

# 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,  $\text{AlO}(\text{OH})$ . 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 450-500°C, BASF PAL M-300 is converted into high porosity, high surface area gamma alumina.

Some applications include:

- **Catalysts.** Pseudoboehmite 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 500°C, these products will exhibit a surface area close to 320 m<sup>2</sup>/g. Heating to about 600°C will decrease the surface area to around 280 m<sup>2</sup>/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

**Chemical composition (wt %), typical**

<b>Al<sub>2</sub>O<sub>3</sub></b>	70
<b>Na<sub>2</sub>O</b>	<0.05
<b>SO<sub>4</sub></b>	<0.25
<b>LOI (1000°C)</b>	25-33

**Physical properties, typical**

<b>Alumina phase</b>	Pseudoboehmite
<b>Loose bulk density (as is), kg/m<sup>3</sup></b>	480-530
<b>Surface area, m<sup>2</sup>/g (1 hr @ 550°C)</b>	280-300
<b>Nitrogen pore volume (1 hr @ 550°C)</b>	0.7-0.85
<b>d<sub>50</sub>, microns</b>	18-28

**Temperature transformations - As PAL M-300 is heated the following transformations occur:**

<b>@ 250°C</b>	PAL M-300	→	Non-dispersible PSB
<b>@ 350-450°C</b>	Non-dispersible	→	Gamma alumina
<b>@ 800-900°C</b>	Gamma	→	Delta/theta alumina
<b>@ 1000-1100°C</b>	Theta	→	Alpha conversion begins
<b>@ 1300-1600°C</b>	Alpha (porous)	→	Sintered alpha alumina

## About Us

BASF's Catalysts division is the world's leading supplier of environmental and process catalysts. The group offers exceptional expertise in the development of technologies that protect the air we breathe, produce the fuels that power our world and ensure efficient production of a wide variety of chemicals, plastics and other products, including advanced battery materials. By leveraging our industry-leading R&D platforms, passion for innovation and deep knowledge of precious and base metals, BASF's Catalysts division develops unique, proprietary solutions that drive customer success.

**BASF - We create chemistry**

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