

BONDERITE M-CR 1225 MU

Known as Alocrom 1225 Make Up
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PRODUCT DESCRIPTION

BONDERITE M-CR 1225 MU provides the following product characteristics:

Technology	Surface treatment
Product Type	Conversion coating
Application	Aluminium Coils
Process components:	BONDERITE M-CR 1225 MU BONDERITE M-CR 1225 R

The BONDERITE M-CR 1225 Process is a liquid, chromate-containing process which serves for the formation of iridescent to golden chromate coatings on aluminium and its alloys.

Furthermore BONDERITE M-CR 1225 is suited for pretreatment of Galvalume coil.

The coatings produced with BONDERITE M-CR 1225 provide distinguished corrosion resistance and excellent adhesion for a subsequent coating with organic paints and lacquers.

BONDERITE M-CR 1225 can be maintained by automated bath control and feeding.

BONDERITE M-CR 1225 was developed for application in high-speed coil coating lines with conventional spray, immersion or spraycoat technology.

DIRECTIONS FOR USE

Preliminary Statement:

Prior to use it is necessary to read the **Material Safety Data Sheet** for information about precautionary measures and safety recommendations. Also, for chemical products exempt from compulsory labeling, the relevant precautions should always be observed. Please also refer to the local safety instructions and contact Henkel for analytical support.

Bath make-up:

For each 1,000 L of bath, add to the water with stirring/circulating pump:

BONDERITE M-CR 1225 MU 50 L = 54 kg

Operating Data:

Chromium(VI) pointage, mL	6.0
Free Acid, mL	3.5 to 4.5
Total Acid, mL	≤25
Temperature, °C	20 to 50
Treatment time, sec	5 to 30
Spray pressure, bar	0.8 to 1.5
Spray pressure, psi	12 to 22

Application:

Procedure under standard conditions normally consists of the following steps:

- Preclean, e.g. BONDERITE C-AK C 72
- Brush (e.g. on Galvalume substrate)
- Clean, e.g. BONDERITE C-AK C 72
- Rinse (twofold cascade)
- Treating with BONDERITE M-CR 1225 processing solution
- Rinse (twofold cascade)
- Final rinse with Di water

Precleaning:

For precleaning silicate free, medium to strong alkaline cleaners like BONDERITE C-AK C 72 are recommended. Specifics for the use and operation of suitable BONDERITE cleaners can be found in the respective Operation Data Sheets. For highly lubricated material there are also suitable BONDERITE degreasing enhancers available.

Brushing:

To remove corrosion products or existing chromate passivation layers (e.g. on Galvalume strip) the use of reversely rotating brushes from e.g. Scotch-Brite or Andalon is recommended with simultaneous spraying with water.

Cleaning:

To thoroughly remove oxidation products or rubbing scale from the brushing operation, a cleaning step with BONDERITE takes place.

Generally the same BONDERITE product is used as in the precleaning step (cf. 1).

The concentration of the cleaner, however, can be reduced down to 50 %, according to the degree of contamination.

To effectuate a long life of the cleaner bath, it is recommended to operate them with a continuous overflow.

The addition of water should amount to at least 10 mL/m² of treated surface.

Rinsing:

The rinse tank must have a continuous supply of fresh water and an overflow device. Cascade rinse sections are especially recommendable. Rinse water temperature should not exceed the temperature of the subsequent chromating bath. The pH value should not exceed 8.5.

Bath Control:

Chromating with BONDERITE M-CR 1225:

The BONDERITE M-CR 1225 bath is controlled by determination of the Chromium(VI) Pointage, the determination of the Free Acid and the Total Acid by titration. Furthermore the bath can be monitored and controlled by means of a LINEGUARD Controller.

Computerized area-controlled feeding devices are also suitable.

When operated in a spray or immersion line the BONDERITE M-CR 1225 bath is replenished with BONDERITE M-CR 1225 R.

When applied with spraycoat technique, only BONDERITE M-CR 1225 MU is necessary.

Determination of the Chromium(VI)-Pointage:

1. Pipette 10 mL bath solution into 300 mL Erlenmeyer flask.
2. Dilute with approx. 1,000 mL DI water, add approx. 20 mL of sulfuric acid (analytical grade) and 2 to 3 g of cryst. potassium iodide and leave for 1 minute.
3. Fill a burette with 0.1 N sodium thiosulphate solution and let this run dropwise into the Erlenmeyer flask, until a change of colour occurs from brown to yellow.
4. Add 1 to 2 mL of starch solution, and dropwise titrate forth until the generated blue-black colour disappears.
5. The consumption of sodium thiosulphate solution (in ml) equals the Chromium(VI) Pointage. Specified pointage is 6.0.

During operation the Chromium(VI) Pointage decreases. For each missing point 3.0 L BONDERITE M-CR 1225 R are added per 1,000 L bath volume.

Titration of free acid:

The titration of the free acid allows to draw a conclusion of the pH-value of the BONDERITE M-CR 1225 bath.

1. Pipette 5 mL bath solution into 500 mL Erlenmeyer flask.
2. Dilute with approx. 200 mL DI water.
3. Add 20 drops of Indicator (Bromphenolblue), upon which the solution takes up a light orange colour.
4. Fill a fine burette with 0.1 N sodium hydroxide solution to the "zero" mark.
5. While gently swirling the flask, dropwise add 0.1 N sodium hydroxide solution, until a change of colour occurs from orange to green-blue.
6. The consumption of sodium hydroxide solution (in mL) equals the Total Acid pointage. Specified pointage is 3.5 to 4.5 mL.

When the Free Acid pointage drops below 3.5 mL, the BONDERITE M-CR 1225 must be flooded with water and replenished with BONDERITE M-CR 1225 R, until Chromium(VI) and Free Acid pointages again meet the specification. A correction of the Free Acid pointage by addition of nitric acid is admitted in exceptional cases. The use of all other acids is strictly forbidden.

Titration of total acid:

The titration of the Total Acid in the BONDERITE M-CR 1225 bath allows to draw a conclusion on the concentration of reaction products present in the bath. These include in general aluminium, zinc, magnesium, and chromium(III) ions.

1. Pipette 5 mL bath solution into 300 mL Erlenmeyer flask.
2. Dilute with approx. 100 mL DI water, add 5 to 10 drops of Indicator (0.1 % alcoholic phenolphthaleine solution).
3. Fill a fine burette with 0.1 N sodium hydroxide solution to the "zero" mark.

4. While gently swirling the flask, dropwise add 0.1 N sodium hydroxide solution, until a change of colour occurs from colourless to pink.
5. The consumption of sodium hydroxide solution (in mL) gives the Total Acid pointage.

Specified Total Acid pointage is max. 25 mL.

When the Total Acid pointage closes in on the specified maximum value, the BONDERITE M-CR 1225 bath must be increasingly overflowed with water.

The Chromium (VI) Pointage must be replenished accordingly by additions of BONDERITE M-CR 1225 MU (when the Free Acid pointage is close to 4.5 mL), or by additions of BONDERITE M-CR 1225 R (when the Free Acid pointage is close to 3.5 mL).

Operational Recommendations:

The BONDERITE M-CR 1225 bath will react differently on different aluminium alloys. The bath should be adjusted so that a light golden layer formation can be seen.

The total layer weight can be measured by means of a Portaspec X-Ray fluorescence apparatus. The total chromium value should be in the range between 14 to 30 mg/m².

This Operation Manual applies to normal conditions. Our technical representatives will be glad to establish optimum parameters for your process.

When the Alodine layer is too thick, or powdery, this may be caused by the following:

- Unsufficient cleaning or rinsing.
- The concentration (resp. Chromium(VI) Pointage) is too high.
- The Free Acid pointage (resp. pH value) is out of specification.
- The BONDERITE M-CR 1225 is contaminated with phosphates, chlorides or sulphates (from e.g. the cleaner).
- The treatment time is too long.
- Temperature of the BONDERITE M-CR 1225 bath or the subsequent rinses are too high.

When the Alodine layer is too thin:

- The treatment time is too short. Check spray nozzles, risers, and pump pressure in the case of spray and spraycoat applications.
- Check the concentration (resp. Chromium(VI) Pointage) of the BONDERITE M-CR 1225 bath.
- The Free Acid pointage is too high or too low.
- The temperature of the BONDERITE M-CR 1225 bath is too low.

Equipment:

The tanks, pumps, piping and heat exchangers must be constructed from acid resistant stainless steel, e.g. # 1.4571 (SUS 316 Ti) or equivalent materials. Entrance and exit of the BONDERITE M-CR 1225 compartment should be equipped with an exhaust suction device. Instructions for the detoxification and neutralisation of used bath liquids and rinse water can be obtained from our "Instructions for Treatment of Waste Water" leaflet.



Caution:

BONDERITE M-CR 1225 MU and BONDERITE M-CR 1225 R contain chromic acid, nitric acid, and fluorides!

Classification:

Please refer to the corresponding **Material Safety Data Sheets** for details on:

Hazards identification

Transport information

Regulatory information

Storage:

Process Component	Recommended Storage Temperature, °C	Shelf life, months (in unopened original packaging)
BONDERITE M-CR 1225 MU	0 to 50	12
BONDERITE M-CR 1225 R	0 to 50	12

ADDITIONAL INFORMATION**Disclaimer****Note:**

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