrete substrate without the use of a primer.

Before application, check if the values in the table to the right are respected. Humidur is able to cure at freezing temperatures.

Before starting spray application, welds and edges are typical areas to be pre-brushed (stripe coating).

PREHEATING OF CARTRIDGES

Humidur FP requires heating before application. The cartridge requires heating to a min of 50°C for optimal performance. Do not exceed 55°C as this may affect the integrity of the cartridges.

If the temperature is not consistent in the cartridge or too low the application spray pattern will be patchy and the risk of damaging the cartridge piston seal increases.

There are numerous ways to heat the cartridges. Common ways to heat cartridges are:

- Hot water bath Hot water in bucket or electrically heated bath
- Heater blanket Zone or non rated •
- Electric oven warmer – eg pie warmer, travel warmer
- Solar place on deck or road heat or wrap in black plastic in sun

Refer to Appendix A for Heater Blanket instructions.

Whatever heating method used the aim is to fully heat the product to ensure all the Part A material is uniformly heated. Ensure to check temp with heat gun prior to application

Note: Do not microwave cartridges, some cartridges may contain metal fittings. Microwave heating does not heat evenly

INSTALLING THE CARTRIDGE

Each Fast Spray cartridge is supplied with two static mixers and spray mixing tips. This enables multiple uses where the cartridge is only partially used

RETAINING NUT AND 'D' PLUG(S)

Remove retaining nut, compression disc and two end-cap(s) from cartridge orifice. NOTE: Retaining nuts used may sometimes be black in colour.









D' Plugs

Compression Disk



The fitting is deliberately tight. Apply sufficient pressure to ensure the bell housing covers both cartridges necks. Place retaining nut over static mixer and hand tighten retaining nut securely on to the cartridge thread (do not over tighten).



INSERTING CARTRIDGE INTO AIR GUN CARTRIDGE HOUSING

Manually retract piston drive rods or activate automatic pressure return on the gun. This allows cartridge to be placed into the gun cartridge housing.

SPRAY APPLICATOR SETUP

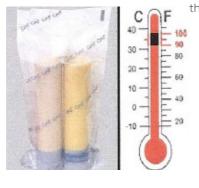
AIR ATOMISATION AND AIR LINE CONNECTION:

- Connect atomization airline to static mixer spray tip.
- 1. Connect air compressor hose to dual air regulator kit.
- 2. Turn ball valve partially on.
- 3. Adjust spray mixing tip position by pushing tip onto mixer then slowly moving forwards until the air sound changes to be unrestricted. A small amount of product will raise in the mixing tube.

Refer static mixer installation document.

Note: Incorrect tip position will be recognisable by:

- Splatted spray pattern or stream of paint-tip in too close
- Gun piston moves back when trigger is released tip out too far
- Tip sounds choked tip in too close



50 °C

50 °C

50 °C

<95%

Dew point 3 °C

No condensation

Temp before mixing

Application temp of

Min surface temp.

Max surface temp.

Humidity of surface

mixture

R.H.

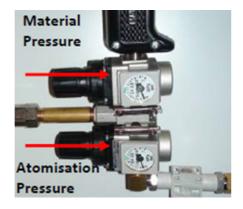
Ensure the static mixer bell housing sits flush over the orifice of the cartridge nozzle.







- 1. Fully turn the material pressure control knob on rear of red gun clockwise No requirement for silver unit.
- 2. Turn material pressure control (upper knob) on dual air regulator kit to 20 ps, or less to begin
- 3. Turn atomization pressure control (lower knob) on dual air regulator kit to 20 ps, or less to begin.



DE-AIR AND CARTRIDGE PHASE IN

- 1 To achieve correct on-ratio mixing, point cartridges up and slowly dispense material into the static mixer.
- 2. Tilt cartridges to remove all air pockets.
- 3. Dispense first 10-20ml of material into a waste container until a uniform mix of material appears from the mixer. Repeat process for all new and partially used cartridges.

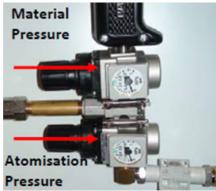


ADJUST MATERIAL AND ATOMISATION PRESSURE ON **DUAL AIR REGULATOR KIT**

Adjust both regulators to the their lowest setpoint. Then set 0.2 bar on each regulator. Changes in desired finish and dispense rates can be achieved by varying material and atomisation pressures.

Adjust nozzle pressure and air flow rates before adjusting the piston speed. If the product is not heated sufficiently too much material pressure will cause the cartridge to leak

Apply the coating preferably by cross-hatching and measure the wet film thickness regularly.



FILM THICKNESS

Always follow coating ITP or contact Matrix Corrosion Technology concerning the film thickness that should be applied.

A practical limitation for vertical surfaces is 400 µm with maximum being unlimited. If thicker layers are requested, overcoating can be done wet-on-wet. The overcoating time is unlimited.

INSPECTION

LAYER THICKNESS

During application it is recommended to check the layer thickness by means of wet film thickness gauges. After sufficient curing of the coating, the layer thickness is checked in conformity with ISO 19840. Criteria

- Each individual dry layer thickness value less than 80% of the required dry layer thickness is unacceptable.
- The average of all individual dry layer thicknesses should be equal to or more than the specified dry layer thickness
- The number of measurements between 80% and 100% of the required dry film thickness can at the most amount to 20 % of the total number of measurements.

When the DFT is extremely high, no specific measures should be taken. The quality of the protection will not be affected.

ADHESION ISO 4624

Before performing this test, the coating should already be sufficiently cured. The optimal delay, in function of the long term properties, amounts to one month. However after about 7 days, it can already be tested with sufficient certainty.

For applications under aggressive exposure, an adhesion with the substrate of 5 MPa for minimal prep and 8 MPa for optimal is required. This is measured with a hydrodynamic adhesion tester. Failures in the glue or cohesion failures with lower values are rejected. At least three representative measurements are necessary.

SPARK TEST

Spark tests can be done for discontinuity (holiday) testing of the coating on steel if the conditions allow it. Consult your supplier for recommendations if required.

CLEAN-UP

Immediately after application of Humidur FP Fast Spray the air should be turned off to the spray ball valve. Retract the product piston by pressing the piston release button located on the hand piece:

- 1. Silver Guns Depress and hold yellow button
- 2. Disconnect air line from the spray mixing tip.
- 3. Remove the cartridge.
- 4. If empty dispose of correctly
- 5. If not empty remove move static mixer, insert plug, disc and locking nut.
- 6. Wipe gun and store in appropriate location.

WATER IMMERSION

The Humidur FP products have the ability of curing under water. They can be immersed in water straight after application.

Note that it is possible, as for all epoxy systems, that amine blooming occurs when the wet coating comes in contact with water/moisture. This results in colour changes. However, this has no influence on the performance or durability of Humidur. If reapplying product where moisture may have formed on the surface, rewash with household grade detergent and warm water followed by abrading with abrasive hand pad . Wash with fresh water blow dry followed by reapplication of product.

DISPOSAL OF WASTE AND SPILLAGE

After application, the product and the packages should be considered as waste. Allow any mixed product to dry then dispose in general waste bin.

APPENDIX A ELECTRIC HEATER BLANKET

INSTALLING HEATER BLANKET

Wrap the jacket around the container to be heated and adjust the retaining straps until a close fit is obtained without over-tensioning the jacket. On larger sizes of jackets, at least 2 people should do this to ensure the jacket is not damaged.

The jacket should be fully spread and not compressed by any obstructions.

Ensure nothing is touching the outside of the jacket. Ensure there is at least 50mm between the outer surface of the heating jacket and any adjacent objects to allow air to circulate.

The jacket should be the correct way up with labels in the correct orientation.

The user should check the temperature of the container on first use to ensure it is as expected. After use, unplug the jacket from the power supply. When removing the jacket from the container, place it on a flat surface to fold for storage. Follow jacket folding instructions below.

DRUM HEATING SYSTEM

If a drum heat kit has been purchased together it will come with the following

- Empty 205L Drum with Lid
- Drum Stand part number 3000417
- Heater Blanket

Insert the Drum Stand feet first inside the drum. This will create a spill tray and allow warm air to circulate drum.

Install heater blanket, as above, and place lid onto drum to complete setup.

MANUFACTURERS RECOMMENDATIONS

THE USER SHOULD CHECK THE TEMPERATURE OF THE CONTAINER ON FIRST USE TO ENSURE IT IS AS EXPECTED.

- 1. Ensure the heating jacket is not operated when folded.
- 2. When using the heater on a material for the first time it is recommended to monitor the heating performance. Note: Temperature of the material within the container will usually be lower than the container wall temperature.
- 3. During and after heating, care should be taken when handling the jacket heater and container. Ensure that the container is vented to prevent internal pressure build up.
- 4. The heating jackets should not be used in conjunction with any other heating appliance. The heating jackets should not be used with any additional insulation unless provided by the manufacturer
- The InteliHeat Flexiplus Heating Jacket is designed to be used in sheltered or indoor areas. The Jacket should 5. be installed so it is protected from mechanical damage.
- 6. The InteliHeat Flexiplus Heating Jacket is manufactured from a silicone or similar rubber compound coated glass fibre cloth with a PVC insulated supply cable. The heating jacket is not suitable for use in applications where it may be subjected to aggressive chemicals.

MAINTENANCE

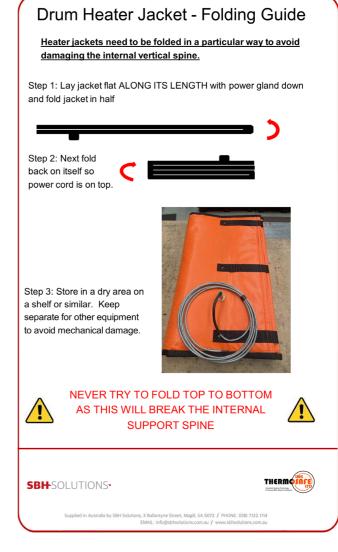
Before each use:

- 1. Check the heating jacket to ensure it is free from any sign of damage.
- 2. Check the overall fabric of the heating jacket, stitching, cable gland, controller and supply cable for damage.
- 3. Contact manufacturer if any damage is found.
- 4. For EEHA blankets, apply applicable EEHA inspections and testing.

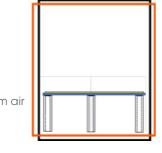
JACKET FOLDING INSTRUCTIONS

The heating jacket may not be folded (e.g. for storage) before it has cooled down to ambient temperature as this may cause damage to the jacket. On larger sizes of jackets, at least 2 people should be used to carefully remove the jacket The jacket should not be allowed to support itself vertically when being attached or removed from a container

Refer to Folding Guide below for folding, shipping and receipting instructions. It is recommend including the guide with the blanket during transport and storage.







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JACKET SHIPPING AND RECEIPTING INSPECTION

	Action	Y/N
1	Conduct a pre/post shipping inspection of the heating jacket. Ensure the jacket is free from any signs of damage. Check:	
	 Fabric and stitching are intact Cables and cable gland not damaged Controller not damaged Straps in good condition 	
2	Confirm jacket has been folded in accordance with EX023 Appendix A. This may require 2 people to fold correctly. Jacket will be damaged if not folded correctly.	
3	WARNING - Jacket should not be folded against the internal splines. If there is resistance to folding STOP, and consult OEM folding instruction. The jacket heating coil will be damaged if folded incorrectly.	
4	WARNING – Never operate the jacket when folded.	
5	Transport jackets on own pallet and use appropriate plastic wrap. Ensure controller and cables are secured to avoid damage. Never place other items on top of blankets in transport.	
6	Verified each blanket is correctly prepared for shipping and the filled in inspection report emailed to salesmct@matrixengineered.com	
7	Ensure copies of the Operations and Maintenance Instructions InteliHeat Flexiplus Heating Jacket are transported with the jackets.	
8	Condition of Blanket as found (add notes):	Good Damaged Missing
	Name:	
	Location:	
	Date:	



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FP - FAST SPRAY

For small and hard to reach spaces

NET CONTENTS 1 kg Component A 835 g/ Component B 165 g

· · · · LIGHTER · STRONGER · SMARTER · ·

MATRIX DELIVERING TO THE WORLD