

# TECHNICAL BULLETIN



19 Motivation Dve Wangara, WA, 6065 AUSTRALIA  
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## ALUM - ALUMINIUM SULFATE

### ALUMINIUM SULFATE

CONTAINS 990 g/kg Aluminium Sulfate Tetradecahydrate  
CAS No. 16828-12-9  
Molecular Weight: 594  
Chemical Formula:  $Al_2(SO_4)_3 \cdot 14H_2O$

#### WARNING

**Causes skin irritation**  
**Causes serious eye irritation**  
**May cause respiratory irritation**



Avoid breathing dust. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/ protective clothing/ eye protection.

IF ON SKIN: Wash with plenty of soap and water.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

Call a POISON CENTER or doctor/ physician if you feel unwell.

If skin or eye irritation occurs: Get medical advice/attention.



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CONTENTS kg nett  
BATCH NO.

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### MATERIAL & FUNCTION

In water treatment, **ALUMINIUM SULFATE** is used as a coagulant to remove almost any kind of impurities in the water, for house or industrial use.

The most important function of this coagulant is to provide electrically charged ions capable to neutralize effectively the electric charges of the colloidal material present in the water and then cause its precipitation. The principle of operation for this flocculent is based on its physical characteristics consisting in a very high surface to volume ratio, place where the adhesion of the colloids to be flocculated, takes place. This flocculate is aluminium hydroxide, resulting from the action of water in contact with the **ALUMINIUM SULFATE** in presence of large quantities of water.

Temperature, pH and turbidity of the water are important factors in determining aluminium solubility and consequently residual aluminium. Aluminium being an amphoteric element, is soluble at extremely acidic (pH < 6) and alkaline (pH > 8.5) conditions but is insoluble at near neutral pH values (7.0 to 7.5).

#### DRINKING WATER:

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Aluminium (Al) is one of the trace inorganic metals present in drinking water. In addition to the naturally occurring aluminium in raw waters, use of Al-based coagulants especially  $Al_2(SO_4)_3$  (alum) often leads to an increase in treated water aluminium concentrations.

A high (3.6 to 6 mg/l) concentration of aluminium may precipitate as aluminium hydroxide giving rise to consumer complaints. During conventional water treatment processes, aluminium undergoes various transformations (also called 'speciation' of Al) which are influenced by factors such as pH, turbidity, temperature of water source and the organic and inorganic ligands present in water. Chemical precipitation, reverse osmosis, electrodialysis and cation exchange methods are efficient in aluminium removal from water.

## DIRECTION FOR USE

In practice, pH levels of 5.5 to 8.0 are used. The best dosage for coagulants is obtained thru laboratory tests until the best results are obtained.

Approximately 0.45 % Alum (ie Aluminium sulfate tetradecahydrate) and 0.40 % Soda Ash (Sodium Carbonate) are required for bore water with an initial pH of 6.45 (Wanneroo in WA). This will flocculate colour due to humic acids and iron. This treated water is NOT recommended for drinking unless disinfection measures are taken.

## CAUTION

*Avoid contact with skin and eyes and avoid breathing vapour or spray mist.*

## PACKAGING

2 & 4 kg pail, 25 kg bag

Solutions of 25% and 40% as the tetradecahydrate are also available

## IMPORTANT NOTICE TO CUSTOMER

*Since the use of this product is beyond the control of either seller or manufacturer, their only obligation shall be to replace any quantity of product which is proven defective. They cannot assume any risk or liability in excess of the purchase price of the product itself, which does not include labour or any consequential damages resulting from the use of this product. Determining the suitability of this product for any intended use shall be solely the responsibility of the user. ALWAYS TEST FIRST.*