Henkel

Surface Technologies

Technical Process Bulletin

Deoxidiser 1

1. PRODUCT DESCRIPTION

Deoxidiser 1 is a dip process for removing the oxide skin from aluminium and aluminium alloys and lightly etching the surface prior to Alocrom treatment or spot welding. The process can also be used in a suitable designed spray washing plant.

Deoxidiser 1 uniformly activates the surface and so ensures an even coating after pretreatment, irrespective of the surface condition of the metal.

It is particularly suitable for removing the oxide skin and etching the surface of aluminium alloy castings, heat treated alloys and clad alloys, and for use on surfaces which have become passivated during extruding or forming. Furthermore, it can be used to prepare aluminium and aluminium alloys for spot welding, and for desmutting alkaline etched aluminium.

2. BATH MAKE UP

Partially fill the tank with water and add 25 litres of Concentrated sulphuric acid (SG 1.84) for every 1000 litres of bath. Add the acid slowly stirring all the time.

NEVER ADD WATER TO ACID.

Use 25kg of **Deoxidiser 1** per 1000 litres of bath. Dissolve in small amounts in a pail of water and add to the bath. Repeat until all the **Deoxidiser 1** has been added.

Fill the tank to its operating level with water and stir thoroughly.

3. DEOXIDISER 1 CONTROL POINTS

Temperature	:	10 - 30°C
Time	:	1 - 10 minutes
Deoxidiser Titration	:	up to 21.0 cm^3
Acid Titration	-	up to 8.6 cm^3

4. BATH CONTROL

The bath is controlled by a hexavalent chromium titration which measures the Deoxidiser concentration, and an acid titration.

The Deoxidiser concentration and acid titration should be determined at intervals depending on bath usage. Before testing bring the bath to its operating level with tap water.

4.1 Deoxidiser Concentration

Pipette 5 cm^3 of the bath solution into a flask and add about 100 cm^3 of water.

Add about 1 gram of potassium iodide and agitate until dissolved.

Add about 5 cm^3 of concentrated hydrochloric acid and rinse the side of the flask several times with water.

Leave for about 1 minute and then titrate with 0.1M sodium thiosulphate until a straw colour is obtained.

Add about 0.5 gram of 'Iotect' iodine indicator and continue the titration until the blue-black colour just disappears. The Deoxidiser concentration can be obtained from the following table:

cm³ of 0.1M Sodium Thiosulphate	Deoxidiser concentration kg/1000 litres
21.0	25
16.8	20
12.6	15
8.4	10
4.2	5

Add sufficient Deoxidiser to the bath to bring the concentration up to 25kg per 1000 litres.

4.2 Acid Titration

Pipette 5 cm³ of the bath solution into a flask and add about 200 cm³ of water.

Add 6 drops of phenolphthalein indicator solution.

Titrate with 0.5M sodium hydroxide solution until the colour changes from orange to red-brown. The acid concentration can be obtained from the following table:

cm³ of 0.5M Sodium Hydroxide	Sulphuric Acid Concentration litres/100 litres
8.6	2.5
6.9	2.0
5.2	1.5
3.4	1.0

Add sufficient sulphuric acid to the bath to bring the concentration up to 2.5 litres/100 litres.

4.3 Test Chemicals

The test chemicals referred to in this data sheet are available from most laboratory chemical suppliers.

5. OPERATING NOTES

5.1 Precleaning

Remove all grease by solvent vapour degreasing or Ridoline or Almeco alkali cleaner. Rinse after the alkali cleaner.

5.2 Deoxidiser Treatment

Immerse the work in the **Deoxidiser 1** bath until the surface is deoxidised. 1 - 3 minutes immersion removes normal amounts of oxide from sheet aluminium and give a slight etch, but for removing heavy oxide or treating sand castings up to 10 minutes may be necessary and the surface will then have a uniformly etched appearance. High silicon alloys, as used for pressure die castings, generally require 2 minutes for optimum treatment, longer immersion times may cause a grey silicon dust to build up on the surface. When treating articles prior to spot welding 3 - 5 minutes is recommended for most alloys

5.3 Rinsing

Rinse thoroughly in clean hot or cold running water and then treat in Alocrom 1200 or if the work is to be spot welded, air or oven dry, taking care to avoid contaminating the surface.

5.4 Maintenance

Whenever the solution is lost through leakage or drag out restore the bath to its operating level with water, acid and Deoxidiser in the same proportions as the original bath.

Deoxidiser baths form no sludge and for all practical purposes need never be discarded.

6. EQUIPMENT

The Deoxidiser tank should be made or lined with 316 stainless steel (En58J), polythene, polypropylene or rigid PVC.

7. HANDLING PRECAUTIONS

(Please refer to Health and Safety Data Sheet).

Always use Deoxidiser in a well-ventilated shop.

When handling Deoxidiser powder avoid breathing any dust. Wear PVC gloves, apron, rubber boots and a dust mask.

Process operators should wear goggles or a face mask and PVC gloves.

Clothing should be protected.

If any of the chemicals or solutions come into contact with the skin, wash off immediately with soap and water. Get medical attention if skin contact has been prolonged, of if a rash develops. If any product get into the eyes flush out at once with quantities of water and OBTAIN IMMEDIATE MEDICAL ATTENTION.

Concentrated sulphuric acid is highly corrosive. Refer to the suppliers literature before use.

Spills should be hosed away with plenty of water, but it must be remembered that Deoxidiser contains chromates which can present an effluent problem. Do not use sawdust to absorb spills. Do not allow organic matter, such as rags, sponges, sawdust etc which is wet with Deoxidiser to dry out as this may constitute a fire hazard.

Store chemicals in a cool dry area. Store in the original containers which should be kept sealed when not in use.

8. FURTHER INFORMATION

Full information on the hazards and safe handling of the product as supplied is given in the Health & Safety Data Sheet which must be read and understood by everyone handling or using this product.

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