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Product Data Sheet

PAL M-300

Medium density pseudoboehmite alumina

BASF PAL M-300 is a wide pore, medium density pseudoboehmite alumina, complementing our product line of aluminas for the catalyst and abrasive industries.

Description

BASF PAL M-300 is a pseudoboehmite alumina, also known as an aluminum monohydrate, AlO(OH). It is produced as a dry white powder with excellent fluidization characteristics. The powder is easily dispersed by most mulling operations. Extruded products exhibit good strength and high attrition resistance with predictable pore volume distribution.

Applications

Product uses vary among chemical, abrasive, and catalyst manufacturers. Outstanding properties include high purity (see chemical composition), reactivity, and excellent binding/bond formation. When heated to approximately 450-500ºC, BASF PAL M-300 is converted into high porosity, high surface area gamma alumina.

Some applications include:

- **Catalysts:** Pseudobohemite is the predominant alumina powder for making catalyst substrates. It is self-binding and easily forms into extrudates, pellets and beads. Formed materials can be activated to high porosity and high surface area transition phases that have excellent hydrothermal stability. Pore volume distributions are typically bimodal. Depending on the application, pore volume can be adjusted into micropores or mesopores. Bimodal porosity is an advantage in many applications because the surface area is primarily located in the micro/mesoporous region, whereas the macroporosity is important for transport and diffusion of molecules to this surface area.
- **Chemicals:** Often used as a bonding or suspending agent for applications that require particulate minerals. The combination of high surface area and porosity provides high capacity adsorption activity in clarification, purification, and separation processes.
- **Abrasives:** Many applications have been found in the formulation of precision polishing compounds, especially for plastics. BASF PAL M-300 alumina also acts as a processing aid for viscosity control and can serve as a high temperature binder.
- **Extrusions:** Formed products can be made using BASF PAL M-300 after peptizing with a dilute acid solution. When heat treated at 500ºC, these products will exhibit a surface area close to 320 m^2/g. Heating to about 600ºC will decrease the surface area to around 280 m^2/g.

Safety & handling

BASF PAL M-300 alumina is classified as nontoxic nuisance dust and does not produce significant organic diseases or toxic effect with reasonable exposure. Normal good housekeeping and operating procedures should ensure personnel safety. The data contained herein are for general informational purpose only. Please refer to the material safety data sheet for specific, complete information regarding these products.

Available Packaging

- 1000 kg super sacks

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Chemical composition (wt %), typical	
Al_2O_3	70
Na_2O	<0.05
SO_4	<0.25
LOI (1000°C)	25-33

Physical properties, typical	
Aluminaphase	Pseudoboehmite
Loose bulk density (as is), kg/m^3	480-530
Surface area, m^2/g (1 hr @ 550°C)	280-300
Nitrogen pore volume (1 hr @ 550°C)	0.7-0.85
d50, microns	18-28

Temperature transformations - As PAL M-300 is heated the following transformations occur:			
@ 250°C	PAL M-300	➔	Non-dispersible PSB
@ 350-450°C	Non-dispersible	➔	Gamma alumina
@ 800-900°C	Gamma	➔	Delta/theta alumina
@ 1000-1100°C	Theta	➔	Alpha conversion begins
@ 1300-1600°C	Alpha (porous)	➔	Sintered alpha alumina

About Us

BASF is a leading global manufacturer of catalysts for the chemical industry, with solutions across the chemical value chain. The business comprises chemical catalysts, adsorbents and custom catalysts. Priority is given to developing new and improved products that enable the chemical industry transformation to net-zero emissions.

BASF's chemical catalysts and adsorbents business is part of the company's Performance Chemicals division. The division's portfolio also includes refinery catalysts, fuel and lubricant solutions, as well as oilfield chemicals and mining solutions. Customers from a variety of industries including Chemicals, Plastics, Consumer Goods, Energy & Resources and Automotive & Transportation benefit from our innovative solutions.

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