BONDERITE M-NT 5992 MU TRI CHROM. COATING

known as: Alodine 5992 MU
September 2013

DESCRIPTION

BONDERITE M-NT 5992 MU TRI CHROM. COATING is a technology, trivalent chromium based, capable of producing a hexavalent chrome free conversion layer on aluminium and its alloys.
According to the application and to the treated materials, the colour of the conversion layer changes from colourless to light green.
The conversion layer is designed to improve the paint adhesion and to increase the anticorrosive protection.
In case of bare metal finishing it provides a high corrosion protection (see specific Technical product bulletin for this use).
BONDERITE M-NT 5992 MU TRI CHROM. COATING meets MIL-C-5541 specification

USE CONDITIONS

BONDERITE M-NT 5992 MU TRI CHROM. COATING is used in spray/cascade or immersion application in typical multistage processes with final DI water rinse.

The best application process of **BONDERITE M-NT 5992 MU TRI CHROM. COATING** consists in the following phases:

1. Acid or alkaline cleaning
2. Rinsing
3. Acid de-oxidation
4. Rinsing with DI water (Tap water is allowed when conductivity is below 400 μS/cm)
5. Treatment with **BONDERITE M-NT 5992 MU TRI CHROM. COATING**
6. Rinse with DI water
7. Drying (preferably below 120°C)

APPLICATIONS

BONDERITE M-NT 5992 MU TRI CHROM. COATING is used in aqueous solution, at the following average working parameters

Use conditions at Spray/cascade		Use conditions at immersion	
Concentration:	3 to 6 %	Concentration:	3 to 6 %
pH:	3,6 to 3,8	pH:	3,6 to 4,3
Temperature:	30 to 40°C	Temperature:	30 to 40°C
Time:	1,0 to 1,5 min	Time:	0,5 to 2 min
Pressure:	0.5 to 1.5 bar		

The Technical Service will suggest the best working parameters and operating sequence according to the plant.

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MAKE UP

Be sure of the cleanliness of the plant. Henkel Technical service will provide instructions how to clean it properly.
To prepare a 1000 l bath use 30 to 60 kg of **BONDERITE M-NT 5992 MU TRI CHROM. COATING** which are added to the tank full of DI water and heated to the operating temperature
Let homogenise the bath under pump recirculation, and make controls.

CONTROLS

The **BONDERITE M-NT 5992 MU TRI CHROM. COATING** bath is controlled through the determination of Chromium pointage and pH.

Chromium pointage

Take a sample of the solution and let it cool to room temperature. Transfer 10 ml of the bath in 250 ml beaker and add 1 ml of Hydrogen peroxide 3% solution (**H_2O_2**); in case **BONDERITE M-NT 5992 MU TRI CHROM. COATING** is used more than 15%, use 2 ml of H_2O_2 solution. Then add 25 ml of 1 N **NaOH** and dilute to 100 ml with DI water.
Heat slowly to boiling for 30 minutes, in case of strong evaporation adds DI water. Then cool down to room temperature and add 50 **ml** of DI water, 20 ml of **KI 10%** and 10 ml of **H_2SO_4 50%** and stir for 3 minutes.
The solution becomes red-brown. Titrate with **0,1 N $Na_2S_2O_3$** solution until discoloration to straw coloured / **orange** yellow. Then add 4-5 drops of starch solution. The solution becomes very dark, continue the titration until discoloration.

The total consumption of **0,1 N $Na_2S_2O_3$** used for the titration is the chromium pointage of the bath.

A new 10% Alodine 5992 titrates 15,5 ml of **0,1 N $Na_2S_2O_3$**.

pH

Put 100 ml bath into a beaker and cool it down to room temperature (about 20°C)
By using a previously calibrated pH-meter with Fluoride resistant electrode, measure and read the pH value, after stabilisation.

Coating weight determination

The coating weight can be determined by the following method:

treat a panel with a well-know surface (S in dm^2) in the application cycle. Take the panel before the final drying and dry it with compressed air.
Then weight the panel with an analytical balance to nearest 0,1 mg and record value (W1 in g).
Immerse the panel in a solution 1:1 of **HNO_3 65%** at room temperature for 10 minutes. Then rinse the panel with DI water and dry it with compressed air, weight again and record value (W2 in g).

Coating weight in g/m^2 is calculated as follows:

$$\text{Coating weight} = \frac{(W1-W2)}{S} \times 100$$

It is advisable to maintain the coating weight value between 0,2 and 1,5 g/m^2 (recommended range prior painting: 0,2-1,0 g/m^2)

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Our tech service will suggest, case by case, possible changes to maintain coating weight in the right range.

REPLENISHMENT

Immersion: the bath is replenished with **BONDERITE M-NT 5992 MU TRI CHROM. COATING** according to Chromium pointage. Add 6,5 kg of **BONDERITE M-NT 5992 MU TRI CHROM. COATING (TH)** for each 1000 l of bath and for each missing point.

Spray/cascade: the bath is replenished with **BONDERITE M-NT 5992 MU TRI CHROM. COATING** according to Chromium pointage. Add 6,5 kg of **BONDERITE M-NT 5992 MU TRI CHROM. COATING** for each 1000 l of bath and for each missing point.

If necessary our Tech Service will suggest addition of **Toner 3068** to decrease pH value
Replenishing with **BONDERITE M-NT 5992 MU TRI CHROM. COATING** is advisable when pH value **is** too low

ADVICES

Tanks and all relevant accessories (risers, nozzles, pumps, etc.) should be made of stainless steel (preferably AISI 316 L)
Small differences in product aspect do not affect its performances.
The bath surface has to be kept free from oil or organic pollutants, through periodical skimming.

STORAGE

Store **BONDERITE M-NT 5992 MU TRI CHROM. COATING** in original containers, in ventilated area, at temperature ranging from 0 to 40°C.

SAFETY/ECOLOGY

Before using BONDERITE M-NT 5992 MU TRI CHROM. COATING read carefully the safety data sheet.
The exhausted bath has to be treated in a waste water treatment plant before discharging.

Parameters indicated in the present user instructions have general character and are not binding for a correct management of the treatment products.
HENKEL Technical Service will advice case by case the most suitable parameters at the moment of plant start-up and, in case quality demands it, will modify them taking care of updating the values.

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