kern s&d

Poly Aluminium Chloride (PAC)

PRODUCTION PLANTS

Engineering at service
of sustainability

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PRODUCTION PLANTS

KERN SD

develops tailor-made 'on-site' poly aluminium chloride production facilities to meet customers' technical and economical needs.

KERN SD plants are fully customizable in terms of production.

Overall process reaction is:

$$Al_2O_3 + 3\ H_2O + mHCl \rightarrow (Al_2(OH)_{6-m}Clm)_x$$

- KERN SD KERN SD has an **innovative PAC 18 production technology**, by continuous reaction of alumina with an aqueous solution of hydrochloric acid - *this reaction takes place in a vitrified reactor; the discharged product is filtered by separating unreacted alumina and insolubles; finally the clarified product is transferred to tanks where it is stored to the specification required by the customer.*
- Plants designed and developed by KERN SD use safe, environmentally friendly and highly competitive technology due to their low investment and low operating costs (high electrical efficiency and degree of automation).
- KERN SD technology complies with **the EU Best Available Technologies (BAT) Directives for the production of chlor-alkali (Directive 2010/75/EU).**

TECHNICAL SPECIFICATIONS OF THE PRODUCT ($(Al_2(OH)_{6-m}Clm)_x$)	
Appearance	Transparent - Amber
Melting point	-20° C
Boiling point	120 °C
Density	1,37 – 1,41 g/cm^3 (20 °C)
Molar Mass	High
Water solubility	Easy

Poly Aluminium Chloride (PAC) **Production Plants**

PLANT FEATURES

Output	Tailored to customer needs
Flexibility	50-100%
Concentration	18% (liquid) / 30% (solid)
Materials	Built with high quality materials
Monitoring	Fully automated and monitored plants

- **ON-SITE PRODUCTION**
- **FIXED PLANTS**
- **MODULAR AND SCALABLE**
- **AUTOMATIC CONTROL**
- **SAFE OPERATION**
- **ECONOMIC SAVINGS** (low operating and maintenance costs)
- **HIGH ENERGY EFFICIENCY**
- **SIGNIFICANT REDUCTION** of associated storage, handling and road transport risks
- **HIGH PURITY PRODUCT**
- **NO ENVIRONMENTAL IMPACT**

Poly Aluminium Chloride (PAC)

PRODUCTION PLANTS

SOME APPLICATIONS

OF POLY ALUMINIUM CHLORIDE

Poly aluminium chloride is used as a **primary coagulant** in :

- **Water purification for human consumption**
- **Waste water treatment**
- **Water conditioning** - in the paper and leather industry
- **Cosmetics industry**

It is among the aluminium salt coagulants along with traditional aluminium sulphate. However, it has some important advantages over the latter :

- Under certain conditions, less coagulant expenditure is required (especially at high turbidity).
- Decreases total organic carbon (TOC)
- Lower alkali consumption
- Effectiveness over a wide pH range
- Same performance at different temperatures
- Colour change (as with aluminium sulphate, depends on the type of colour present in the water)