PBA/QSH/QMS/01-04 (3)

DOCUMENT AMENDMENT RECORD SHEET (Revision History)

No	Date of Change	Description	Page	Revision	Approved By
1	27 June 2018	New Release	1-8	00	CEO

1.0 General

All chemicals (Polyaluminium Chloride) shall be of a grade suitable for the treatment of drinking water and shall contain no soluble minerals or organic substances capable of producing deleterious or injurious effects on public health.

The Polyaluminium Chloride shall be in accordance to MS 1454:2007; Liquid Polyaluminium Chloride for use in potable water supply – specification (first revision)

2.0 Scope

The specification for Water Treatment Chemical – Polyaluminium Chloride is a guideline for the Polyaluminium Chloride suppliers to comply with in order to supply the Polyaluminium Chloride for PBAPP's use in potable water supply service.

3.0 SPAN Requirements

All suppliers of the chemical must be registered in the Suruhanjaya Perkhidmatan Air Negara (SPAN) Listing / Registration of Suppliers, and the registration must be valid during period of supplying of the chemical.

4.0 Safety & Health Requirements

4.1 All suppliers shall fully comply with the clauses / requirements in:

a) Occupational Safety and Health Act , 1994,

b) Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013,

c) Industry Code of Practice on Chemicals Classification and Hazard Communication 2014 (ICOP 2014),

d) Any Regulations / Orders; and

e) As well as other applicable laws

5.0 Halal Certificates Requirements

All chemicals (Polyaluminium Chloride) shall have valid HALAL certificate.

6.0 Chemical Requirement

6.1 Purity Criteria

6.1.1 Polyaluminium Chloride shall not contain any impurities and additives in such concentrations that are capable of producing deleterious or injurious effects on the health of those consuming water that has been properly treated with the Polyaluminium Chloride solution.

6.1.2 The Polyaluminium Chloride must comply with the requirements as specified in Table 1

Parameter	PBAPP specifications	Test Method
Density (ambient temperature) , g/ml	1.13 – 1.23	Annex B MS 1454:2007
Aluminium Oxide (Al_2O_3) , % (w/w)	10% minimum	Annex C MS 1454:2007
Basicity , % (w/w)	35% - 83%	Annexes D , E , F MS 1454:2007
pH (1% w/v solution)	3.5 – 5.0	Annex G MS 1454:2007
Sulphate ion (SO_4^{2-}) , % (w/w)	3.5% maximum	Annex H MS 1454:2007
Insoluble matter, % w/w	1.0% maximum	Annex J MS 1454:2007
Total iron (Fe) , % w/w	0.05% maximum	Annex K MS 1454:2007
Ammoniacal nitrogen (N) , % w/w	0.01% maximum	Annex L MS 1454:2007

Table 1 : Requirements for Polyaluminium Chloride

6.2 Toxic Substances

The content of toxic substances in the product must comply with the requirements Specified in Table 2.

Parameter	Maximum Limit in mg/kg of dry substance	Test method
Arsenic (As)	40	BS EN 1302:1999
Manganese (Mn)	300	
Cadmium (Cd)	50	
Chromium (Cr)	700	
Mercury (Hg)	10	
Nickel (Ni)	700	
Lead (Pb)	200	
Antimony (Sb)	40	
Selenium (Se)	40	

Notes:

1) The contribution of toxic substances in the chemical used for treatment of drinking water should not be more than 10 percent of the maximum allowable concentration of those toxic substances to the drinking water (''the 1/10th rule'')
2) For allowable limit of toxic substances in mg/kg PACI as stated concentration, the value after calculation are given in Table 3

Table 2 : Content of toxic substances

Parameter	Maximum Limit in mg/kg of product
Arsenic (As)	2.4
Manganese (Mn)	17.9
Cadmium (Cd)	3.0
Chromium (Cr)	41.9
Mercury (Hg)	0.6
Nickel (Ni)	41.9
Lead (Pb)	12.0
Antimony (Sb)	2.4
Selenium (Se)	2.4

Table 3 : Limit of toxic substances

7.0 Marking, Labelling and Packaging

7.1 Marking

7.1.1 The following information shall be marked legibly either on each container (bag / big bag) :

a) Chemical solution, trade names and grade
b) Net Weight
c) Name, address and telephone number of supplier and manufacturer
d) Batch number
e) The date of manufacturing; and shall bear such other markings as required by applicable laws
f) The statement 'potable grade'
g) Expiry date of the chemical

7.1.2 In the case of shipment in bulk, every consignment shall carry a certificate setting out the above-mentioned information.

7.2 Risk and Safety Labelling and Safety Data Sheet (SDS)

7.2.1 Labelling requirements (written in both Bahasa Malaysia and English) shall apply to Polyaluminium Chloride and shall comply with the requirements of the Regulation 6,7,8,9,10,11,12 of the Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013, Industry Code of Practice on Chemicals Classification and Hazard Communication 2014 (ICOP 2014), Occupational Safety and Health Act 1994 (Act 514) and Regulation and Orders.

7.2.2 Suppliers shall furnish dual languages (English and Bahasa Malaysia) of an up-to-date Safety Data Sheet (SDS) complying with Regulation 13 of the Occupational Safety and Health (Classification, Labeling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 for each chemical before their first delivery to PBAPP Sdn. Bhd. or whenever there are changes made to the SDS.

7.3 Packaging, Chemical Handling during Transportation, Labeling and Certificate of Analysis

7.3.1 Packaging, Chemical Handling during Transportation and Labeling

7.3.1.1 All suppliers must prepare packaging according to the below Table 4: Requirement of Packaging

Type of Packing of Polyaluminium Chloride	Packing Description
Liquid Polyaluminium Chloride	Bulk Tanker

Table 4 : Requirement of Packaging

7.3.1.2 The packaging shall be securely sewn at both ends to provide sufficient sealing at ends to prevent leaking and also be with stand rough handling.

7.3.1.3 No contamination of Polyaluminium Chloride by toxic substances or other foreign substances shall occur during transportation.

7.3.1.4 Broken bags, drums, container, rebadged chemicals or other packing conditions shall be rejected and PBAPP reserves the right to reject any good that in their opinion is considered poorly packed.

7.3.1.5 It is mandatory requirement to state the lot number, manufacturer date and expiry date at all packages of shipments.

7.3.1.6 The supplier shall provide recommendations for appropriate materials of constructions for the storage, handling and packaging of each specific product.

7.3.2 Certificate of Analysis (COA)

7.3.2.1 A certificate of analysis, with the indication of country of origin (where applicable) shall accompany all deliveries for the chemical and to be given to the end users.

7.3.2.2 The contents of the certificate of analysis shall include the following :

a) Density (ambient temperature) g/ml
b) Aluminium Oxide ($A1_2O_3$) , % (w/w)
c) Basicity , % (w/w)
d) pH (1% w/v solution)
e) Sulphate ion $(SO_4)^2$, % (w/w)
f) Total Iron (FE) , % w/w PAC

7.3.2.3 The COA shall contain the Batch No. , parameter, PBAPP specification, Actual Results and a column stating comparison of the result against PBAPP specification (Compliance to PBAPP specification). Supplier must provide the COA according to the below sample format as tabulated in Table 5.

Customer / Location of Chemical Delivered to : Tanker / Lorry Number : Delivery Date : Delivery Order Number : Name of Chemical : Batch Number : Country of Origin : Manufacturing Date : Expiry Date :			
Parameter	PBAPP Specifications	Actual Result	Compliance
Density (ambient temperature) , g/ml	1.13 – 1.23		
Aluminium Oxide (Al_2O_3) , % (w/w)	≥ 10%		
Basicity , % (w/w)	35% - 83%		
pH (1% w/v solution)	3.5 – 5.0		
Sulphate ion (SO_4^{2-}) , % (w/w)	≤ 3.5%		
Insoluble matter, % w/w	≤ 1.0 %		
Total iron (Fe) , % w/w	≤ 0.05 %		

Table 5 : Sample Format of COA Report

7.3.2.4 A comprehensive certificate of analysis shall be provided to end users upon their request and the parameter as per 6.1 Table 1 and 6.2 Table 2 and Table 3