



**Ranhill  
SAJ**

**SPECIFICATION FOR ALUMINIUM SULPHATE  
(ALUM) USED FOR POTABLE WATER SUPPLY**

**SPECIFICATION SAJ CH/AS/001  
(Rev.6.0 / 09.2018)**

QUALITY ASSURANCE DEPARTMENT  
RANHILL SAJ SDN. BHD.

**Ranhill**

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## Specification for Aluminium Sulphate (Alum) Used For Potable Water Supply

CONTENT	PAGE
Contents	2
1.0 GENERAL DESCRIPTION	3
2.0 FEATURES REQUIRED	3
3.0 TEST AND INSPECTION	4
4.0 PACKING AND STORAGE	4
5.0 MANDATORY MARKING	4
6.0 PRE-DELIVERY INSPECTION AND EVALUATION	5
7.0 CERTIFICATION	5



## Specification For Aluminium Sulphate (Alum) Used For Potable Water Supply

### 1.0 GENERAL DESCRIPTION

- 1.1) Features required are as follows or otherwise the Specification MS 699:2008, Malaysian Standard Specification For Aluminium Sulphate (Alum) Used for Potable Water Supply shall be used.

### 2.0 FEATURES REQUIRED

- 2.1) Aluminium Sulphate (Alum) Used for Potable Water Supply shall comply with requirements as specified in Table 1 – Product Specification.

Table 1 – Product Specification

Parameter	Requirement		Method of test
	Solid	Liquid	
<b>A. Chemical requirement</b>			
Aluminium content, as Al <sub>2</sub> O <sub>3</sub> , % (w/w)	17.0 min	8.0 min	<u>Annex B MS 699:2008</u>
Basicity, as Free Al <sub>2</sub> O <sub>3</sub> % (w/w)	0.3 max	0.1 max	<u>Annex C MS 699:2008</u>
Free acid, as H <sub>2</sub> SO <sub>4</sub> % (w/w)	0.1 max	0.05 max	<u>Annex D MS 699:2008</u>
<b>B. Impurity</b>	<b>Limit</b>		
Insoluble matter, % (w/w)	0.5 max	0.2 max	<u>Annex E MS 699:2008</u>
Iron, as Fe <sub>2</sub> O <sub>3</sub> , % (w/w)	0.75 max	0.35 max	<u>Annex F MS 699:2008</u>
<b>C. Physical requirement</b>	<b>Requirement</b>		
Specific gravity, at ambient temperature	-	1.310 min	<u>Annex G MS 699:2002</u>
<b>D. Toxic Substances</b>	<b>Limit</b>		
Arsenic (As), as mg/kg of Al	40		
Cadmium (Cd), as mg/kg of Al	50		
Chromium (Cr), as mg/kg of Al	700		
Mercury (Hg), as mg/kg of Al	10		<u>BS EN 1302</u>
Nickel (Ni), as mg/kg of Al	700		
Lead (Pb), as mg/kg of Al	200		
Selenium (Se), as mg/kg of Al	40		
Antimony (Sb), as mg/kg of Al	40		
Manganese (Mn), as mg/kg of Al	300		

2.2) Physical Properties of Aluminium Sulphate used for potable water supply as follow:

No.	Physical Properties	Description
1.	Appearance	i. <u>Liquid Aluminium Sulphate shall be a clear to yellowish</u> ii. Dry, white solid in lump/kibbled or ground/granulated form
2.	Solubility	i. 410g/L (at 15° C) for product with 17% Al <sub>2</sub> O <sub>3</sub> content

- 2.3) Aluminium Sulphate shall contain water soluble aluminium of not less than 9.0 percent as Al or 17% percent, by weight as Al<sub>2</sub> O<sub>3</sub>
- 2.4) Liquid aluminium sulphate shall contain water soluble aluminium of not less than 4.23 percent as Al or 8.0 percent as Al<sub>2</sub> O<sub>3</sub>
- 2.5) The Aluminium Sulphate shall not contain any impurities and additives.

**3.0 TEST AND INSPECTION**

3.1 All Aluminium Sulphate shall comply with test in accordance with the requirement of standard.

**4.0 PACKING AND STORAGE**

- 4.1 Aluminium Sulphate shall be supplied in lump (kibbled) from ranging in size from not less than ½” to not more than 3” and shall be packed in non-returnable double bags (e.g. in sewn cotton bags placed inside gunny sacks)
- 4.2 Each bag shall contain a nett. weight of 50kg of the Aluminium Sulphate (Alum)
- 4.3 Container or tanker load for liquid product.
- 4.4 For storage purpose, Storage Tank shall be of acid-resistant and place in cool-dry and well-ventilated place.
- 4.5 Avoid contact with chlorites, hypochlorites and sulphites.
- 4.6 Under proper storage conditions, Aluminium Sulphate should be stable up to 12 months.

## 5.0 MANDATORY MARKING

Each bag of Aluminium Sulphate shall have mark legibly on it including: -

- 5.1 “Aluminium Sulphate”, trade name and grade;
- 5.2 Net Weight;
- 5.3 Name, address and telephone number of supplier and/or manufacturer;
- 5.4 Batch number
- 5.5 Date of manufacturing or packaging; and shall bear such other markings as requires by applicable laws;

## 6.0 PRE-DELIVERY INSPECTION AND EVALUATION

- 6.1 It is the responsibility of the tenderer to inform SAJ for inspection purposes during manufacturing and before delivery.
- 6.2 SAJ reserve the right to inspect and witness the testing of the product offered without any prior notice.
- 6.3 At any time, when requested, the supplier is to provide SAJ a sample of the product offered for evaluation purposes. All cost shall be borne by the supplier.
- 6.4 If at any time the supplier fails to deliver the required sample, the product is deemed fail to meet the specification.

## 7.0 CERTIFICATION

- 7.1 Manufacturer and/or supplier of the product are required to provide a copy of the certificate and testing report from SIRIM, IKRAM and/or other recognised certification bodies.
- 7.2 Tests report required should be those tests conducted within a year period.
- 7.3 Manufacturer and/or supplier shall conform to SPAN's requirements.
- 7.4 SAJ has the right to refuse offer or reject supply if those documents required are not enclosed.

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