

Hydral[®] Series

ALUMINUM HYDROXIDE (ATH)

DESCRIPTION

Hydral[®] is a specially precipitated white aluminum trihydroxide $\text{Al}(\text{OH})_3$. Hydral 710 has an extra-fine, uniform median particle size of about 1.0 micron in diameter. Hydral PGA-SD has the same crystalline structure as Hydral 710, but in a spray-dried form. This results in higher bulk densities, better material flow properties, and allows more economical bulk handling. The dispersant used in PGA-SD causes the material to disperse readily when added to water, forming a stable high solids suspension. All Hydral products are finely divided, high-purity white powders with a Z brightness value of +99%.

BENEFITS

- Hydral is halogen-free and is an outstanding flame retardant and smoke suppressant for thermoset and thermoplastic materials. It also improves arc-track resistance in many plastics used in electrical applications.
- When used as fillers, Hydral products can significantly increase the opacity and brightness of most papers including text and cover papers.
- In coating applications, Hydral is used to impart brightness and gloss for annual report stock and paperboard. It has the added benefit of providing high ink receptivity.
- Hydral is compatible with a full range of paper processing pH levels (4-10), and other paper fillers and chemicals.
- When compared to clays, silicas, and carbonates, Hydral has a lower Einlehner abrasivity for paper applications.
- As a reinforcing pigment in adhesives and adhesive tapes, Hydral products improve cold flow properties, maintain neutrality or alkalinity of the composition, and increase cohesion.
- Hydral products are useful as a mild abrasive in waxes and polishes when a relatively soft and extremely fine polishing agent is required.
- Hydral's extreme fineness and smooth texture make it an excellent ingredient in cosmetic powders and lotions.
- It is a good mild polishing agent in dentifrices.
- Spray-dried Hydral PGA-SD, an agglomerated material, disperses easily into particle sizes identical to Hydral 710.

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Chemical Composition (%)	Hydral 710 Typical	PGA-SD Typical
Al(OH) ₃	99.5	99.5
SiO ₂	0.004	0.004
Fe ₂ O ₃	0.007	0.007
Na ₂ O (total)	0.24	0.24
Na ₂ O (soluble)	0.016	0.027
Moisture	0.20	0.17
Physical Properties		
Loose bulk density (g/cm ³)	0.30	0.41
Packed bulk density (g/cm ³)	0.51	0.69
Surface area (m ² /g)	4.0	4.5
Particle Size		
% on 325 mesh by wet screen	0.003	0.002
d95 (μ) by Sedigraph 5100	2.1	2.1
d50 (μ) by Sedigraph 5100	1.1	1.1
d10 (μ) by Sedigraph 5100	0.7	0.7
Other Physical Properties		
LOI (%; 110-1100°C)		34.5
Density (g/cm ³)		2.42
Mohs hardness		3
Refractive index		1.57
Brightness (% Z)		99+
Color		White
Test Methods		
Al(OH) ₃		By difference
SiO ₂ , Fe ₂ O ₃ , and total soda		DC Arc Optical Emission Spectrometry
Soluble soda		Flame Emission Photometry
Moisture		Microwave
Loose bulk density		Modified ASTM B212-89
Packed bulk density		Modified ASTM B557-85
Surface Area		Brunauer-Emmett-Teller method of nitrogen absorption
Z percent brightness		Z value of the XYZ tristimulus divided by 1.18103

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