

TECHNICAL DATA

AUSTRALIAN CHEMICALS & COATINGS PTY LTD

ABN 92 884 104 142



69 Quantum Close,
Dandenong South
Vic 3175

Ph: (61 3) 9799 9833

Fax: (61 3) 9799 9033

NSW Ph: (61 2) 9737 9772

QLD Ph: (61 7) 3865 5787

Email: sales@auschem.com.au

Website: www.auschem.com.au

WARNING

THIS CHEMICAL IS
FORMULATED FOR
INDUSTRIAL USE ONLY

Contact with skin or clothing or other improper handling or use of this product may result in bodily harm or other damage. Before using or mixing the contents with other substances, all labels applied to container, the applicable Technical Data Sheet and Material Safety Data Sheet should be read and specific instructions and precautions followed to assure correct use and personal safety.

AUSBRIGHT

READY FOR USE ALUMINIUM BRIGHTENING SOLUTION

AUSBRIGHT is a compound for the chemical brightening of aluminium and its alloys: it can be used on pressings, extrusions and wire work with comparable results to mechanical polishing.

The brightening is obtained by simple dipping of the pieces into the solution.

WORK PARAMETERS

CONCENTRATION:	Ready for use
TIME OF DIPPING:	30-200 seconds
TEMPERATURE:	100 degrees Celcius +/-5
DENSITY AT 15°C:	1.70 – 1.72
TANK:	Stainless steel type 316 (A stainless steel perforated pipe for agitation is advisable)

WARNING

AUSBRIGHT contains concentrated acids and it must be handled carefully. It has to be stored at a temperature of 5-30 degrees Celcius (a lower temperature can cause crystallisation).

For AUSBRIGHT handling wear goggles and protective clothing. For further details refer to the MSDS

WAY OF USE

- A pre-cleaning step is not normally required, but if it is, it is better to use acid solution or organic solvents.
- A desmut tank is advisable.
- During the work the nitric acid content decreases and the aluminium content grows up till a constant value (generally 20-40 g/l)

1/3

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MAINTENANCE AND ANALYTICAL CHECK

- Daily checks should be carried out by measure of specific gravity and a simple control of the concentration of nitric acid. Specific gravity: it should be made on a sample of bath cooled to 15 degrees Celcius, using a Twaddell hydrometer nb.6. Usual working range 1.70-1.75g/l.
- The appearance of work is the most useful help for a correct maintenance: a dull finish means a very low concentration of nitric acid, a slight deficiency produces a white film on the surface difficult to remove. An excess of nitric acid causes an uneven finish and potential pitting.
- A dull finish can be obtained also when the aluminium concentration is higher than 45 g/l.
- The usual consumption of nitric acid requires generally two additions in a day (1-2% of total volume) however an addition of fresh AUSBRIGHT is advisable to maintain the working level of the solution.
- In order to prevent the growing of the specific gravity (cause of pitting and smut on the aluminium surface) water can be added (1% of total volume tank) considering that an addition of 1.0% of the total volume produces a density reduction of 0.01 unit.

ANALYTICAL CONTROL

NITRIC ACID

Reagents:

1) Ferrous sulphate solution.

Cautiously add 50ml concentrated sulphuric acid to about 700 ml distilled water. Cool, add 265g ferrous sulphate heptahydrate ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$) and stir until dissolved. Transfer to a 1 litre volumetric flask and dilute to the mark with distilled water.

Standardization of ferrous sulphate solution

Pipette 25ml 0.5 normal potassium dichromate into a 600 ml beaker; add 200-250 ml distilled water and acidify the solution with a few drops of concentrated sulphuric acid. Add 25 ml phosphoric acid and mix well. Add one sodium diphenylamine sulphonate indicator tablet and allow to dissolve. Titrate with the ferrous sulphate solution. The end point is indicated by a colour change to clear green.

Let **A** ml be the volume of ferrous sulphate used.

2) Phosphoric acid (sp.gr.1.75)

3) Potassium dichromate solution 0.5 N solution.

Dissolve 24.516 g potassium dichromate in distilled water.

4) Sodium diphenylamine sulphonate indicator.

Procedure:

- Accurately measure 5 ml of AUSBRIGHT solution into a dry 250 ml beaker. Add 100 ml phosphoric acid. Stir and heat to 40-45 degrees Celcius.
- Titrate with ferrous sulphate solution until the first permanent golden brown colour is formed.

- Let "B" be the volume of ferrous sulphate used.

Calculation:

B

-- x 5.3 = % V/V conc. nitric acid

A

ALUMINIUM

Reagents:

- 1) Copper sulphate solution 0.1 molar
(24.97 g in one litre of distilled water plus some drops of sulphuric acid conc.)
- 2) EDTA, 0.1 molar solution.
- 3) PAN indicator, 0.1% w/w solution, prepared dissolving 0.1g of product in 100 ml of industrial methylated spirits.
- 4) Buffer solution prepared dissolving 500 g of ammonium acetate in distilled water, adding 20 ml of glacial acetic acid, and diluting to 1 litre with distilled water.
- 5) Sodium fluoride.

Procedure:

- Measure 10 ml of AUSBRIGHT solution and dilute to 100 ml in a volumetric standard flask with distilled water.
- Pipette 10 ml of this prepared solution into a 600 ml beaker and dilute to 350-400 ml.
- Add 20 ml buffer solution and 25 ml 0.1 M EDTA.
- Warm and add 1.0 ml PAN indicator. Bring to the boil, cool to 60 degrees Celcius and titrate with standardized 0.1 M copper sulphate solution.
- The end point is shown by a sharp change from green to deep blue.
- Add 1-2 g sodium fluoride and boil. Cool to 60 degrees Celcius and titrate with 0.1 M copper sulphate to the blue end-point.
- If the first drops of copper sulphate produce a pink or purple colour, the procedure should be repeated using 5 instead of 10 ml diluted AUSBRIGHT.
- Add 1-2 g of sodium fluoride and again bring to the boil. Cool to 60 degrees Celcius and titrate the liberated EDTA with 0.1 M copper sulphate to the blue end-point.
- Call A ml copper sulphate.

Calculation:

g/L aluminium = A x 2.7

If the aluminium concentration exceeds 40 g/l the determination should be repeated using 5 ml diluted AUSBRIGHT MG 99. The factor is the 5.4.