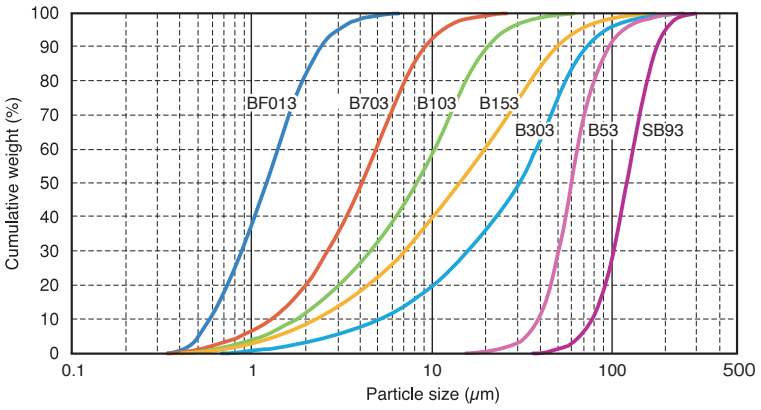
ALUMINUM HYDROXIDE

Aluminum hydroxide is white gibbsite crystalline powder extracted from bauxite by the Bayer Process.
The chemical formula is $Al_2O_3 \cdot 3H_2O$ or $Al(OH)_3$.
It is an amphoteric compound of considerable reactivity, soluble in both acids and alkalis, producing aluminum salts and aluminates. When heated, it starts decomposing at approximately 200˚C and rapidly dehydrates, exhibiting an endothermic reaction. Due to these characteristics, our range of aluminum hydroxides are widely used as non-toxic flame retardants.

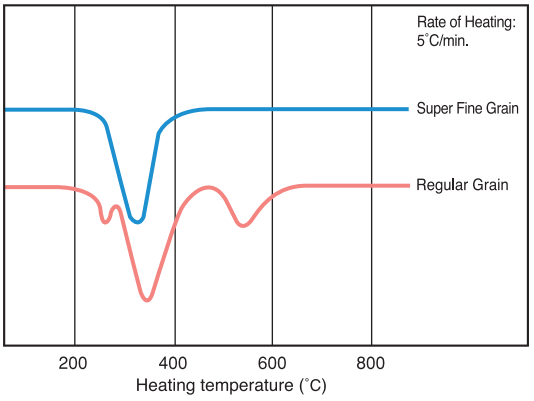
General Properties

Mohs Hardness	3
Specific Gravity	2.42
Refraction Index	1.57
Loss on Ignition	34.6%
Decomposition Starting Temp.	approx. 200˚C
Vapor Emission	0.9ℓ/g
Endothermic Heat	2.0×10^3J/g

Particle Size Distribution

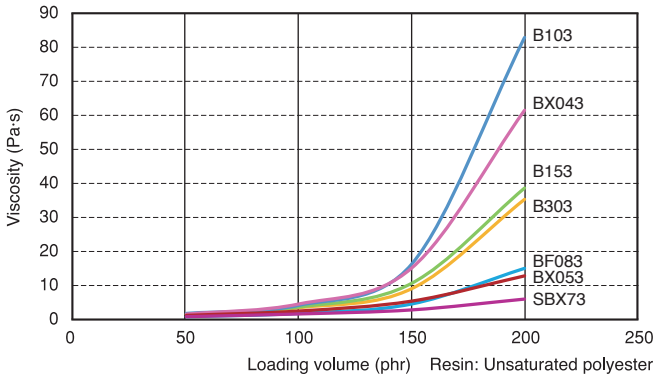


Differential Thermal Analysis (D.T.A.)

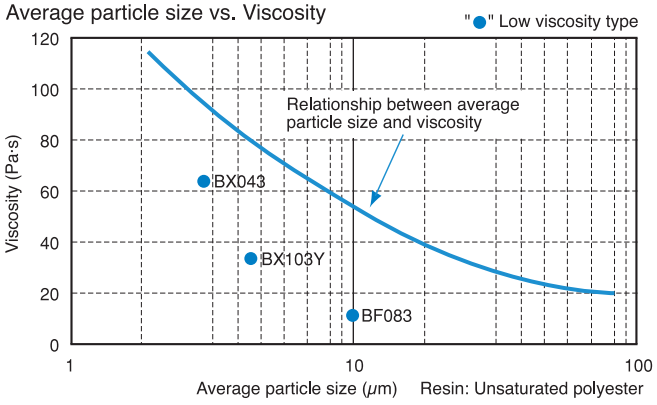


Viscosity

Loading volume vs. Viscosity

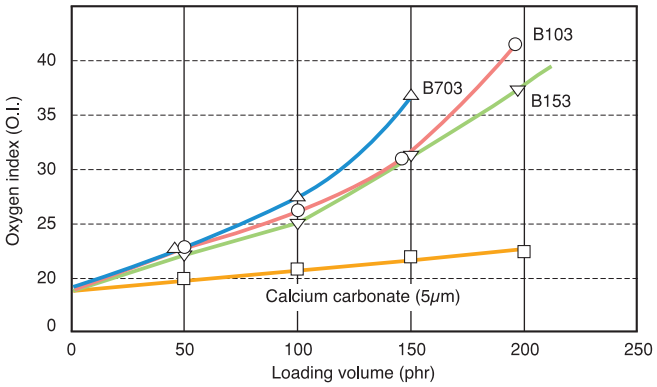


Average particle size vs. Viscosity

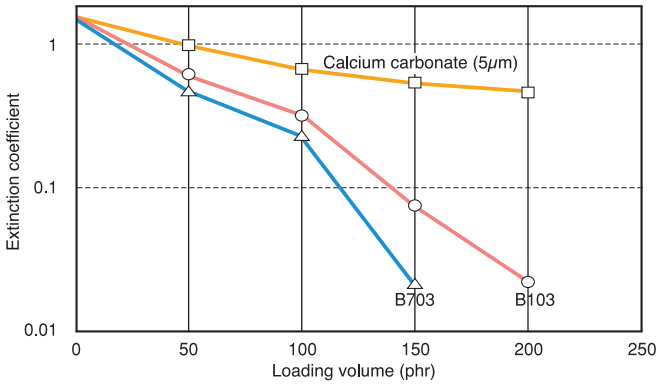


Flame Retardancy

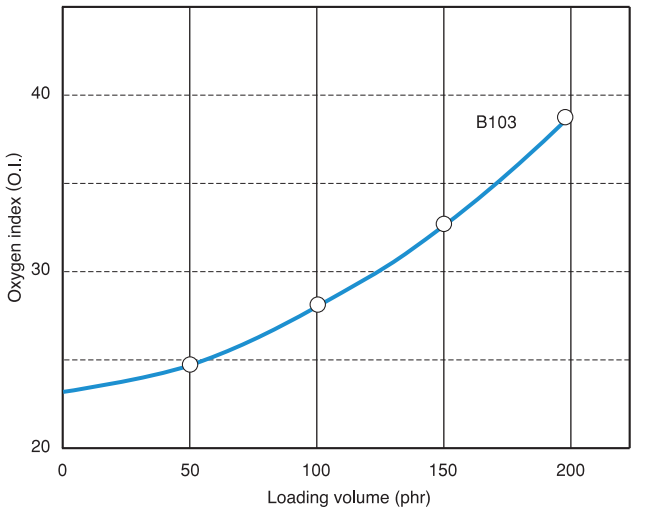
Flame retardancy (Unsaturated Polyester)



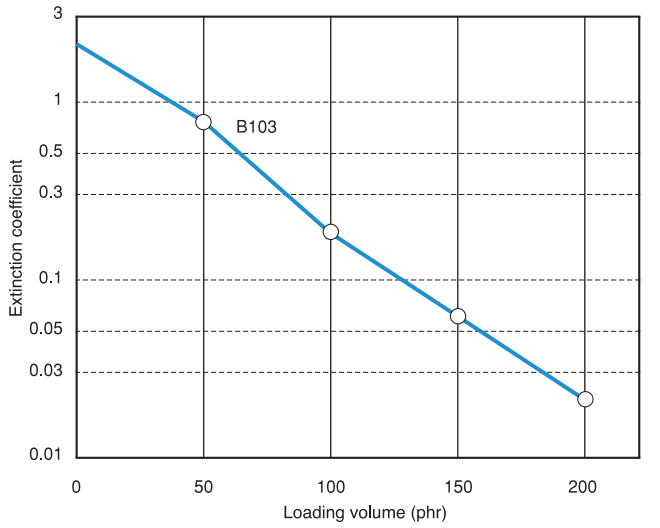
Smoke suppression (Unsaturated Polyester)



Flame retardancy (Epoxy)

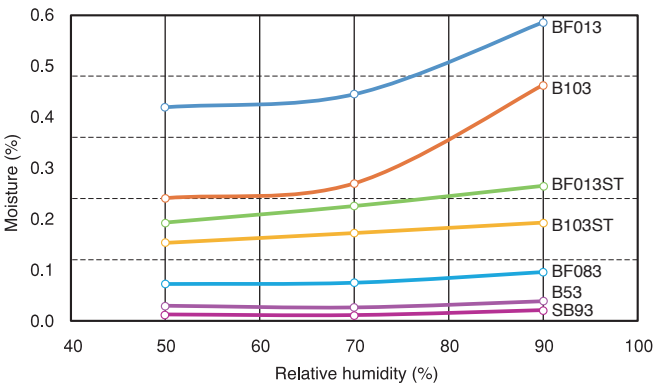


Smoke suppression (Epoxy)



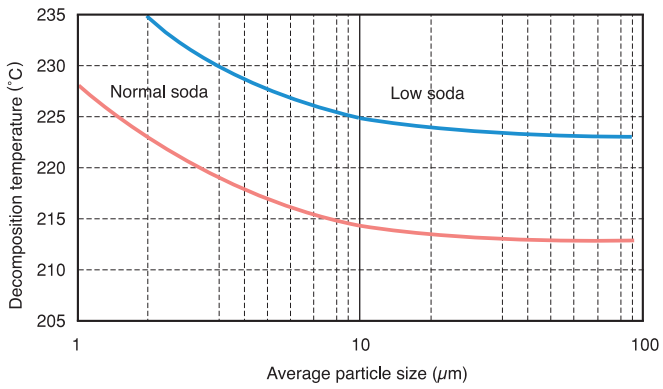
Moisture Absorption Properties

Moisture absorption properties (7-day-retention)



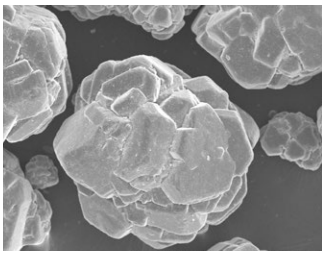
Decomposition Temperature

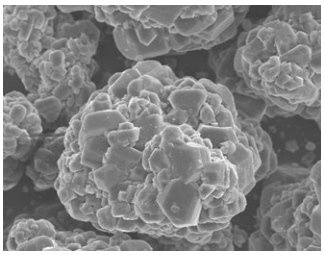
Average particle size vs. Decomposition temperatures



Regular/Coarse Grain Aluminum Hydroxide

Regular grain aluminum hydroxide SB92 and B52 are wet gibbsite crystalline powders, which show good reactivity and solubility in acids and alkalis.These are used to produce various chemical products such as aluminum sulfate, poly aluminum chloride and zeolite. SB93 and B53 are dried powder products. These are easy to handle making them suitable for many processes such as mixing. They are used as raw materials for glass and ceramics as well as flame retardant fillers.





Typical Properties

Grade	SB92	SB93	B52	B53
Moisture (%)	4～9	0.01	8～10	0.02
Na_2O (%)	0.27	0.27	0.20	0.20
SiO_2 (%)	0.02	0.02	0.01	0.01
Fe_2O_3 (%)	0.01	0.01	0.01	0.01
$Al(OH)_3$ (%)	99.7	99.7	99.8	99.8
Ave. Particle Size (μm)	110	110	55	55
Angle of repose (deg)	—	32	—	40
pH	—	9	—	9

Applications

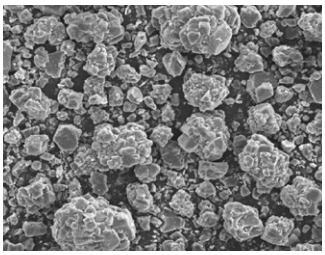
(1) Aluminum sulfate, Poly aluminum chloride
Aluminum fluoride, Cryolite, Zeolite
(2) Sodium aluminate
(3) Synthetic mullite, Refractories
(4) Ceramics, Glaze, Bedding powder
(5) Glass, Glass fiber
(6) Filler for rubbers and plastic
(7) Catalyst carrier

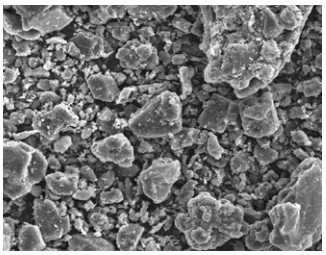
Packing

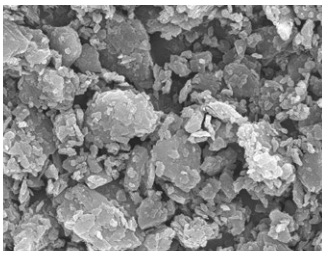
Flexible container bag (500kg and 1000kg)
Paper bag (25kg)

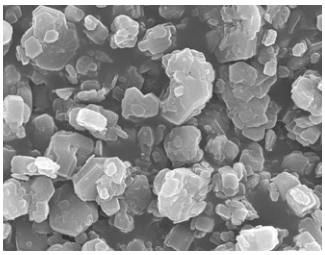
Fine/Super Fine Grain Aluminum Hydroxide

Aluminum hydroxide is widely used as flame retardant filler. As the material burns, non-toxic or non-corrosive gases are emitted and smoke generation is also reduced. B303, B153 and B103 are fine grain products. B703, B1403 and BF013 are superfine grain products.





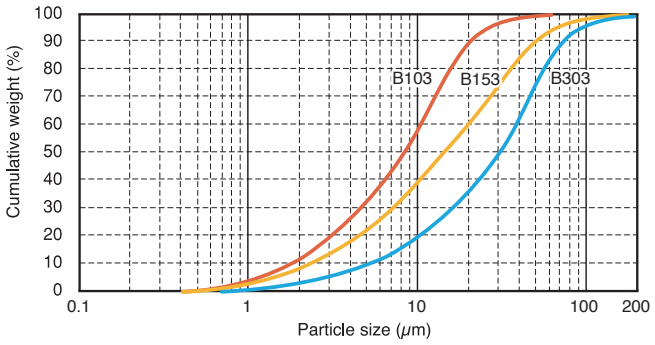




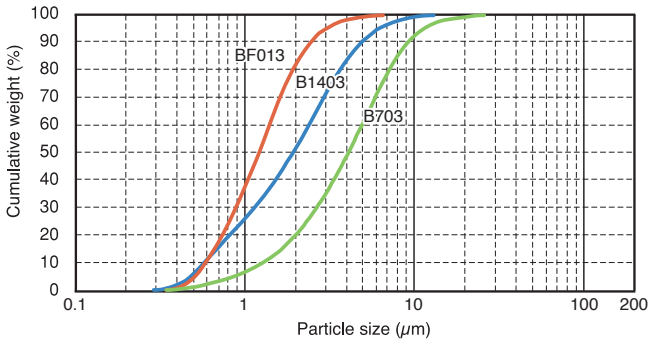
Typical Properties

Grade	B303	B153	B103	B703	B1403	BF013
Moisture (%)	0.10	0.10	0.20	0.40	0.70	0.30
Na_2O (%)	0.20	0.20	0.20	0.30	0.35	0.30
f-Na_2O (%)	0.02	0.02	0.02	0.10	0.20	0.02
SiO_2 (%)	0.01	0.01	0.01	0.01	0.03	0.01
Fe_2O_3 (%)	0.01	0.01	0.01	0.01	0.01	0.01
$Al(OH)_3$ (%)	99.7	99.7	99.7	99.7	99.6	99.7
Ave. Particle Size (μm)	26	11	7	4	2	1
Oil Absorption (mℓ/100g)	27	28	32	41	57	47
pH	10	10	10	10	10	9

Particle Size Distribution (Fine grain)



Particle Size Distribution (Super fine grain)



Applications

(1) Fillers for unsaturated polyester, epoxy, acrylic, silicone, phenol or melamine resins
(2) Fillers for polyolefin or PVC
(3) Filler for rubbers or latex compounds
(4) Flame retardant paper, coated paper, fillers for paper

Packing

Flexible container bag (500kg and 1000kg)
Paper bag (20kg or 25kg)

Low Soda Aluminum Hydroxide

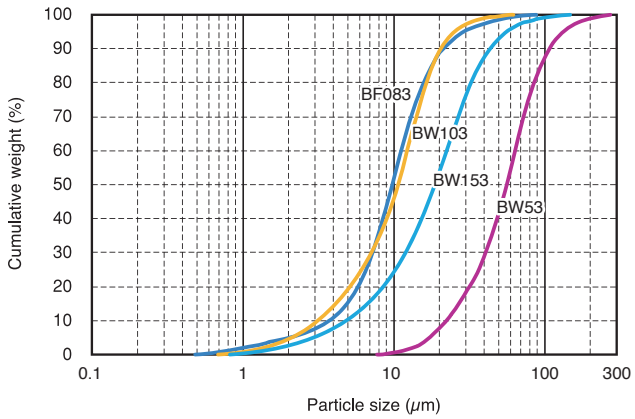
Low soda aluminum hydroxide BF083, BW and BE series further improve electric characteristics and heat resistance therefore finding special use in electronic materials. The BW series is also a product with limited colored organics and is widely used as filler for synthetic marbles made of unsaturated polyester or acryl resin. The BE series, further limiting soda content, provides excellent heat resistance and insulation.

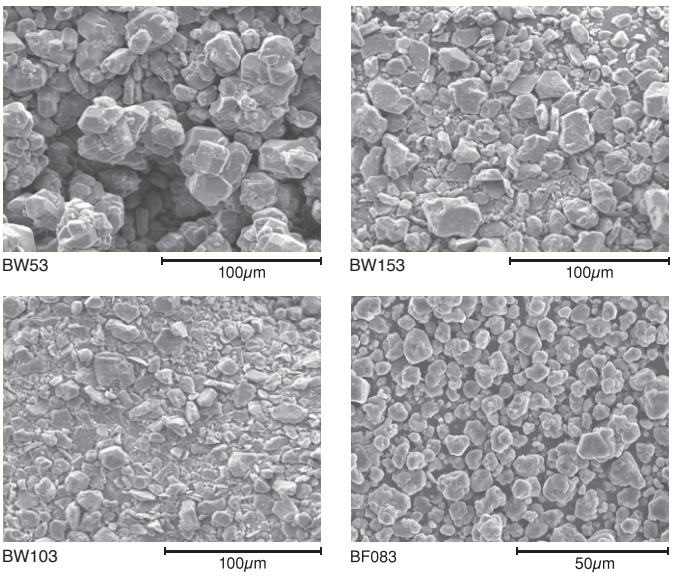
BW Series, BF083

Typical Properties

Grade	BW53	BW153	BW103	BF083
Moisture (%)	0.02	0.10	0.20	0.10
Na_2O (%)	0.02	0.02	0.02	0.08
f-Na_2O (%)	<0.01	<0.01	<0.01	<0.01
SiO_2 (%)	0.01	0.01	0.01	0.01
Fe_2O_3 (%)	0.01	0.01	0.01	0.01
$Al(OH)_3$ (%)	99.9	99.9	99.9	99.9
Ave. Particle Size (μm)	54	19	10	10
Oil Absorption (mℓ/100g)	30	30	35	30

Particle Size Distribution



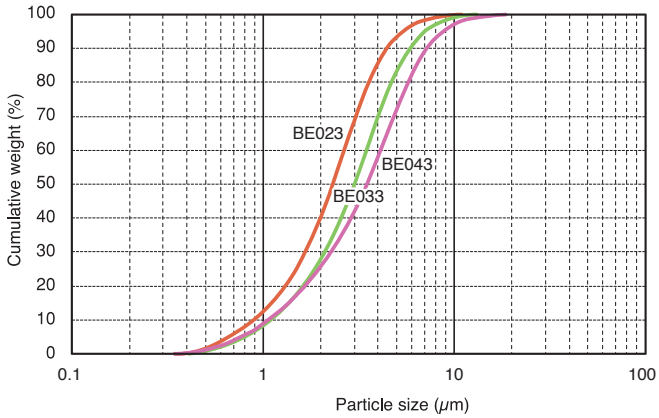


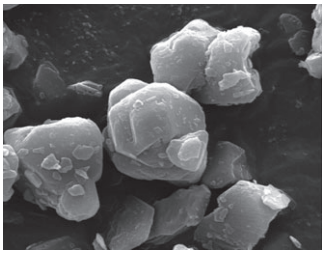
BE Series

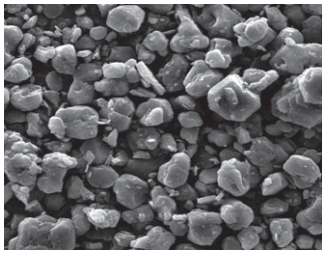
Typical Properties

Grade	BE023	BE033	BE043
Moisture (%)	0.20	0.20	0.10
Na_2O (%)	0.01	0.01	0.01
f-Na_2O (%)	<0.01	<0.01	<0.01
SiO_2 (%)	0.01	0.01	0.01
Fe_2O_3 (%)	0.01	0.01	0.01
$Al(OH)_3$ (%)	99.9	99.9	99.9
Ave. Particle Size (μm)	2	3	4
Oil Absorption (mℓ/100g)	40	35	30

Particle Size Distribution







Applications

(1) Fillers for unsaturated polyester, epoxy, acrylic, silicone, phenol or melamine resins
(2) Fillers for polyolefin or PVC
(3) Fillers for rubbers or latex compounds
(4) Flame retardant paper, coated paper, fillers for paper

Packing

Flexible container bag (500kg and 1000kg)
Paper bag (20kg or 25kg)

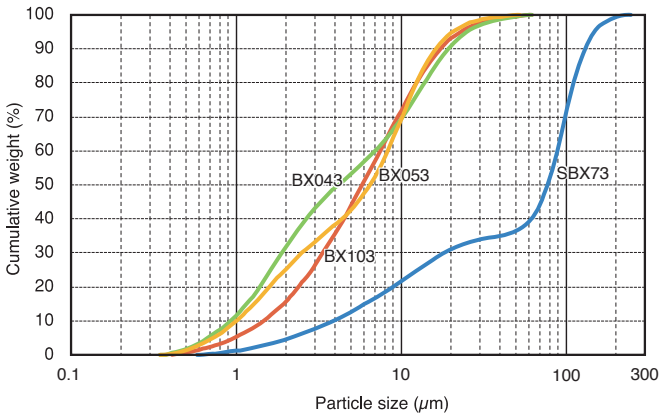
Low Viscosity/Surface Treated Aluminum Hydroxide

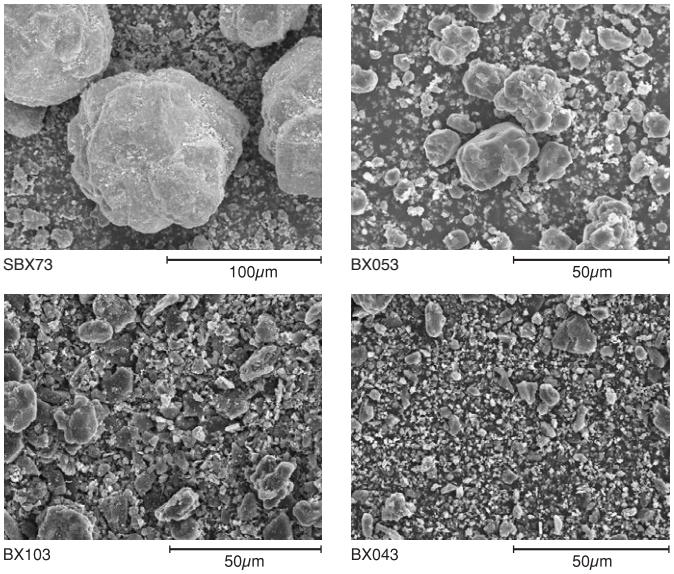
The BX series provides broad particle size distributions suitable for high loading. Surface treated products are developed to realize better compatibility of aluminum hydroxide with resins. The better compatibility with resins works to improve the loadability and dispersibility of aluminum hydroxide in resins and the mechanical strength of compound. Particular efforts are made to make sure that we offer optimum grades depending on customer's requirements.

Typical Properties

Grade	SBX73	BX053	BX103	BX043
Moisture (%)	0.10	0.10	0.20	0.20
Na_2O (%)	0.22	0.16	0.24	0.23
f-Na_2O (%)	0.03	0.01	0.05	0.02
SiO_2 (%)	0.01	0.01	0.01	0.01
Fe_2O_3 (%)	0.01	0.01	0.01	0.01
$Al(OH)_3$ (%)	99.7	99.8	99.7	99.8
Ave. Particle Size (μm)	60	6	5	3
Oil Absorption (mℓ/100g)	20	28	33	33

Particle Size Distribution





Surface Treated Aluminum Hydroxide

●Products treated with Silane coupling agents (ST Series)
This type improves mechanical strength and resistance to chemicals, water and heat by increasing affinity to resins.

●Products treated with Stearic Acid (S Series)
This type improves dispersion in resins with its hydrophobicity.

●Products treated with Titanate coupling agents (T Series)
This type improves the dispersion properties thereby increasing the flexibility of molded resins.

Applications

(1) Fillers for unsaturated polyester, epoxy, acrylic, silicone, phenol or melamine resins
(2) Fillers for polyolefin or PVC
(3) Fillers for rubbers or latex compounds
(4) Flame retardant paper, coated paper, fillers for paper

Packing

Flexible container bag (500kg and 1000kg)
Paper bag (20kg or 25kg)

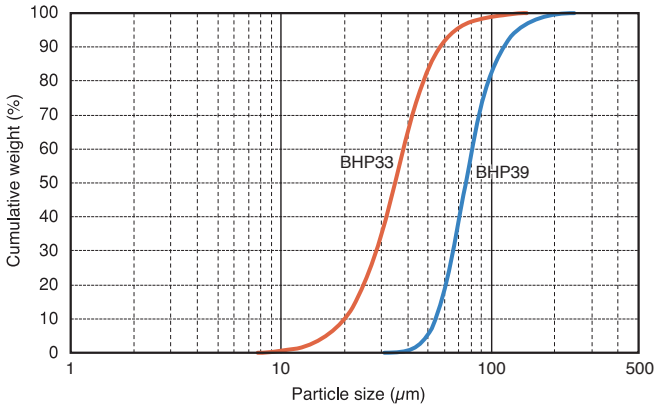
High Purity Aluminum Hydroxide

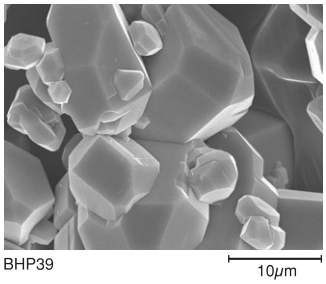
High purity aluminum hydroxide provides an $Al(OH)_3$ purity of 99.9% or higher, essentially eliminating impurities such as Fe, Si and Ca.

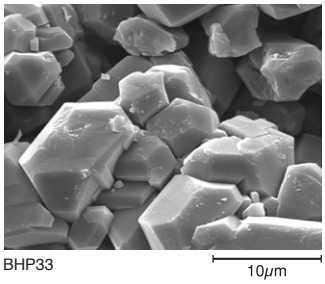
Typical Properties

Grade	BHP39	BHP33
Moisture (%)	0.02	0.02
Na_2O (%)	0.07	0.05
Fe (ppm)	1	1
Si (ppm)	2	2
Ca (ppm)	<1	<1
Ti (ppm)	<1	<1
Mg (ppm)	<1	<1
$Al(OH)_3$ (%)	>99.9	>99.9
Ave. Particle Size (μm)	70	35

Particle Size Distribution







Applications

(1) Raw material for high purity chemicals
(2) Additives for optical glass
(3) Additives for battery materials
(4) Raw material for high purity alumina

Packing

Flexible container bag
Paper bag (25kg)