Henkel

Technologies

Translation of the German Technical Product Bulletin

Alodine® 1200 (Immersion application)

Yellow chromating of aluminum in an immersion process - powdered, chromic acid containing product -

Fields of application:

Alodine® 1200 is a powdered chemical used to produce a protective coating on aluminum which ranges in colour from light iridescent golden to tan. The process is operated at room temperature. The coating produced minimizes corrosion and provides an improved bond for paint.

Alodine® 1200 coating chemical, being listed on the Qualified Product List QPL-81706, is an approved material to be used by Method C (immersion processing) to produce Class 1A and 3 coatings, bare or unpainted, in accordance with Military Specification MIL-C-5541 B.

Alodine® 1200 and other Alodine® coating chemicals are listed in the Qualified Product List QPL-81706 as approved materials for other Methods and Classes of Military Specification MIL-C-5541 B.

Coating bath make-up:

For each 1000 l of bath, add to the water with stirring or circulating by the pump:

Alodine® 1200	7,5 - 15 kg

Operating conditions:

Points Cr(VI)	6.7 - 13.5
pH	1.8 - 2.1
Temperature	21 - 38° C
Time	1 - 5 min.
Class 3 - Time	15 sec. - 3 min.

Process sequence:

Operation No. 1 - Clean
Operation No. 2 - Rinse
Operation No. 3 - Deoxidize
Operation No. 4 - Rinse
Operation No. 5 - Coat with Alodine® 1200
Operation No. 6 - Rinse
Operation No. 7 - Rinse with deionized water
Operation No. 8 - Dry

The work, after processing and drying, is ready for use either painted or unpainted.

Maintenance of the bath:

The Alodine® 1200 coating chemical bath is controlled in the plant by a titration of the Cr(VI)-points and a pH check.

Cr(VI)-points:

Titration:

1. Pipette 10 ml sample of the Alodine® 1200 coating chemical bath into a flask and dilute with 50 ml distilled water.
2. Add 20 ml of 25 % H_2SO_4 and 2 - 3 g KJ.
3. Titrate against 0.1 N sodium thiosulphate solution until the colour changes from brown to yellow.
4. Add several ml of soluble starch solution to the sample and continue the titration until the blue-black colour disappears.
5. Record the number of ml of 0.1 N sodium thiosulphate solution used as Cr(VI)-points.

Replenishment:

Add 1,1 kg of Alodine® 1200 per 1000 l of bath for each Cr(VI)-point lacking.

The bath should be kept within 6.7 and 13.5 Cr(VI)-points.

pH-Determination:

A pH determination should be made each time the Alodine® 1200 coating chemical bath has been replenished.

The optimum pH lies between 1.8 and 2.1.

NOTE: The pH of the Alodine® 1200 is adjusted with diluted caustic solution and nitric acid, respectively.

Remarks:

The tank material containing Alodine® 1200 should be made out of rigid PVC (free of plasticisers) or austenic steel (type 1.4571).

Hooks and basket will have to be made out aluminum, rigid PVC (free of plasticisers) or austenic steel.

Bathes of Alodine® 1200 as well as its rinsing bathes are not to be discharged into the public sewage system without prior detoxification and neutralization.

Caution!

Alodine® 1200 contains chromium trioxide, complex fluoro and cyanide compounds. Wear

- Eye goggles
- Rubber gloves
- Acid resistant wear
- Avoid contact with skin
- Provide air circulation

Equipment and chemicals for the analysis:

Pipet, 10 ml
Erlenmeyer flask, 300 ml
Graduated cylinder, 50 ml
Buret, 25 ml
DI-water
Sulphuric acid, 25 %, pur
Potassium iodide
Starch solution (stabilized), 1 %
Sodium thiosulphat solution, 0.1 N
pH-meter

The expiry date of the product is given on the packaging labels.

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Revision date: 04/19/2001

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Alodine® 1200 (Brush-on application)

Yellow chromating of aluminum in a brush-on process - powdered, chromic acid containing product -

Fields of application:

Alodine® 1200 is a powdered chemical used to produce a protective coating on aluminum which ranges in color from light iridescent golden to tan. The process is operated at room temperature. The coating produced minimizes corrosion and provides an improved bond for paint.

Alodine® 1200 and other Alodine® coating chemicals are listed in the Qualified Product List QPL-81706 as approved materials for other Methods and Classes of Military Specification MIL-C-5541 B.

Process components:

Alodine® 1200
Nitric acid (62 %)

Coating bath make-up:

For the preparation of 10 l of the Alodine® 1200 coating solution add to 7 l water under stirring:

Alodine® 1200	0,25 kg
Nitric acid (62 %)	0.04 - 0.07 kg or 30 - 50 ml

After complete dissolution fill up with water to 10 l.

Operating conditions:

pH	1.3 - 1.7
Temperature	20 - 40 °C
Time	20 - 180 sec.

Process sequence:	Operation No. 1	Clean/Pickle
	Operation No. 2	Rinse
	Operation No. 3	Chromate with Alodine® 1200
	Operation No. 4	Rinse
	Operation No. 5	Dry

Clean/Pickle:

Products of the Primalu® typ are used for cleaning/pickling. Check back with their data sheets.

Rinse:

The clean surfaces are thoroughly rinsed with cold tap water.

Chromating:

The wet surfaces are treated for 15 sec. to 3 min by brushing on the Alodine® 1200 solution with a acid proofed sponge or a soft brush. The surface must stay wet all the time. Too long treating time or a too high concentrated Alodine® 1200 solution will result in layers which are powdereous and can be wiped off. Too low temperatures of the solution and/or substrate inhibit the coat formation.

In case of having achieved powdereous coats these layers should be washed off with a soft sponge and much water. The remaining firmly sticking layer is suitable as a coat for subsequent painting.

Rinse:

The chromated surface is thoroughly rinsed with cold tap water.

Drying:

The PMT during the drying should be kept below 100 °C.

pH-Adjustment:

A high pH can be readjusted by adding nitric acid and a low pH by adding caustic solution (5 %).

Required pH: 1.3 - 1.7

Remarks:

The tank material containing Alodine® 1200 should be made out of rigid PVC (free of plasticisers) or austenic steel (type 1.4571).

Hooks and basket will have to be made out aluminum, rigid PVC (free of plasticisers) or austenic steel.

Spraying systems, pumps and heat exchangers have to be made out of stainless steel (type 1.4571).

Bathes of Alodine® 1200 as well as its rinsing bathes are not to be discharged into the public sewage system without prior detoxification and neutralization.

Caution:

Alodine® 1200 contains chromium trioxide, complex fluoro and cyanide compounds. Wear

- Eye goggles
- Rubber gloves
- Acid resistant wear
- Avoid contact with skin
- Provide air circulation

Equipment and chemicals for the analysis:

pH-meter

The expiry date of the product is given on the packaging labels.

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