SUMITOMO CHEMICAL

Creative Hybrid Chemistry
For a Better Tomorrow

Product Databook

- ☐ *Aluminum Hydroxide*
- ☐ *Aluminum Oxide - Alumina*
- ☐ *High Purity Alumina - HPA*
- ☐ *Activated Alumina / Hydraulic Alumina*

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<Important Notice for Users of this Databook>

(1) All data in this data book is typical and not guaranteed. The typical properties of all the listed products in this data-book are subject to change without prior notice due to continual improvements.

(2) Applications mentioned in this databook are examples without any guarantee. Fitness for any particular purpose should be verified by customers.

(3) Please refrain from using products in this databook for medical and food applications.

1. Aluminum Hydroxide

Sumitomo Aluminum Hydroxides product portfolio is quite wide to serve diverse industries. Our precipitation process in Bayer Process enables us to fine-tune particle sizes and impurity levels to serve various industries.

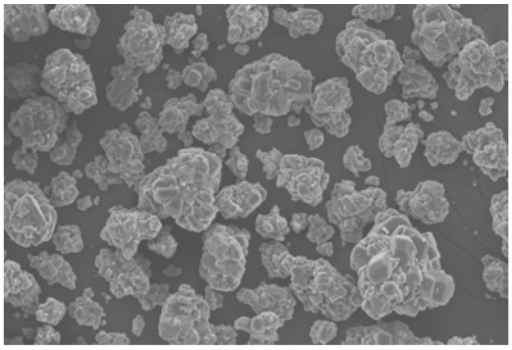
Generic Grade

Typical Properties			Product C-12
Chemical Composition	H2O	[%]	9
	Al(OH)3*	[%]	99.8
	Fe2O3*	[%]	0.01
	SiO2*	[%]	0.01
	Na2O*	[%]	0.18
Loose Bulk Density		[g/cm3]	1.1
Packed Bulk Density		[g/cm3]	1.4
True Specific Gravity			2.42
D50(MT-3300, Laser Diffraction)		[µm]	50
+75µm		[%]	5

Packing	Bulk	Truck, Vessel
	Big Bag	1,000kg
	Paper Bag	25kg

*Analysis after dried.
Calculated as oxide after analyzing Fe, Si, Na contents.
Al(OH)3 = 100 - (Fe2O3+SiO2+Na2O)

C-12 : Extremely low impurity concentration and small particle size. Excellent reactivity.



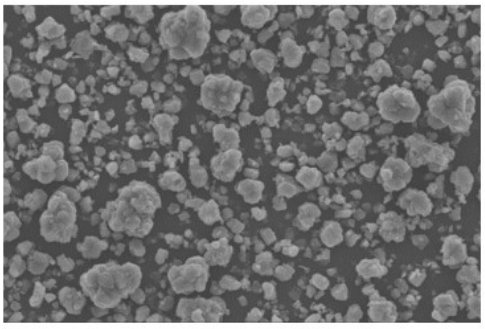
C-12 50µm

Fine, Very Fine, Low-Soda

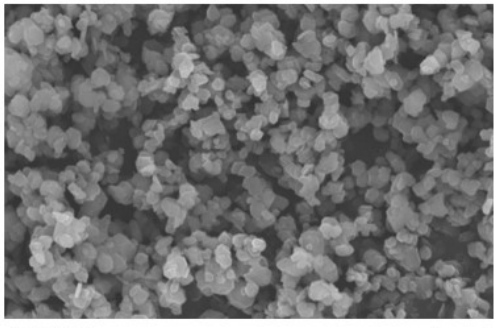
Typical Properties			Product	Fine		Very Fine	Low Soda		
				C-310	C-305	C-301N	CL-310	CL-303	C-302A
Chemical Composition	H2O	[%]		0.05	0.07	0.2	0.04	0.07	0.12
	Al(OH)3*	[%]		99.8	99.8	99.8	99.9	99.9	99.8
	Fe2O3*	[%]		0.01	0.01	0.01	0.01	0.01	0.01
	SiO2*	[%]		0.01	0.01	0.01	0.01	0.01	0.01
	Na2O*	[%]		0.12	0.12	0.2	0.07	0.04	0.11
D50(MT-3300, Laser Diffraction)		[µm]		10	5.5	1.5	12	4	2.4
+45µm		[%]		<0.1	<0.1	<0.1	0.3	<0.1	<0.1
Loose Bulk Density		[g/cm3]		0.7	0.5	0.3	0.7	0.6	0.4
Packed Bulk Density		[g/cm3]		1.3	1.2	0.6	1.3	1.2	0.9
DOA Oil Absorption		[ml/100g]		35	31	54	34	39	39
Whiteness		[%]		-	95	96	92	-	96
BET Specific Surface Area		[m2/g]		1.0	1.5	4	1.1	1.5	2.5
Electric Conductivity**		[µS/cm]		-	-	-	18	20	100
True Specific Gravity				2.42					
Refractive Index				1.57					
Hardness		[Mohs]		3					

Packing	Big Bag	500kg, 1,000kg
	Paper Bag	25kg

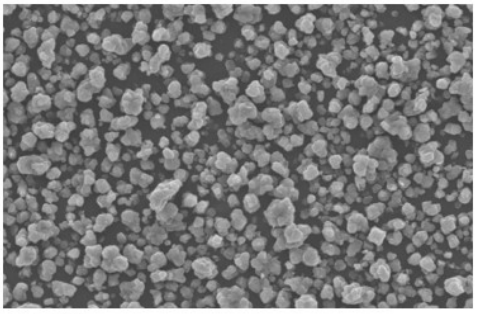
*Analysis after dried.
Calculated as oxide after analyzing Fe, Si, Na contents.
Al(OH)3 = 100 - (Fe2O3+SiO2+Na2O)



C-305 20µm



C-301N 4µm



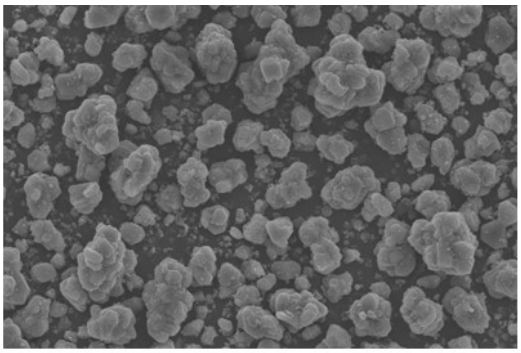
CL-303 20µm

High Whiteness

Typical Properties		Product	CW-350	CW-308
Chemical Composition	H2O	[%]	0.03	0.06
	Al(OH)3*	[%]	99.9	99.8
	Fe2O3*	[%]	0.01	0.01
	SiO2*	[%]	0.01	0.01
	Na2O*	[%]	0.06	0.17
D50(MT-3300, Laser Diffraction)		[μm]	43	10
+45μm		[%]	-	<0.1
Loose Bulk Density		[g/cm3]	1.0	0.6
Packed Bulk Density		[g/cm3]	1.4	1.3
DOA Oil Absorption		[ml/100g]	29	34
True Specific Gravity			2.42	
Refractive Index			1.57	
Hardness		[Mohs]	3	
Packing	Big Bag		500kg, 1,000kg	
	Paper Bag		-	25kg

*Analysis after dried.
Calculated as oxide after analyzing Fe, Si, Na contents.
Al(OH)3 = 100 - (Fe2O3+SiO2+Na2O)

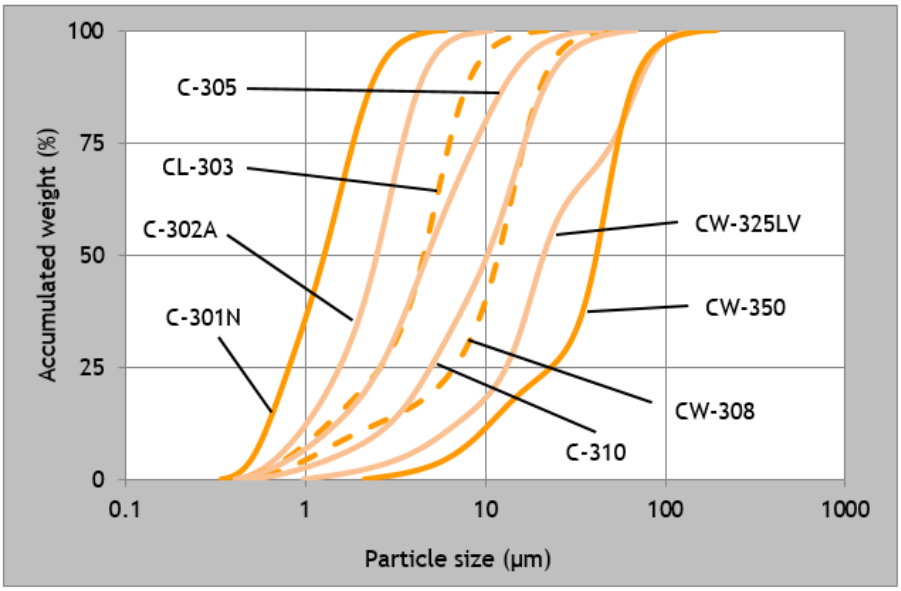
Impart tone and transparency to artificial marbles / plastics when added as a filler.



CW-308 20μm

High Whiteness (Surface Treated)

Typical Properties		Product	CW-350B	CWL-325J	CW-308B
Chemical Composition	H2O	[%]	0.03	0.05	0.05
	Al(OH)3*	[%]	99.9	99.7	99.7
	Fe2O3*	[%]	0.01	0.01	0.01
	SiO2*	[%]	0.04	0.15	0.12
	Na2O*	[%]	0.05	0.07	0.15
D50(MT-3300, Laser Diffraction)		[μm]	51	20	10
DOA Oil Absorption		[ml/100g]	28	22	32
True Specific Gravity			2.42		
Refractive Index			1.57		
Hardness		[Mohs]	3		
Packing	Big Bag		500kg, 1,000kg		
	Paper Bag		-	25kg	

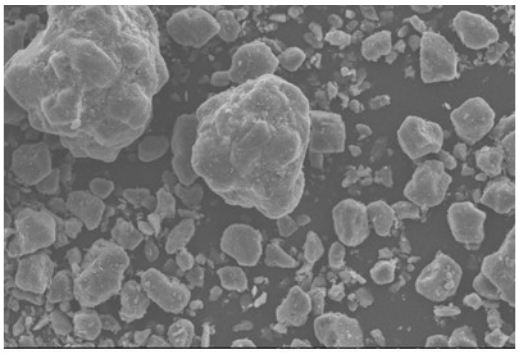


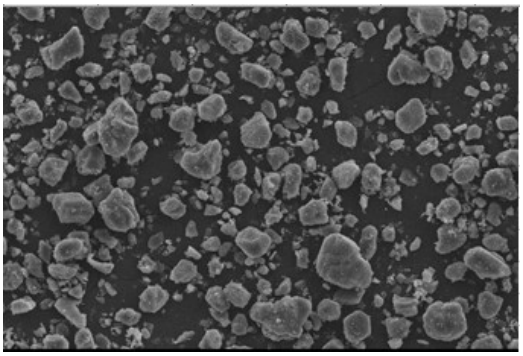
Low Viscosity

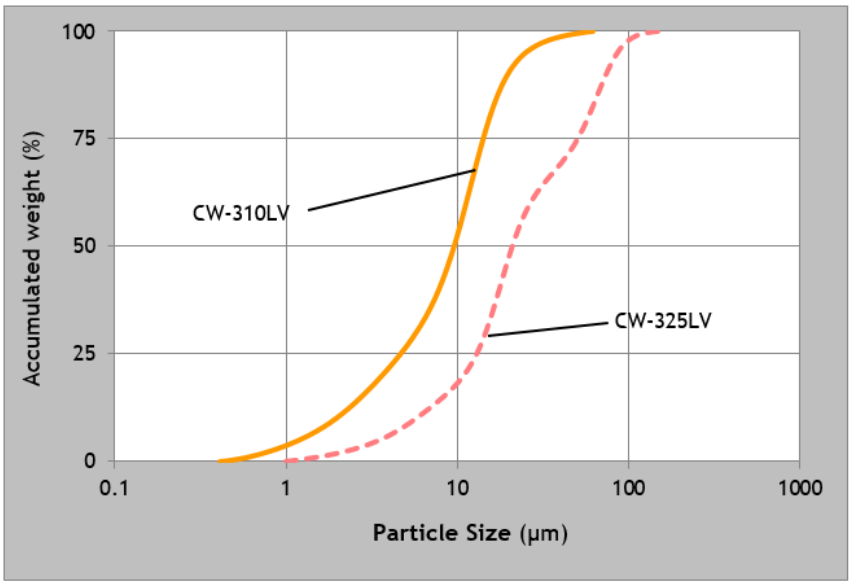
Typical Properties		Product	CW-325LV	CW-310LV
Chemical Composition	H2O	[%]	0.04	0.05
	Al(OH)3*	[%]	99.9	99.9
	Fe2O3*	[%]	0.01	0.01
	SiO2*	[%]	0.00	0.00
	Na2O*	[%]	0.07	0.06
D50(MT-3300, Laser Diffraction)		[µm]	21	10
+45µm		[%]	-	-
BET Specific Surface Area		[m2/g]	0.8	1.7
Electric Conductivity		[µS/cm]	20	20
Loose Bulk Density		[g/cm3]	1.0	0.7
Packed Bulk Density		[g/cm3]	1.4	1.4
DOA Oil Absorption		[ml/100g]	24	28
True Specific Gravity			2.42	
Refractive Index			1.57	
Hardness		[Mohs]	3	

Packing		
	Big Bag	1,000kg
	Paper Bag	25kg

*Analysis after dried.
Calculated as oxide after analyzing Fe, Si, Na contents.
Al(OH)3 = 100 – (Fe2O3+SiO2+Na2O)







Click the movie to learn viscosity performance difference between each product.

<Test Conditions>

Observed the compound's behavior 100 seconds while pressing with 50g weight.

Aluminum Hydroxide: 60vol%
Resin: Silicone
Compound Volume: 1.5g
Weight: 50g

<Movie Operating Conditions>
PC only.
Download this PDF file necessary.

2. Aluminum Oxide - Alumina

Sumitomo Chemical's Calcined Aluminas are produced in various levels of calcination level/soda content and supplied in both unground and ground shapes to satisfy diverse customer requirements.

Normal Soda / Unground

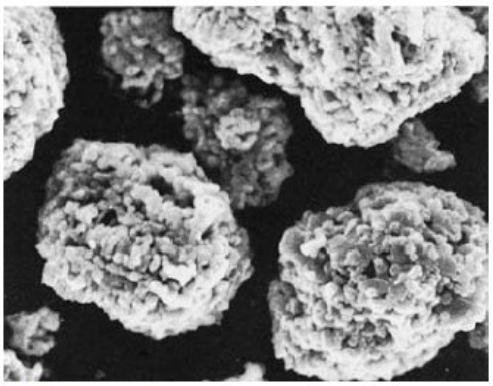
Typical Properties		Product	A-21	A-26	A-210
Chemical Composition	H2O	[%]	0.04	0.1	0.04
	L.O.I	[%]	0.05	0.1	0.05
	Fe2O3	[%]	0.01	0.01	0.01
	SiO2	[%]	0.01	0.01	0.02
	Na2O	[%]	0.26	0.26	0.22
	Al2O3	[%]	99.7	99.7	99.7
Specific Gravity		[g/cm3]	3.95	3.90	3.95
D50 (MT-3300, Laser Diffraction)		[μm]	50	50	95
α Crystal Size		[μm]	2～4	＜1	2～4
Bulk Density	Green	[g/cm3]	0.7	0.9	0.9
	Packed	[g/cm3]	1.2	1.2	1.2

Packing		
	Big Bag	1,000kg
	Paper Bag	25kg

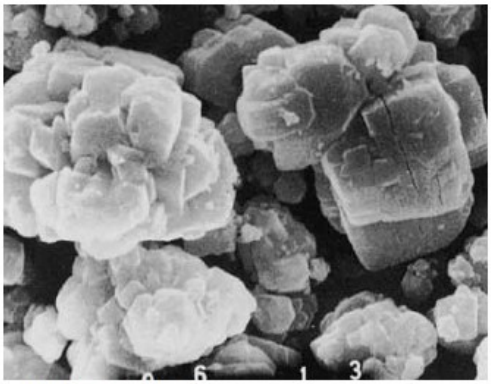
A-21 : High calcined. Used for initial buffing stages of stainless steel.

A-26 : Smaller α crystal size with lower calcination than A-21. Used as a reactive alumina when ground.

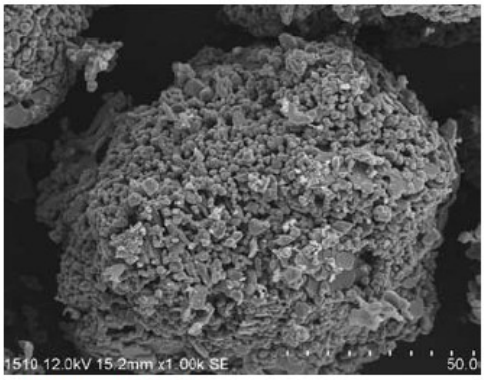
A-210 : High calcined. Low dust and good fluidity.



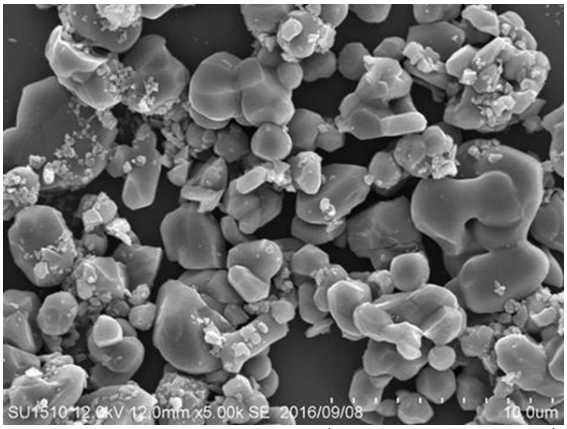
A-21 20μm



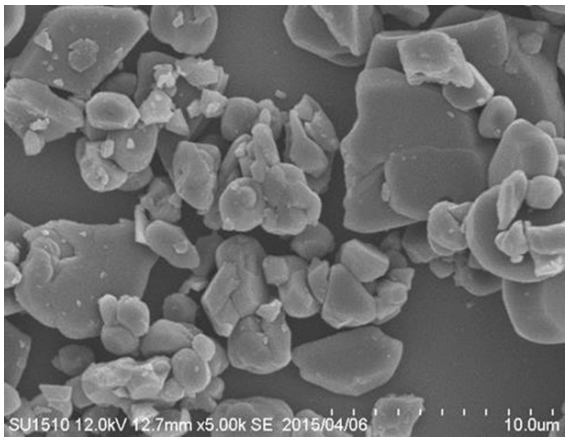
A-26 20μm



A-210 20μm



AM-21 10μm



AM-210 10μm

Normal Soda / Ground

Typical Properties		Product	AM-21	AM-210	AM-210-02	AM-27	AM-28B
Chemical Composition	H2O	[%]	0.06	0.06	0.05	0.1	0.05
	L.O.I	[%]	0.05	0.05	0.05	0.1	0.05
	Fe2O3	[%]	0.01	0.01	0.01	0.01	0.01
	SiO2	[%]	0.02	0.02	0.02	0.01	0.02
	Na2O	[%]	0.26	0.22	0.22	0.26	0.25
	Al2O3	[%]	99.7	99.7	99.7	99.7	99.7
Specific Gravity		[g/cm3]	3.95	3.95	3.95	3.90	3.95
D50 (MT-3300, Laser Diffraction)		[μm]	4.8	4.8	7.9	2.8	19
α Crystal Size		[μm]	2~4	2~4	2~4	0.3	3~5
Bulk Density	Green	[g/cm3]	0.7	0.7	-	0.6	0.6
	Packed	[g/cm3]	1.3	1.3	-	1.3	1.6
Oil Absorption		Boiled Linseed Oil [ml/100g]	16	-	-	27	24
Green Density*		[g/cm3]	2.26	2.26	-	-	-
Fire Density*		[g/cm3]	3.72	3.72	-	-	-

Packing		
	Big Bag	1,000kg
	Paper Bag	25kg

* Flux 4%, 49MPa(500kg/cm2), sample sintered at 1600 degC.

AM-21 / AM-210 : Ground high calcined alumina. Used for intermediate buffing stages of stainless steel.

AM-210-02 : A variation of AM-210 with bigger particle size and bi-modal particle size distribution. Used for both initial and intermediate buffing stages of stainless steel.

AM-27 : Finely ground for mirror surface buffing stages of stainless steel.

AM-28B : Specially developed for intermediate buffing stages of stainless steel. Some of coarse particles crumble to fine particles.

Low Soda / Unground

Typical Properties		Product	AL-41-01	AL-43A	AL-44
Chemical Composition	H2O	[%]	0.05	0.05	0.05
	L.O.I	[%]	0.05	0.05	0.05
	Fe2O3	[%]	0.01	0.01	0.01
	SiO2	[%]	0.04	0.04	0.04
	Na2O	[%]	0.04	0.02	0.02
	Al2O3	[%]	99.9	99.9	99.9
D50 (MT-3300, Laser Diffraction)		[μm]	50	50	50
α Crystal Size		[μm]	1~2	2~3	3~4

Packing		
	Big Bag	1,000kg
	Paper Bag	25kg

Molding density and firing shrinkage vary between these products due to α crystal size differences.

Low Soda / Ground

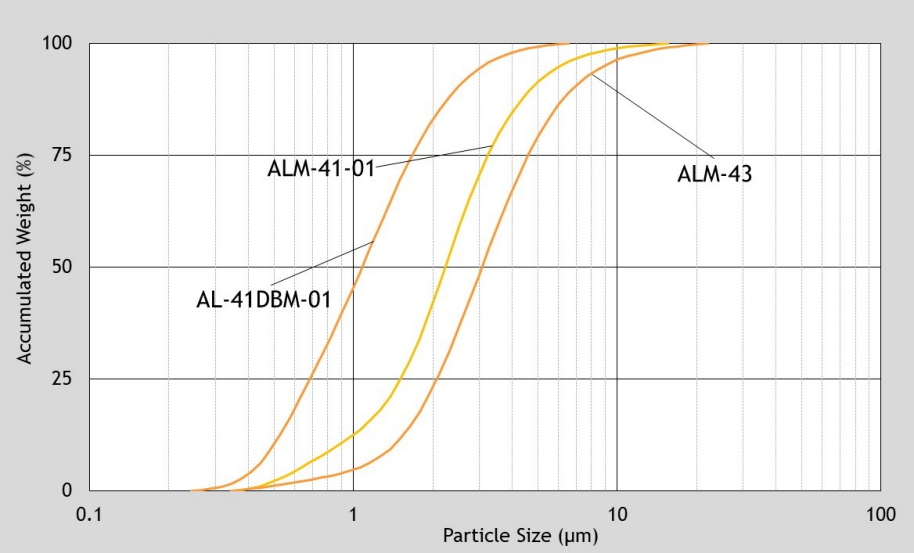
Typical Properties		Product	ALM-41-01	ALM-43	AL-41DBM-01
Chemical Composition	H2O	[%]	0.08	0.07	0.08
	L.O.I	[%]	0.07	0.05	0.07
	Fe2O3	[%]	0.01	0.01	0.01
	SiO2	[%]	0.04	0.05	0.04
	Na2O	[%]	0.04	0.03	0.04
	Al2O3	[%]	99.9	99.9	99.9
D50 (MT-3300, Laser Diffraction)		[μm]	2.2	3.7	1.3
BET Specific Surface Area		[m2/g]	1.8	1.2	2.6
α Crystal Size		[μm]	1~2	2~3	1~2
Green Density*		[g/cm3]	2.23	2.27	2.23
Fire Density*		[g/cm3]	3.71	3.67	3.71
Linear Shrinkage*		[%]	16	15	15

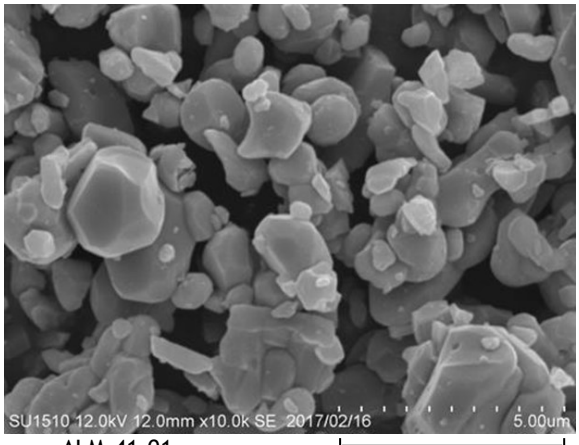
Packing				
	Big Bag	1,000kg		-
	Paper Bag	25kg		

*Flux 4%, 49MPa (500kg/cm2), sample sintered at 1600 degC.

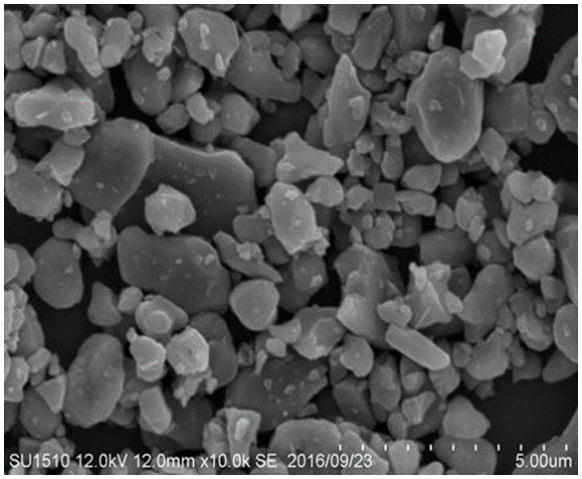
ALM-41-01 / ALM-43 : Ground down close to α crystal sizes.

AL-41DBM-01 : PSD of ALM-41-01 shifted to smaller side. Used for LTCC and thermal conductive fillers.





ALM-41-01 5μm



AL-41DBM-01 5μm

Low Soda / Ground (for Functional Fillers)

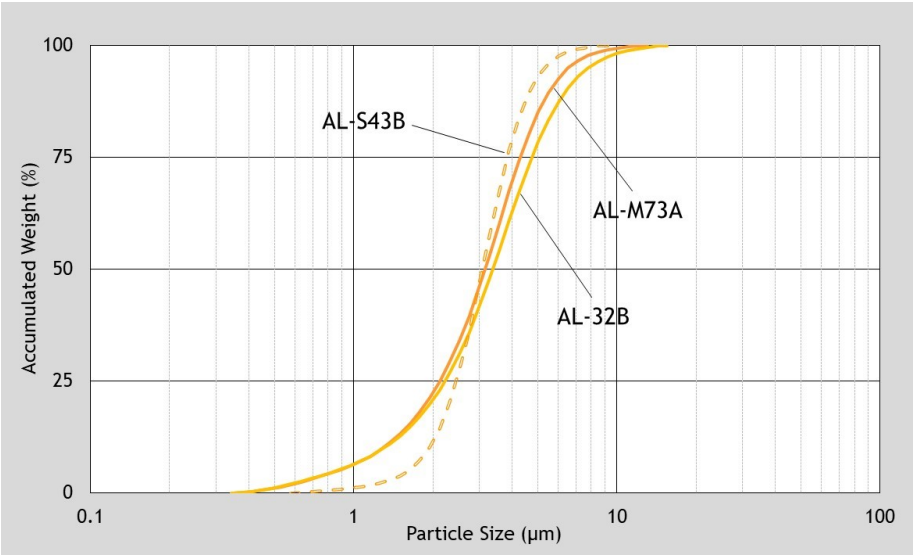
Typical Properties		Product	AL-M73A	AL-S43B	AL-32B
Chemical Composition	H2O	[%]	0.07	0.07	0.04
	L.O.I	[%]	0.05	0.05	0.04
	Fe2O3	[%]	0.01	0.01	0.01
	SiO2	[%]	0.05	0.05	0.05
	Na2O	[%]	0.03	0.04	0.02
	Al2O3	[%]	99.9	99.9	99.9
D50 (MT-3300, Laser Diffraction)		[μm]	3.0	3.1	3.4
BET Specific Surface Area		[m2/g]	1.5	1.3	1.6
+45μm		[μm]	0.0	0.0	0.0
α Crystal Size		[μm]	2~3	1.5~2.5	3~4

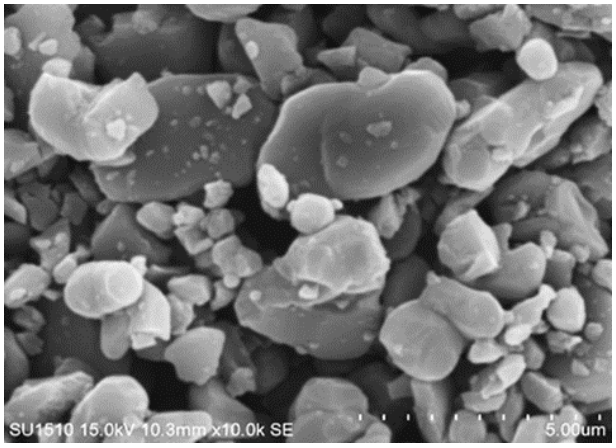
Packing				
	Big Bag	-		
	Paper Bag	20kg	25kg	

AL-M73A : Top-cut version of ALM-43.

AL-S43B : PSD of ALM-43 narrowed.

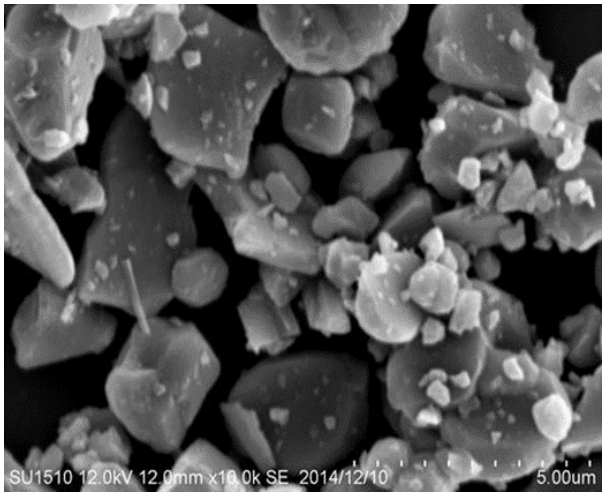
AL-32B : Big α crystal size, and easy to mix with resins.





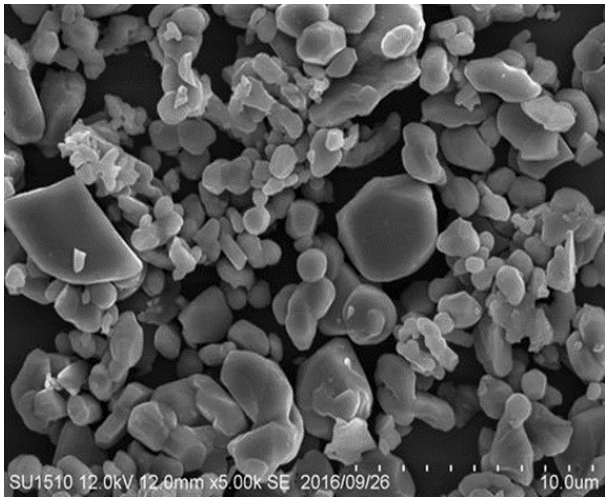
AL-M73A

5μm



AL-32B

5μm



AL-S43B

10μm

Normal Soda / Easy Sintering (Reactive)

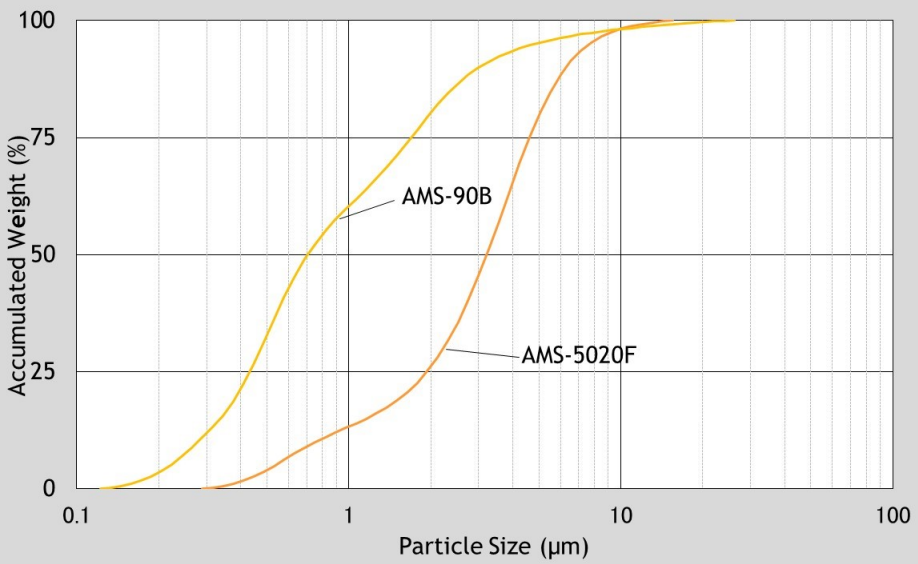
Typical Properties			Product AMS-5020F	AMS-90B
Chemical Composition	H2O	[%]	0.1	0.1
	L.O.I	[%]	0.1	0.3
	Fe2O3	[%]	0.01	0.01
	SiO2	[%]	0.02	0.01
	Na2O	[%]	0.23	0.22
	Al2O3	[%]	99.7	99.7
Specific Gravity		[g/cm3]	3.95	3.90
D50 (MT-3300, Laser Diffraction)		[μm]	3.2	0.7
α Crystal Size		[μm]	0.3～4	0.3
Green Density*		[g/cm3]	2.44	2.07
Fire Density*		[g/cm3]	3.40	3.82

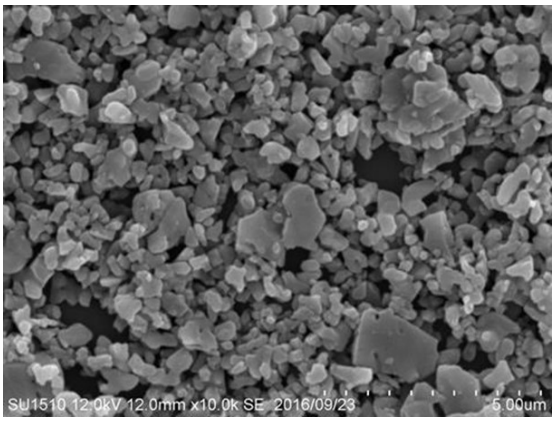
Packing		
	Big Bag	1,000kg
	Paper Bag	25kg

* No flux added, 29.4MPa (300kg/cm2), sample sintered at 1600 deg C.

AMS-5020F : Enables high filling ratio because of bi-modal and broad particle size distribution.
Typically used for castable plasticizer and low shrinkage ceramics.

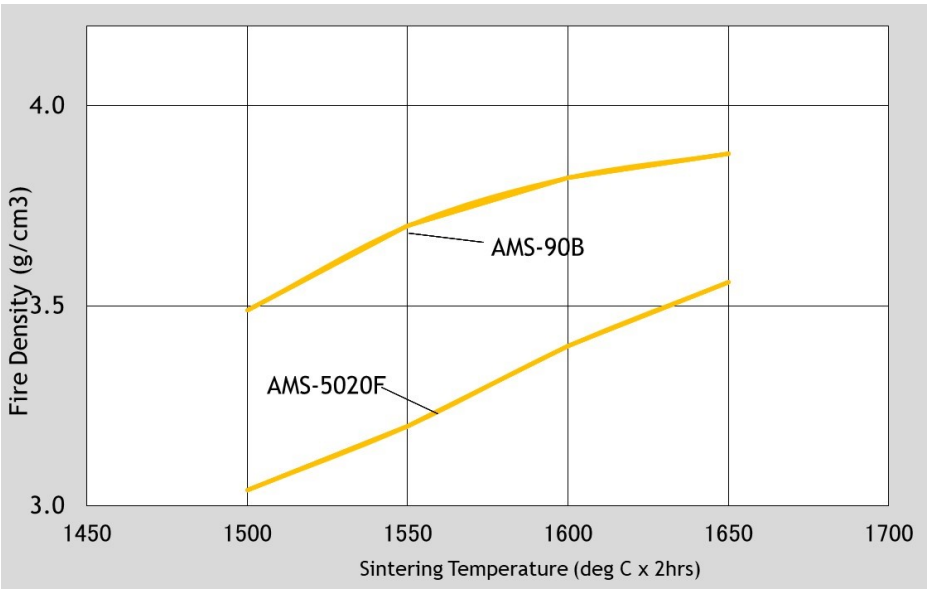
AMS-90B : Mono-modal particle size distribution, ground down to 0.7μm.





AMS-90B

5μm



Low Soda / Easy Sintering (Reactive)

Typical Properties		Product	AES-12	AES-11	AES-11C	AES-11H	AES-23
Chemical Composition	H2O	[%]	0.1	0.1	0.1	0.1	0.1
	L.O.I	[%]	0.1	0.2	0.1	0.2	0.1
	Fe2O3	[%]	0.01	0.01	0.01	0.01	0.01
	SiO2	[%]	0.03	0.03	0.03	0.04	0.04
	Na2O	[%]	0.04	0.04	0.04	0.04	0.04
	MgO*	[%]	-	0.11	0.05	0.04	-
	Al2O3	[%]	99.9	99.9	99.9	99.9	99.9
D50 (MT-3300, Laser Diffraction)		[μm]	0.44	0.43	0.39	0.54	2.2
BET Specific Surface Area		[m2/g]	6.9	6.7	5.5	6.3	3.4
α Crystal Size		[μm]	0.3	0.3	0.3	0.3	0.3～4
Green Density		[g/cm3]	2.22	2.22	2.20	2.20	2.57
Fire Density**		[g/cm3]	3.88	3.93	3.94	3.87	3.77
Linear Shrinkage**		[%]	17	17	18	17	12

Packing	Paper Bag	25kg

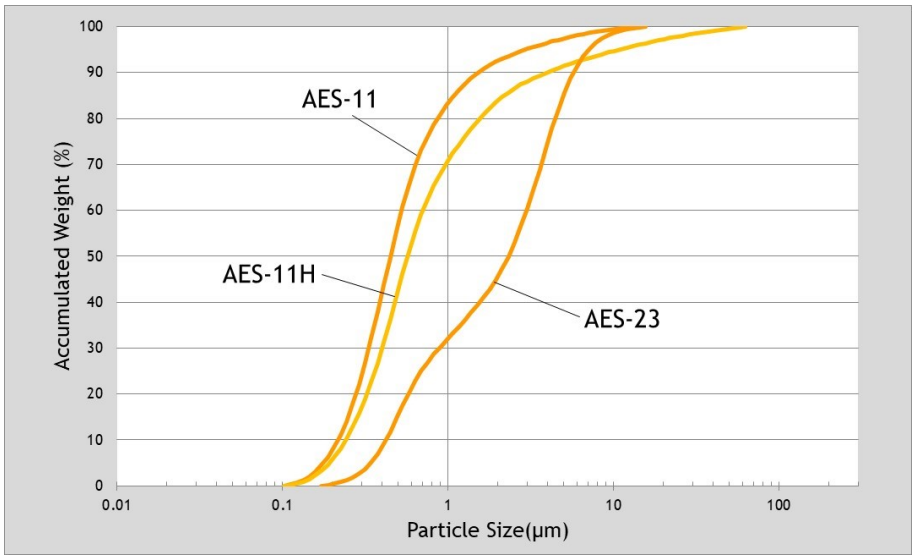
* MgO is an additive and not considered as an impurity in Al2O3.
**No flux added, 29.4MPa (300kg/cm2), sample sintered at 1600 deg C.

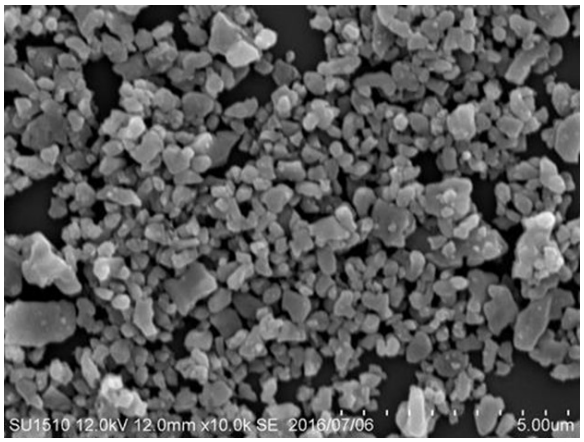
AES-11/11C : Sub-micron size particles. Used for fine ceramic applications requiring 99% purity or higher.

AES-11H : Contains less re-agglomeration than AES-11 / 11C, and it makes slurry dispersion easier.

AES-12 : MgO not added. Also used as a sub-filler of thermal interface materials.

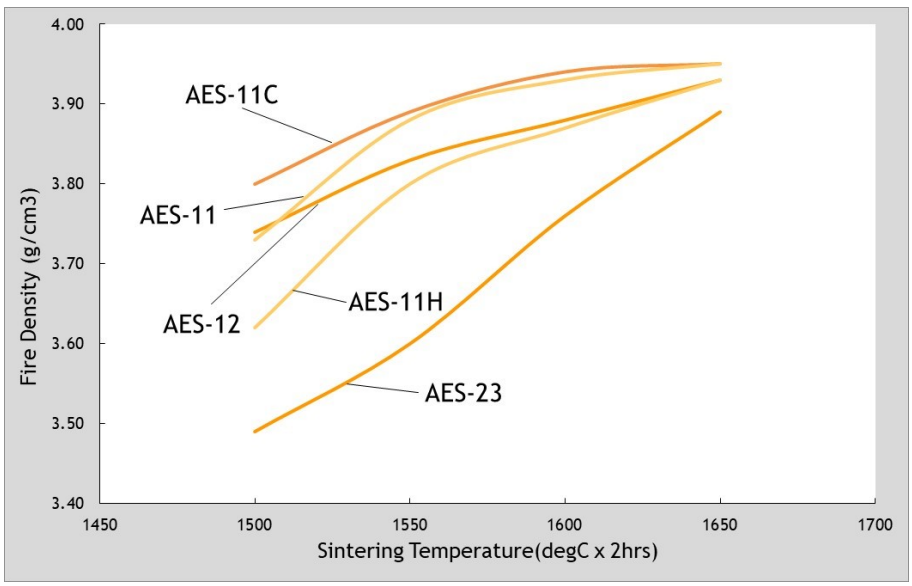
AES-23 : Thixotropic and low viscosity.

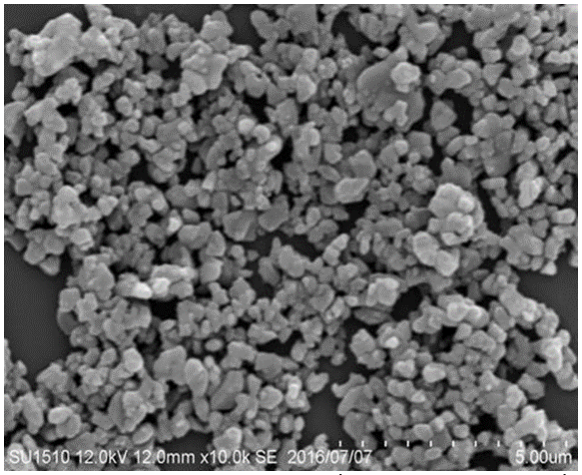




AES-12

5μm





AES-11

5μm

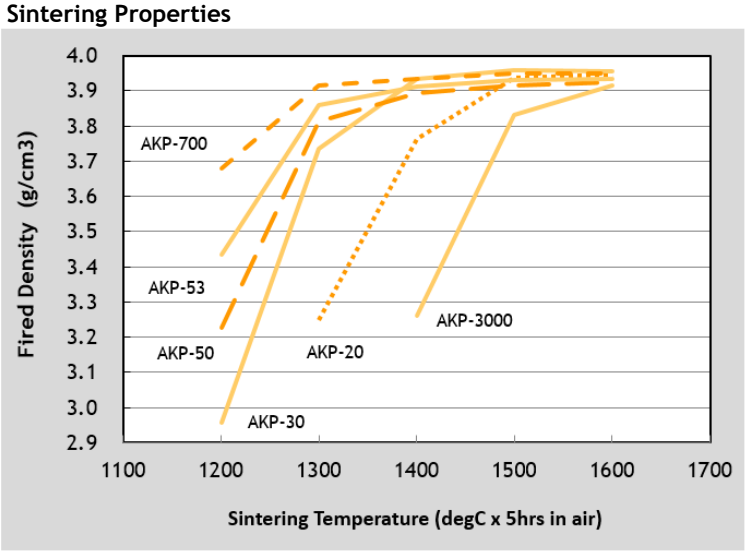
3. High Purity Alumina - HPA

Sumitomo Chemical's High Purity Aluminas(HPA) are uniform fine powders characterized by highly pure and homogeneous crystal structure. We produce HPA by Aluminum Alkoxide Hydrolysis process.

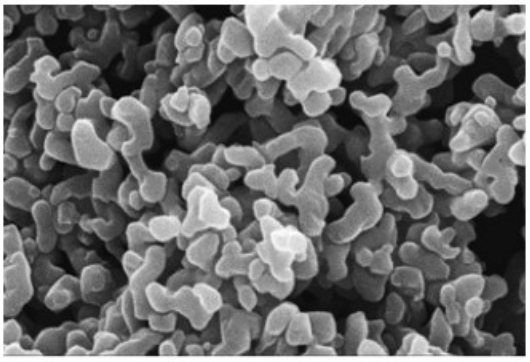
AKP Series

Typical Properties \ Product			AKP-15	AKP-20	AKP-30	AKP-50	AKP-53	AKP-700	AKP-3000
Crystal Structure			α	α	α	α	α	α	α
Purity(Al2O3)		[%]	≧99.99	≧99.99	≧99.99	≧99.99	≧99.99	≧99.99	≧99.99
D50 (MT3300)		[μm]	0.60	0.42	0.26	0.20	0.17	-	0.67
Loose Bulk Density		[g/cm3]	0.9	1.0	0.9	0.9	1.1	0.7	0.43
Tapped Bulk Density		[g/cm3]	1.5	1.4	1.3	1.3	1.4	1.1	0.81
BET Specific Surface Area		[m2/g]	3.6	4.6	7.4	11.1	13.7	17.8	4.4
Impurity	Si	[ppm]	20	16	9	10	36	8	3
	Na		6	3	3	3	3	3	2
	Mg		3	3	2	2	6	1	1
	Cu		1	1	1	1	1	1	1
	Fe		2	2	2	2	3	3	2
Packing	PE Bag		20kg	20kg	20kg	20kg	20kg		10kg
	Pail Can							10kg	
Application			High-strength and High-density Ceramics, Translucent Ceramics, Composite Materials, Additives for non-Oxide Ceramics, Abrasives, Ceramic Filter, Resin Filler, etc.						
									Insulation layer of Li-ion Secondary Battery

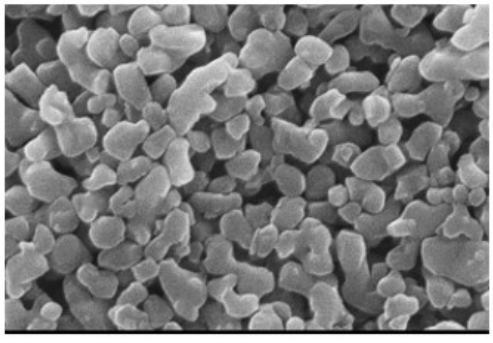
Sintering Properties



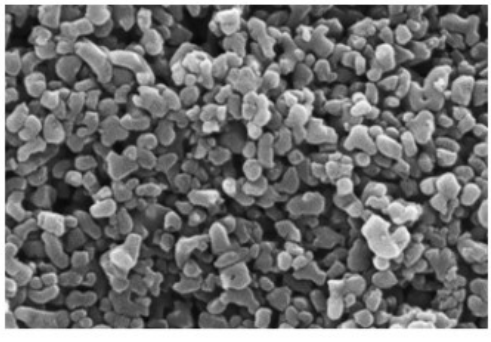
AKP-3000



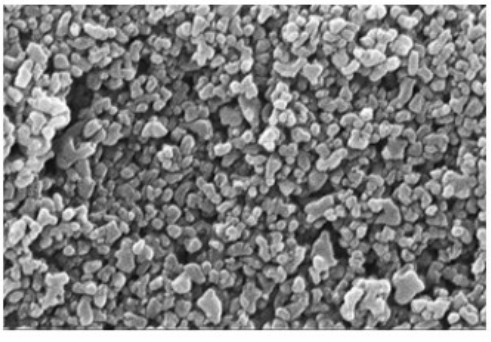
AKP-20



AKP-30



AKP-50

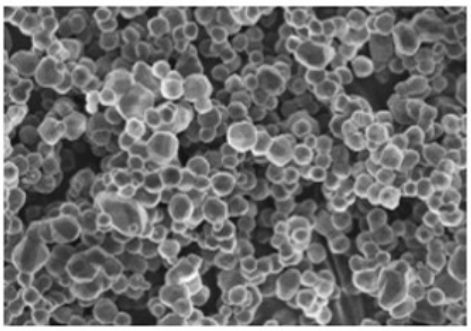


Advanced Aluminas are α-alumina single crystals with precisely controlled particle size distribution and almost-spherical polyhedral shape.

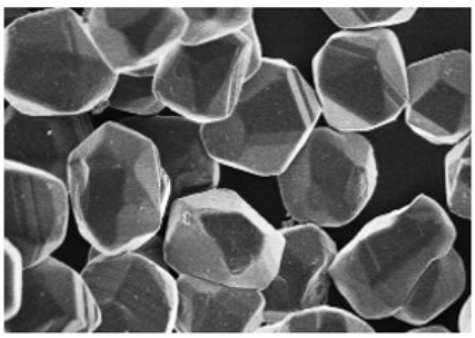
Advanced Alumina (AA)

Typical Properties \ Product		AA-03	AA-04	AA-05	AA-07	AA-1.5	AA-2	AA-3	AA-5	AA-10	AA-18
Crystal structure		α	α	α	α	α	α	α	α	α	α
Purity(Al2O3)	[%]	≧ 99.99	≧ 99.99	≧ 99.99	≧ 99.99	≧ 99.99	≧ 99.99	≧ 99.99	≧ 99.99	≧ 99.99	≧ 99.99
D50 (MT3300)	[μm]	0.40	0.47	0.58	0.88	1.7	2.2	3.5	6.6	13.5	20.3
Loose Bulk Density	[g/cm3]	0.5	0.5	0.6	0.6	0.6	0.7	0.7	1.3	1.7	1.9
Tapped Bulk Density	[g/cm3]	0.9	1.0	1.1	1.2	1.5	1.5	1.5	2.0	2.3	2.4
BET Specific Surface Area	[m2/g]	5.6	4.6	3.2	2.2	1.3	1.1	0.6	0.4	0.3	0.2
Impurity Si	[ppm]	4	4	4	4	9	11	22	22	22	17
Impurity Fe	[ppm]	2	2	2	2	3	2	3	2	2	2
Impurity Na	[ppm]	3	3	3	3	3	3	3	3	3	3
Impurity Mg	[ppm]	1	1	1	1	1	1	1	1	1	1
Impurity Cu	[ppm]	1	1	1	1	1	1	1	1	1	1
Packing PE Bag		20kg	20kg	20kg	20kg	20kg	20kg	20kg	20kg	20kg	
Packing Pail Can											20kg
Application		High-strength and High-density Ceramics, Translucent Ceramics, Resin filler(Thermal Conductive Materials), Plasma Spray, Ceramic Filter, etc.									

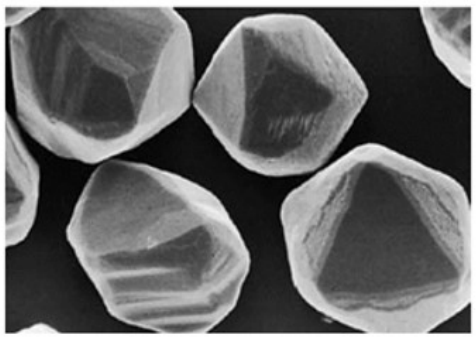
AA-04



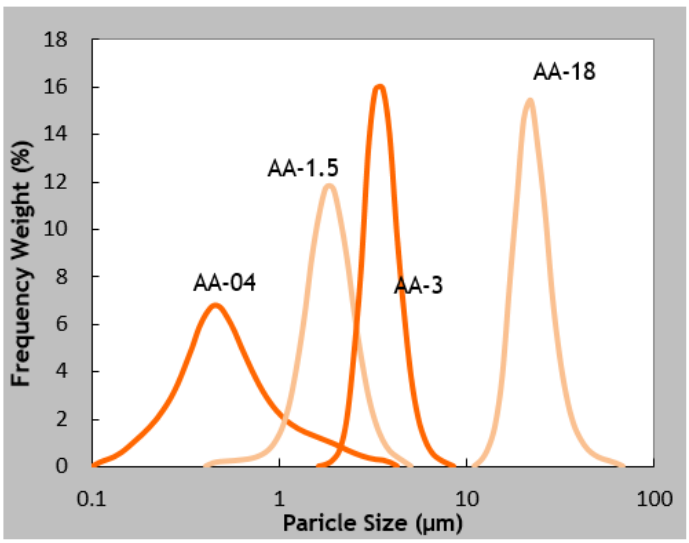
AA-3



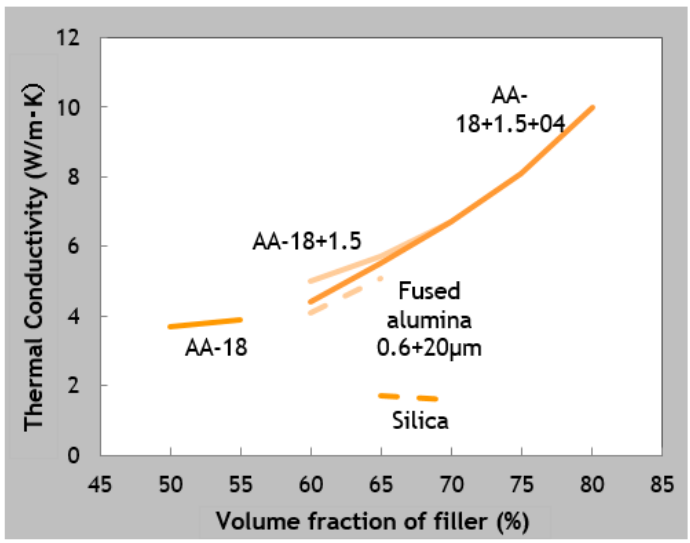
AA-18



Particle Size Distribution



Thermal Conductivity

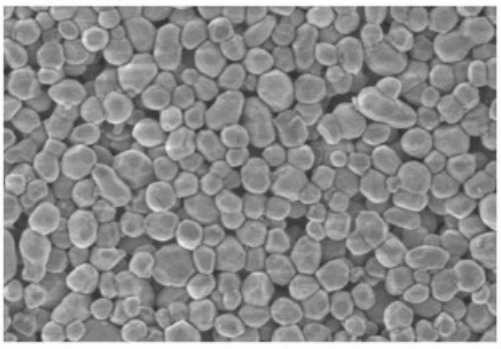


NXA is almost-spherical fine α-alumina crystals with excellent dispersion.

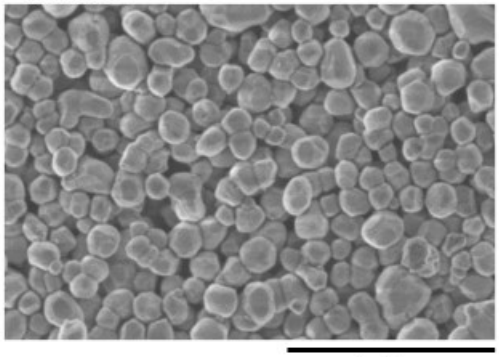
NXA Series

Typical Properties \ Product			NXA-100	NXA-150
Crystal structure			α	α
Purity(Al2O3)		[%]	≧ 99.99	≧ 99.99
D50 (MT3300)		[μm]	0.18	0.20
Loose Bulk Density		[g/cm3]	1.0	1.0
Tapped Bulk Density		[g/cm3]	1.3	1.2
BET Specific Surface Area		[m2/g]	10.8	9.7
Impurity	Si	[ppm]	12	17
	Fe	[ppm]	3	5
	Na	[ppm]	< 3	< 3
	Mg	[ppm]	2	3
	Cu	[ppm]	< 1	< 1
Packing	AL Laminated Bag		20kg	20kg
Application			High-strength and High-density Ceramics, Translucent Ceramics, Resin Filler(Thermal Conductive Materials), Precision Abrasives, etc.	

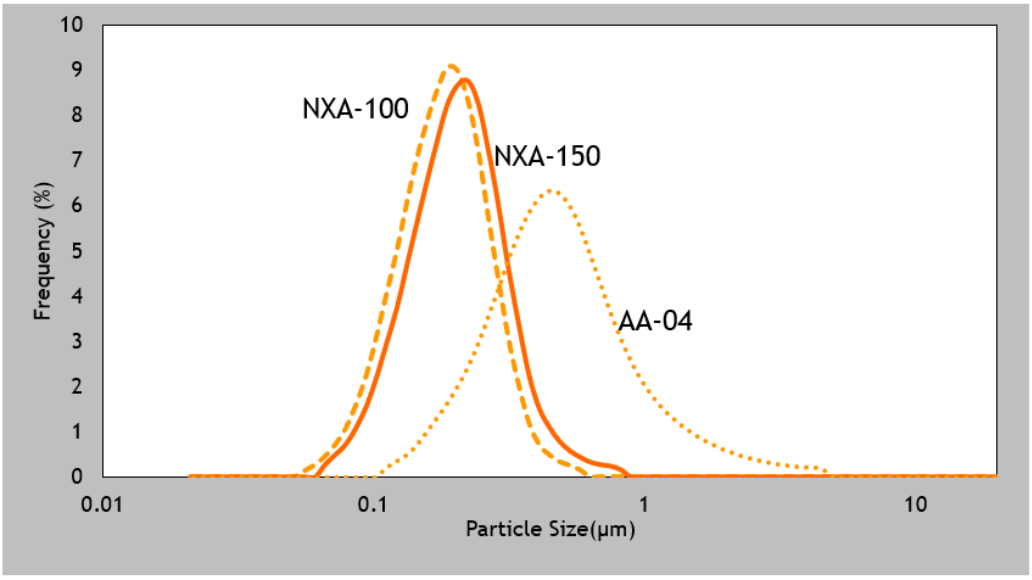
NXA-100



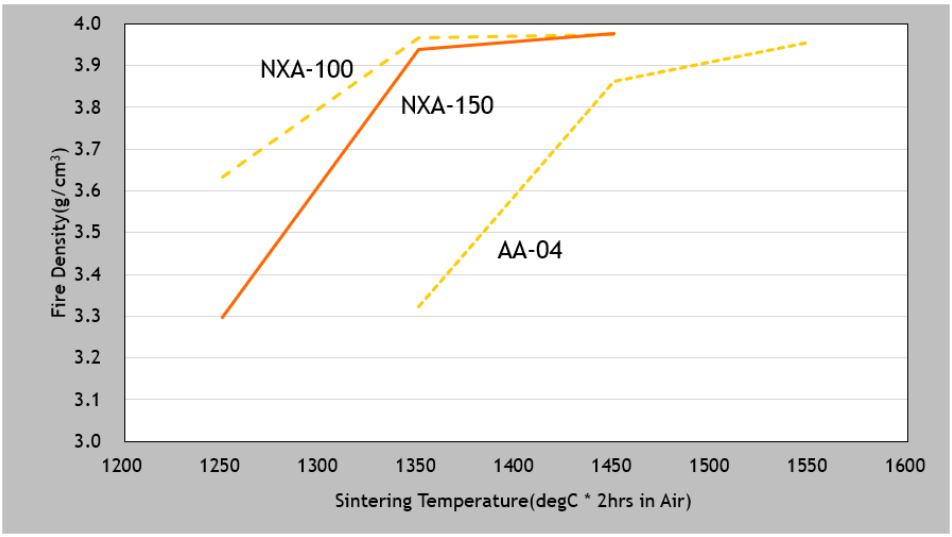
NXA-150



Particle Size Distribution



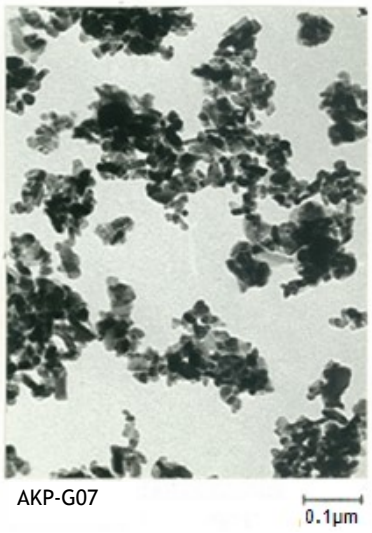
Sintering Properties



Gamma HPA

Typical Properties	Product	AKP-G07	AKP-G15
Crystal Structure		θ	γ
Purity(Al2O3)	[%]	≧99.99	≧99.99
Loose Bulk Density	[g/cm3]	-	0.13
Tapped Bulk Density	[g/cm3]	0.3	0.16
BET Specific Surface Area	[m2/g]	79.9	164
Impurity Si	[ppm]	3	2
Impurity Na	[ppm]	3	3
Impurity Mg	[ppm]	1	1
Impurity Cu	[ppm]	1	1
Impurity Fe	[ppm]	4	4
Packing		20kg Cardboard Box	10kg Cardboard Box
Application		Resin Filler, Catalyst, etc.	

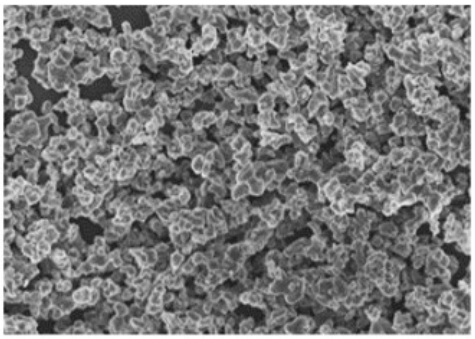
AKP-G15



AKP-G07

HIT Series

Typical Properties	Product	HIT-60A	HIT-82	HIT-100
Crystal Structure		α	α	α
Loose Bulk Density	[g/cm3]	0.8	1.0	0.9
Tapped Bulk Density	[g/cm3]	1.1	1.3	1.2
BET Specific Surface Area	[m2/g]	12.5	25.4	36.1
Packing		15kg PE Bag	20kg Pail Can	20kg Pail Can
Application		Abrasive, etc.		

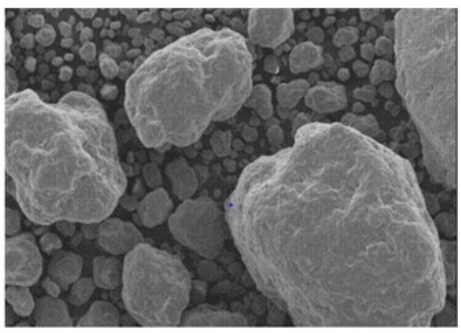


HIT-60A

HIT-100

High Bulk Density for Single Crystal

Typical Properties	Product	AKX-5
Crystal Structure		α
Purity(Al2O3)	[%]	≧99.99
Loose Bulk Density	[g/cm3]	1.8
Tapped Bulk Density	[g/cm3]	-
BET Surface Area	[m2/g]	1.1
Impurity Si	[ppm]	9
Impurity Na	[ppm]	3
Impurity Mg	[ppm]	1
Impurity Cu	[ppm]	1
Impurity Fe	[ppm]	3
Packing		100kg Fiber Drum
Application		Single Crystal



AKX-5

4. Activated Alumina / Hydraulic Alumina

Activated Alumina : Powder Shape

Typical Properties		Product	Powders				Chlomatography Grade	
			KC-501	A-11	AC-11	AC-12R	KCG-30	KCG-1525W
Chemical Composition	L.O.I	[%]	4.5	4.0	4.5	4.5	3.5	3.5
	Fe2O3	[%]	0.01	0.02	0.02	0.02	0.02	0.02
	SiO2	[%]	0.02	0.02	0.02	0.02	0.02	0.02
	Na2O	[%]	0.45	0.26	0.26	0.26	0.26	0.26
	Al2O3	[%]	99.5	99.7	99.7	99.7	99.7	99.7
Physical Properties	True Specific Gravity		-	3.1	3.1	3.1	3.1	3.1
	Apparent Specific Gravity (Packed Bulk Density)	[g/cm3]	0.3	1.1	1.1	1.1	1.1	1.1
	D50	[μm]	1.5	40-50	80-100	100-200	40-50	80-100
	BET Specific Surface Area	[m2/g]	200	150	140	130	150	140
	Pore Volume	[mL/g]	-	0.30	0.30	0.30	0.30	0.30

Packing	Paper Bag / PE Bag	-	25kg	25kg	-	-	-
	Pail Can	5kg	-	-	15kg	15kg	15kg
	Drum	50kg	-	-	180kg	-	-

Easy to be adsorped ↑	organic acid	PO_4^{-3}	F^-
	water		
	alcohol	F^-	
	amine		
	mercaptan	$[Fe(CN)_6]^{-4}$	
	aldehyde		Cl^-
	ketone	SO_4^{-2}	
	ester		
	ether	$[FE(CN)_6]^{-3}$	
	aromatic hydrocarbon	$Cr_2O_7^{-2}$	Br^-
Difficult to be adsorped ↓	sulfide		
	organic halogen	Cl^-	
	unsaturated hydrocarbon	MnO_4^-	
	saturated hydrocarbon	ClO_4^-	I^-

Activated Alumina can be used as an adsorption refining agent, especially to refine non-polar solvents.

In general, the more polarity and heavier molecular weight, the better adsorption effect would be obtained.

Adsorption order example as follows.
-SO3H > -COOH > -OH, -NH2, -SH > -CHO
> -CO > -COOR > -S-, -O- > -X
> Unsaturated hydrocarbons
> Saturated hydrocarbons

Adsorption performance can be measured in terms of adsorption rate and transmission rate of the picric acid by sending a benzene solution of picric acid through a column filled with activated alumina.

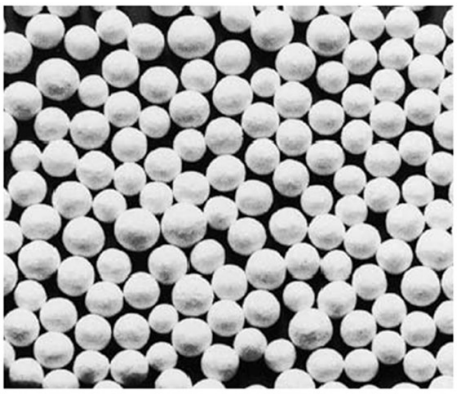
Activated Alumina : Spherical Shape

Typical Properties			Product	KHS	KHA		KHO			NKHO
				-46	-46	-24	-46	-24	-12	-24
Appearance	Form			Spherical						
	Color			White						
	Particle Size	[mm]		4-6	4-6	2-4	4-6	2-4	1-2	2-4
Chemical Composition	L.O.I	[%]		3.5	1.9		1.5		2.4	1.8
	Fe2O3	[%]		0.02	0.02					
	SiO2	[%]		0.02	0.02					
	Na2O	[%]		0.04	0.26					
	Al2O3	[%]		99.9	99.7					
Physical Properties	Bulk Density	[kg/L]		0.60	0.73	0.74	0.80	0.83	0.85	0.61
	Pore Volume	[mL/g]		0.64	0.51		0.43			0.62
	BET Specific Surface Area	[m2/g]		165	160		150		210	170
Mechanical Strength	Attrition Loss	[%]		0.3	0.4		0.4		0.2	0.2
	Crushing Strength	[daN]		17	26	13	33	18	5	5

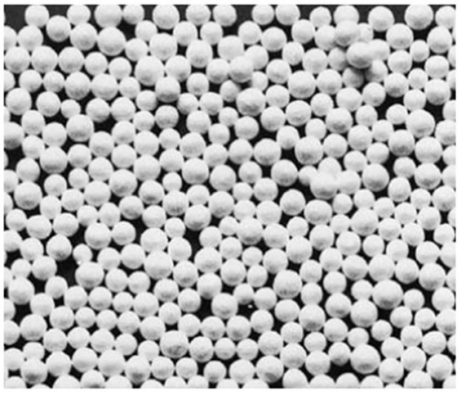
Packing						
	Drum	120kg	130kg		150kg	120kg
	Square Can	10kg	10kg		15kg	10kg

Typical Properties			Product	NKHD				KHD		HD	FD
				-46	-24	-46HD	-24HD	-46	-24	-13	-24
Appearance	Form			Spherical							
	Color			White							
	Particle Size	[mm]		4-6	2-4	4-6	2-4	4-6	2-4	1-2	2-4
Chemical Composition	L.O.I	[%]		6.4		5.9		5.4		6.1	6.3
	Fe2O3	[%]		0.02							
	SiO2	[%]		0.02							
	Na2O	[%]		0.26							
	Al2O3	[%]		99.7							
Physical Properties	Bulk density	[kg/L]		0.60	0.64	0.74	0.77	0.82	0.86	0.80	0.68
	Pore volume	[mL/g]		0.60		0.45		0.38		0.45	0.55
	BET Specific Surface Area	[m2/g]		290				280		290	280
Mechanical Strength	Attrition Loss	[%]		0.3		0.3		0.2		0.4	0.2
	Crushing Strength	[daN]		10	5	30	16	30	16	5	7
H2O Adsorption	Effluent Gas Moisture		[gH2O/m3]	0.003		0.003		0.003			0.003
	Adsorption Capacity	10% RH	[%]	5.7	5.7	5.8	6.1	5.3	5.5		5.8
		50% RH	[%]	15.5	16.0	15.7	16.7	13.6	14.8		16.0
		90% RH	[%]	37.8	39.3	37.0	38.2	34	34.1		37.0

Packing							
	Drum	120kg	150kg		160kg	150kg	120kg
	Square Can	10kg	15kg		15kg	-	10kg



KHD-46



KHD-24

Hydraulic Alumina

Typical Properties			Product: BK-112
Chemical Composition	L.O.I	[%]	6.6
	Fe2O3	[%]	0.05
	SiO2	[%]	0.01
	Na2O	[%]	0.25
	Al2O3	[%]	99.7
Physical Properties	True specific gravity		3.0
	Apparent specific gravity (Packed bulk density)	[g/cm3]	1.0
	Mean particle size	[μm]	16

Packing		
	Drum	150kg
	Pail Can	15kg
	Paper Bag	20kg

An alumina powder with a large surface area and some crystal water.

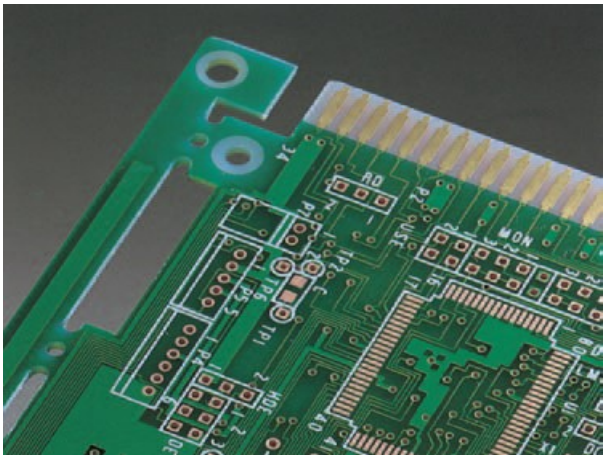
Used as a binder for refractories instead of alumina cement due to large caking capacity and plasticity.

Condition/setting time of the hydraulic alumina and water mixture

Water Volume (g/100g-Al2O3)	Kneaded material condition	Setting Time* (min.)
60	Dry	-
70	Impossible to knead	-
75	Creamy	-
80	Creamy	15
90	Slurry with good fluidity	20

* Setting time is determined by JIS R 5210 needle penetration method (slurry thickness 38mm). Distance between the slurry bottom and the needle is 25mm.

Plant & Office Location / Contact



Aluminum Hydroxide as a flame retardant for CCL.

Aluminum Hydroxide as a filler for solid surface.

CONTACTS for Sales and Technical Information

◆ Aluminum Hydroxide / Alumina / High Purity Alumina-HPA

SUMITOMO CHEMICAL Creative Hybrid Chemistry For a Better Tomorrow

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2-7-1, Nihonbashi, Chuo-ku, Tokyo, 103-6020, Japan
TEL +81 3 5201 0259 FAX +81 3 5201 0460

◆ Activated Alumina / Hydraulic Alumina

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