

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 databook 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

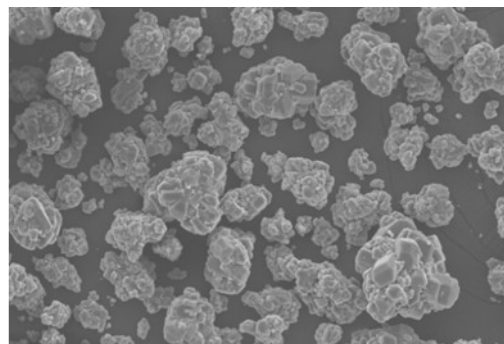
Typical Properties		Product	C-12
Chemical Composition	H ₂ O	[%]	9
	Al(OH) ₃ *	[%]	99.8
	Fe ₂ O ₃ *	[%]	0.01
	SiO ₂ *	[%]	0.01
	Na ₂ O*	[%]	0.18
Loose Bulk Density		[g/cm ³]	1.1
Packed Bulk Density		[g/cm ³]	1.4
True Specific Gravity			2.42
D50(MT-3300, Laser Diffraction)		[μm]	50
+75μm		[%]	5
Packing	Big Bag		1,000kg

*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

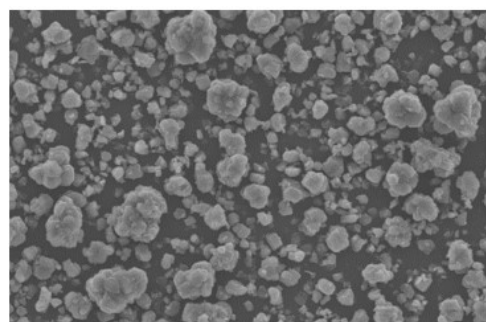
Fine, Very Fine, Low-Soda

Typical Properties		Product		Fine		Very Fine	Low Soda		
				C-310	C-305	C-301N	CL-310	CL-303	C-302A
Chemical Composition	H ₂ O	[%]		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
	Fe ₂ O ₃ *	[%]		0.01	0.01	0.01	0.01	0.01	0.01
	SiO ₂ *	[%]		0.01	0.01	0.01	0.01	0.01	0.01
	Na ₂ O*	[%]		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/cm ³]		0.7	0.5	0.3	0.7	0.6	0.4
Packed Bulk Density		[g/cm ³]		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		[m ² /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.

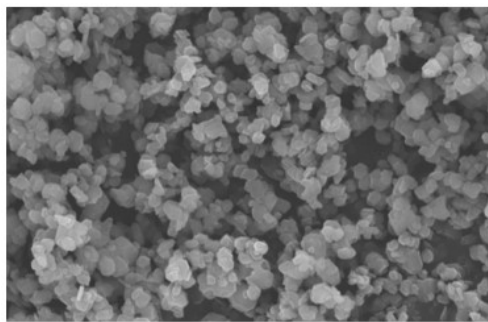
Calculated as oxide after analyzing Fe, Si, Na contents.

Al(OH)₃ = 100 - (Fe₂O₃+SiO₂+Na₂O)



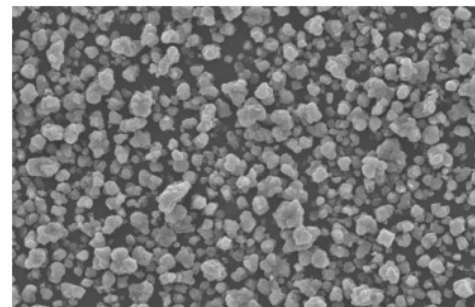
C-305

20μm



C-301N

4μm



CL-303

20μm

High Whiteness

Typical Properties		Product	CW-350	CW-308
Chemical Composition	H ₂ O	[%]	0.03	0.06
	Al(OH) ₃ *	[%]	99.9	99.8
	Fe ₂ O ₃ *	[%]	0.01	0.01
	SiO ₂ *	[%]	0.01	0.01
	Na ₂ O*	[%]	0.06	0.17
D50(MT-3300, Laser Diffraction)		[μm]	43	10
+45μm		[%]	-	<0.1
Loose Bulk Density		[g/cm ³]	1.0	0.6
Packed Bulk Density		[g/cm ³]	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.

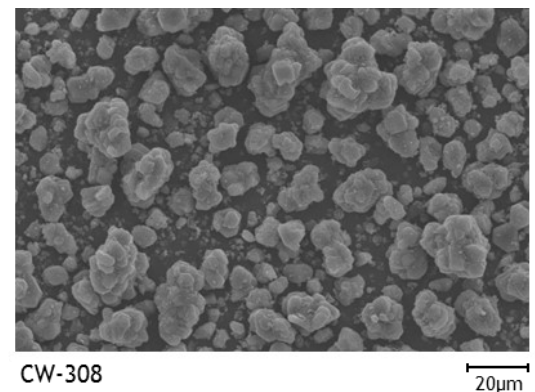
Calculated as oxide after analyzing Fe, Si, Na contents.

Al(OH)₃ = 100 - (Fe₂O₃+SiO₂+Na₂O)

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

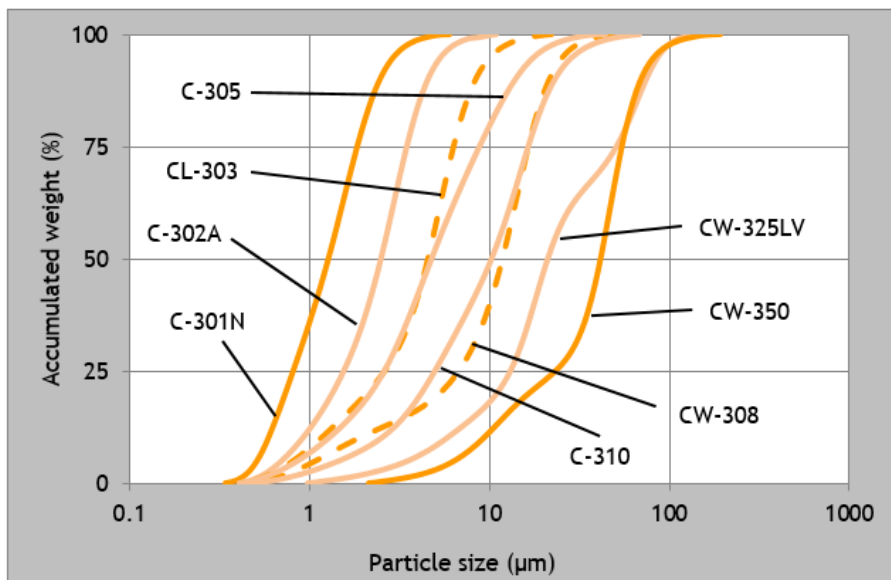
High Whiteness (Surface Treated)

Typical Properties		Product	CW-350B	CWL-325J	CW-308B
Chemical Composition	H ₂ O	[%]	0.03	0.05	0.05
	Al(OH) ₃ *	[%]	99.9	99.7	99.7
	Fe ₂ O ₃ *	[%]	0.01	0.01	0.01
	SiO ₂ *	[%]	0.04	0.15	0.12
	Na ₂ O*	[%]	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	



CW-308

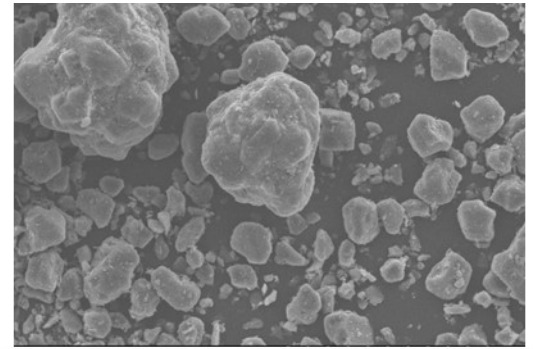
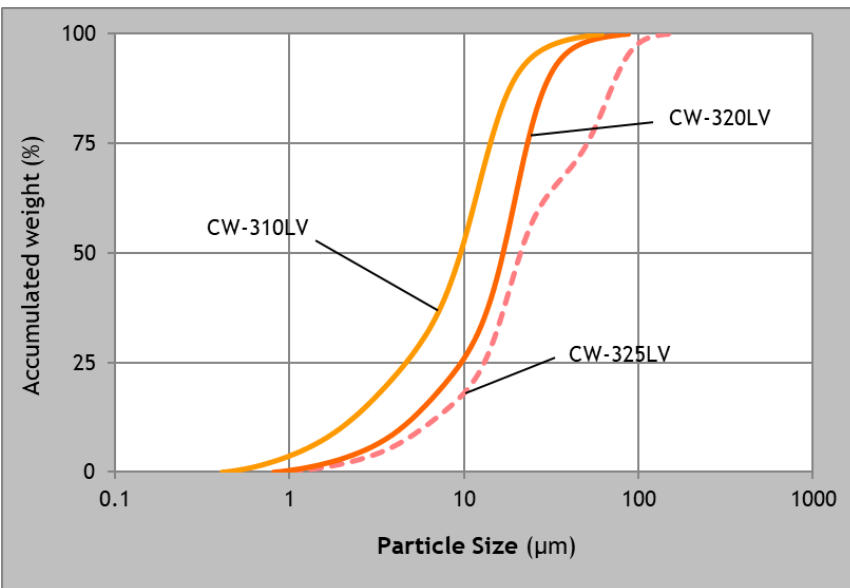
20μm



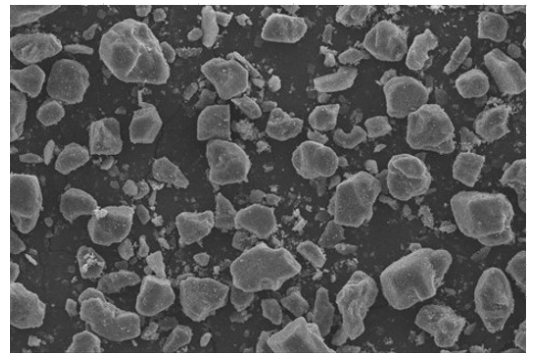
Low Viscosity

Typical Properties		Product	CW-325LV	CW-320LV	CW-310LV
Chemical Composition	H ₂ O	[%]	0.04	0.04	0.05
	Al(OH) ₃ *	[%]	99.9	99.9	99.9
	Fe ₂ O ₃ *	[%]	0.01	0.01	0.01
	SiO ₂ *	[%]	0.00	0.00	0.00
	Na ₂ O*	[%]	0.07	0.08	0.06
D50(MT-3300, Laser Diffraction)		[μm]	21	17	10
+45μm		[%]	-	-	-
BET Specific Surface Area		[m ² /g]	0.8	1.1	1.7
Electric Conductivity		[μS/cm]	20	20	20
Loose Bulk Density		[g/cm ³]	1.0	0.8	0.7
Packed Bulk Density		[g/cm ³]	1.4	1.5	1.4
DOA Oil Absorption		[ml/100g]	24	27	28
True Specific Gravity			2.42		
Refractive Index			1.57		
Hardness		[Mohs]	3		
Packing	Big Bag		1,000kg		
	Paper Bag		25kg		

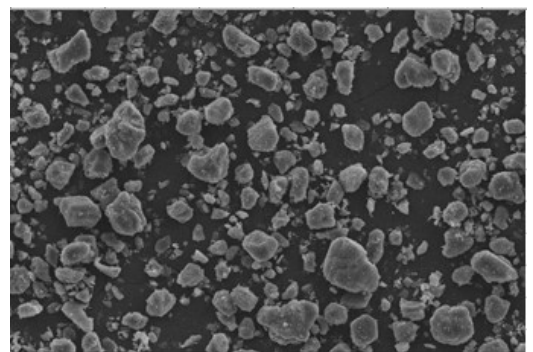
*Analysis after dried.
Calculated as oxide after analyzing Fe, Si, Na contents.
Al(OH)₃ = 100 - (Fe₂O₃+SiO₂+Na₂O)



CW-325LV



CW-320LV



CW-310LV

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.

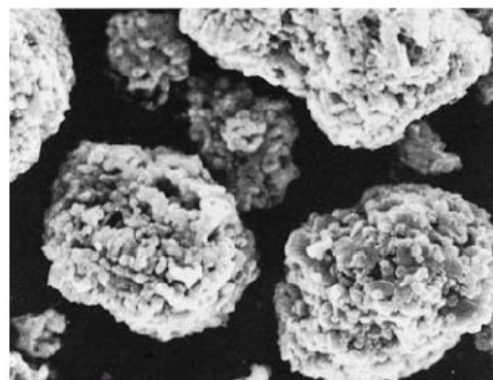
Normal Soda / Unground

Typical Properties			Product	A-21	A-26	A-210
Chemical Composition	H ₂ O	[%]		0.04	0.1	0.04
	L.O.I	[%]		0.05	0.1	0.05
	Fe ₂ O ₃	[%]		0.02	0.02	0.02
	SiO ₂	[%]		0.01	0.01	0.02
	Na ₂ O	[%]		0.21	0.21	0.27
	Al ₂ O ₃	[%]		99.7	99.7	99.6
Specific Gravity			[-]	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/cm ³]		0.7	0.9	0.9
	Packed	[g/cm ³]		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.

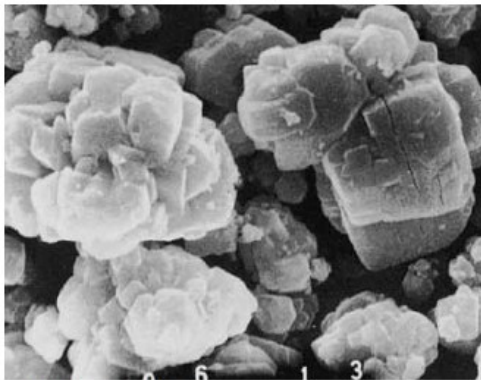
A-26 : Smaller α crystal size with lower calcination than A-21. Used as a reactive alumina when ground.

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



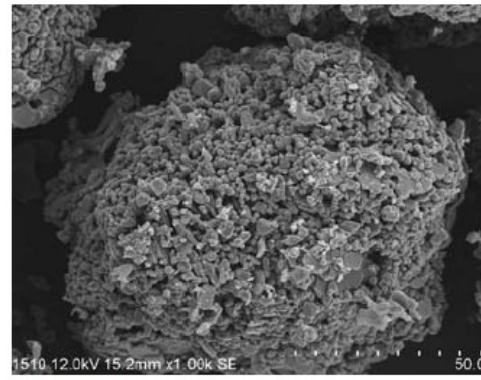
A-21

20μm



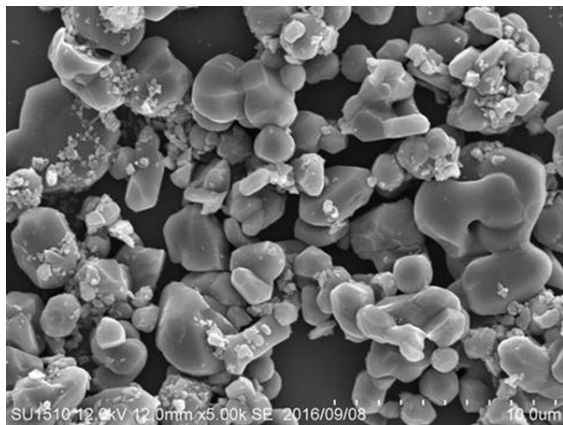
A-26

20μm



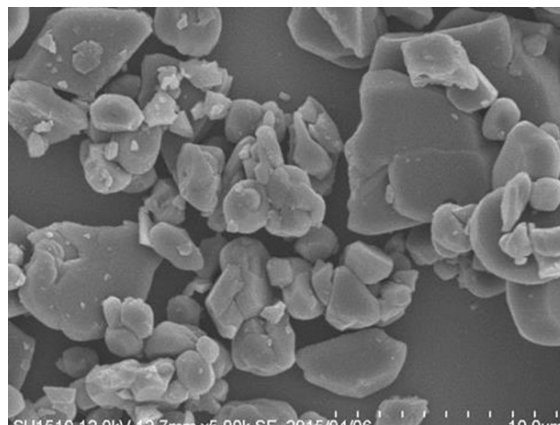
A-210

20μm



AM-21

10μm



AM-210

10μm

Normal Soda / Ground

Typical Properties		Product	AM-21	AM-210-02	AM-210	AM-28B	AM-29B	AM-27
Chemical Composition	H ₂ O	[%]	0.06	0.05	0.06	0.05	0.05	0.1
	L.O.I	[%]	0.05	0.05	0.05	0.05	0.05	0.1
	Fe ₂ O ₃	[%]	0.02	0.02	0.02	0.05	0.05	0.02
	SiO ₂	[%]	0.01	0.02	0.02	0.02	0.02	0.01
	Na ₂ O	[%]	0.21	0.27	0.27	0.15	0.15	0.21
	Al ₂ O ₃	[%]	99.7	99.6	99.6	99.7	99.7	99.7
Specific Gravity		[-]	3.95	3.95	3.95	3.95	3.95	3.90
D50 (MT-3300, Laser Diffraction)		[μm]	4.8	7.9	4.8	19	8.2	2.8
α Crystal Size		[μm]	2~4	2~4	2~4	2~5	2~5	0.3
Bulk Density	Green	[g/cm ³]	0.7	-	0.7	0.6	0.6	0.6
	Packed	[g/cm ³]	1.3	-	1.3	1.6	1.6	1.3
Oil Absorption Boiled Linseed Oil		[ml/100g]	16	-	-	21	18	27
Green Density		[g/cm ³]	2.26	-	2.26	-	-	-
Fire Density*		[g/cm ³]	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-28B/29B : Specially developed for intermediate buffing stages of stainless steel. Some of coarse particles crumble to fine particles.

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

Low Soda / Unground

Typical Properties		Product	AL-41-01	AL-43A	AL-44
Chemical Composition	H ₂ O	[%]	0.05	0.05	0.05
	L.O.I	[%]	0.05	0.05	0.05
	Fe ₂ O ₃	[%]	0.02	0.02	0.02
	SiO ₂	[%]	0.05	0.05	0.05
	Na ₂ O	[%]	0.01	0.01	0.01
	Al ₂ O ₃	[%]	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		

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

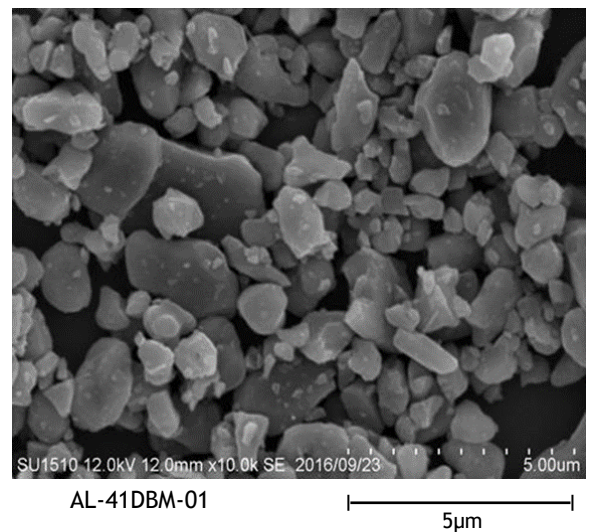
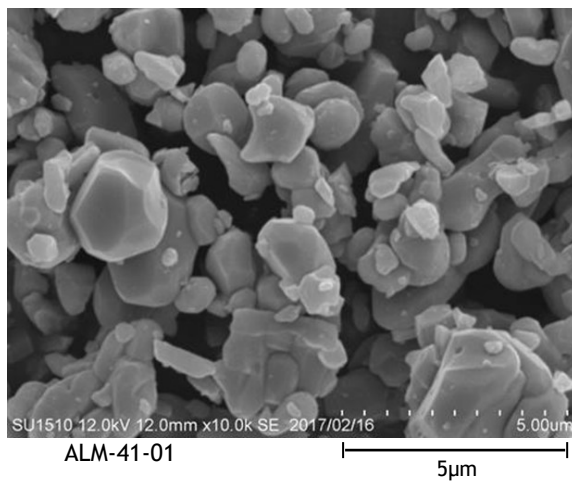
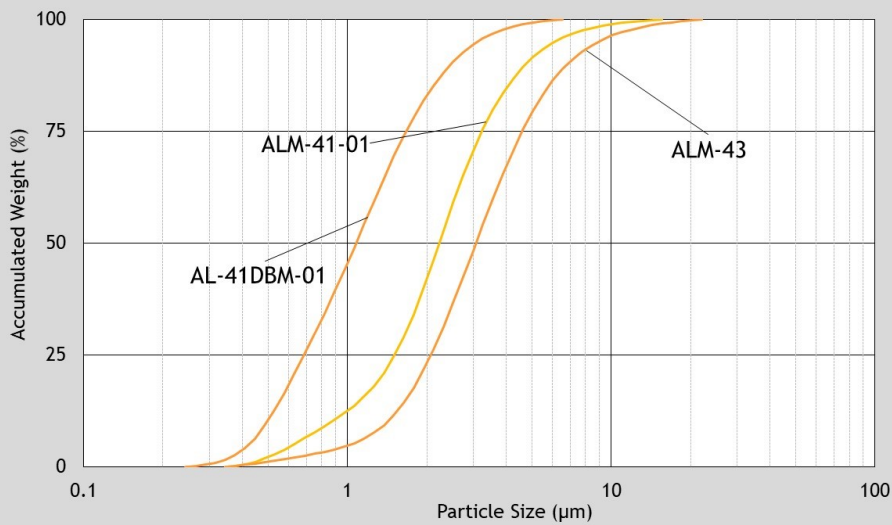
Low Soda / Ground

Typical Properties		Product	ALM-41-01	ALM-43	AL-41DBM-01
Chemical Composition	H ₂ O	[%]	0.08	0.07	0.08
	L.O.I	[%]	0.07	0.05	0.07
	Fe ₂ O ₃	[%]	0.02	0.02	0.02
	SiO ₂	[%]	0.05	0.05	0.05
	Na ₂ O	[%]	0.01	0.01	0.01
	Al ₂ O ₃	[%]	99.9	99.9	99.9
D50 (MT-3300, Laser Diffraction)		[μm]	2.2	3.7	1.3
BET Specific Surface Area		[m ² /g]	1.8	1.2	2.6
α Crystal Size		[μm]	1~2	2~3	1~2
Green Density		[g/cm ³]	2.23	2.27	2.23
Fire Density*		[g/cm ³]	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.



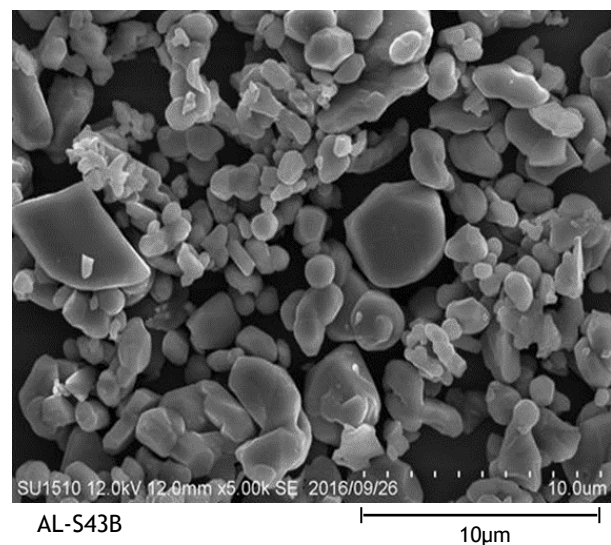
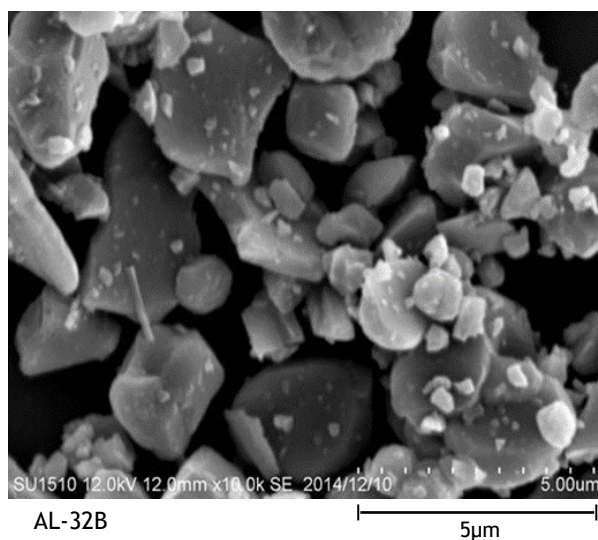
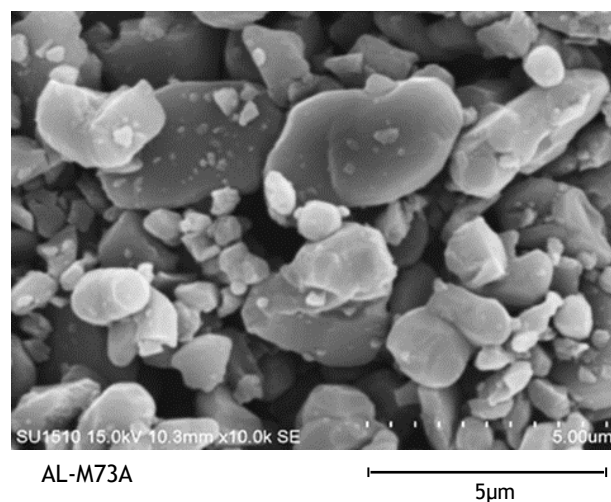
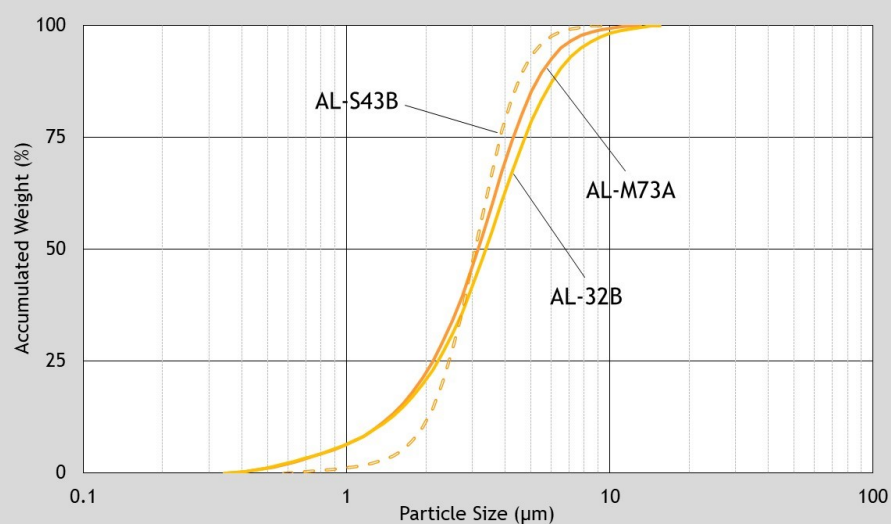
Low Soda / Ground (for Functional Fillers)

Typical Properties		Product	AL-M73A	AL-S43B	AL-32B
Chemical Composition	H ₂ O	[%]	0.07	0.07	0.04
	L.O.I	[%]	0.05	0.05	0.04
	Fe ₂ O ₃	[%]	0.02	0.02	0.02
	SiO ₂	[%]	0.05	0.05	0.05
	Na ₂ O	[%]	0.01	0.01	0.01
	Al ₂ O ₃	[%]	99.9	99.9	99.9
D50 (MT-3300, Laser Diffraction)		[μm]	3.0	3.1	3.4
BET Surface Area		[m ² /g]	1.5	1.3	1.6
+45μm		[%]	0.0	0.0	0.0
α Crystal Size		[μm]	2~3	1.5~2.5	3~4
Packing	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.



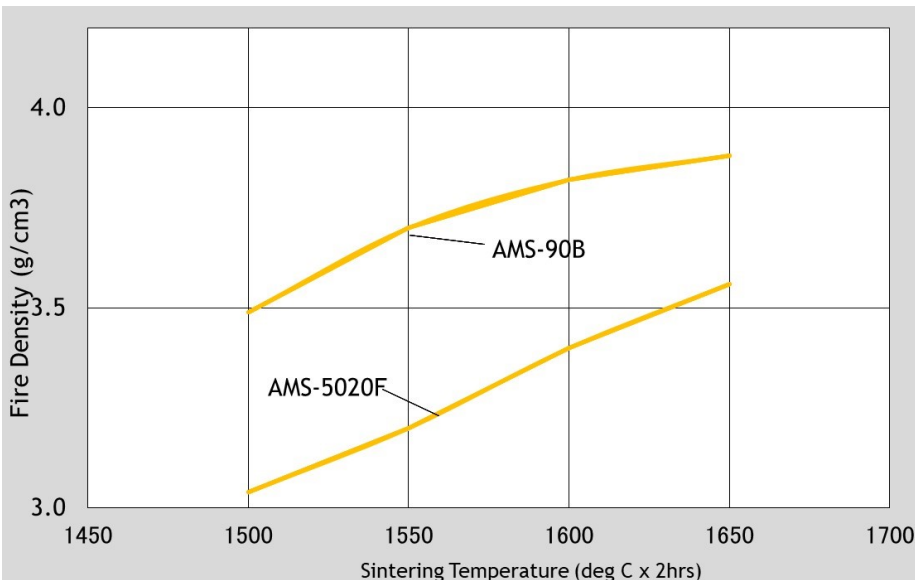
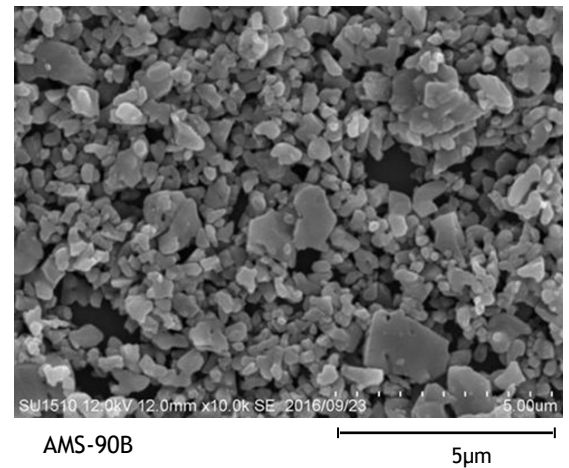
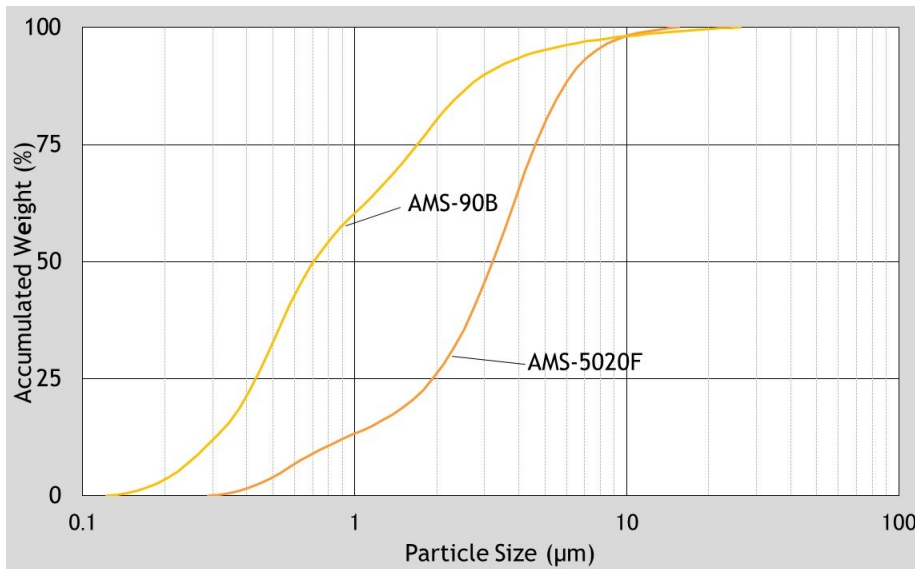
Normal Soda / Easy Sintering (Reactive)

Typical Properties		Product	AMS-5020F	AMS-90B
Chemical Composition	H ₂ O	[%]	0.1	0.1
	L.O.I	[%]	0.1	0.3
	Fe ₂ O ₃	[%]	0.02	0.02
	SiO ₂	[%]	0.02	0.02
	Na ₂ O	[%]	0.27	0.27
	Al ₂ O ₃	[%]	99.6	99.6
Specific Gravity		[-]	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/cm ³]	2.44	2.07
Fire Density*		[g/cm ³]	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.



Low Soda / Easy Sintering (Reactive)

Typical Properties		Product	AES-12	AES-11	AES-11C	AES-11H	AES-23
Chemical Composition	H ₂ O	[%]	0.1	0.1	0.1	0.1	0.1
	L.O.I	[%]	0.1	0.2	0.1	0.2	0.1
	Fe ₂ O ₃	[%]	0.02	0.02	0.02	0.02	0.02
	SiO ₂	[%]	0.04	0.04	0.03	0.04	0.04
	Na ₂ O	[%]	0.04	0.04	0.05	0.04	0.03
	MgO*	[%]	-	0.11	0.05	0.04	-
	Al ₂ O ₃	[%]	99.9	99.9	99.9	99.9	99.9
D50 (MT-3300, Laser Diffraction)		[μm]	0.44	0.43	0.54	0.39	2.2
BET Specific Surface Area		[m ² /g]	6.9	6.7	6.3	5.5	3.4
α Crystal Size		[μm]	0.3	0.3	0.3	0.3	0.3~4
Green Density		[g/cm ³]	2.22	2.22	2.20	2.20	2.57
Fire Density**		[g/cm ³]	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.

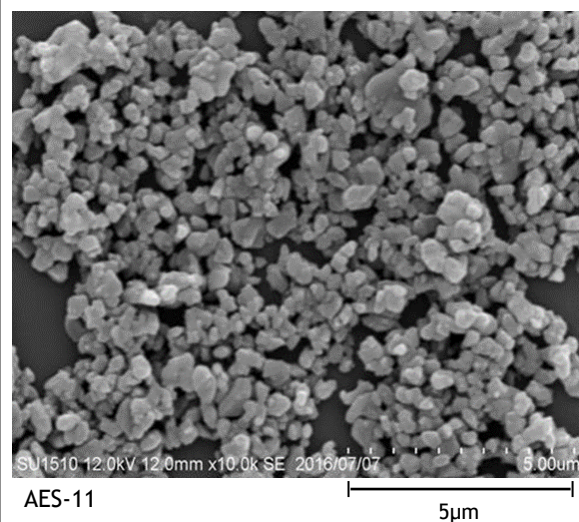
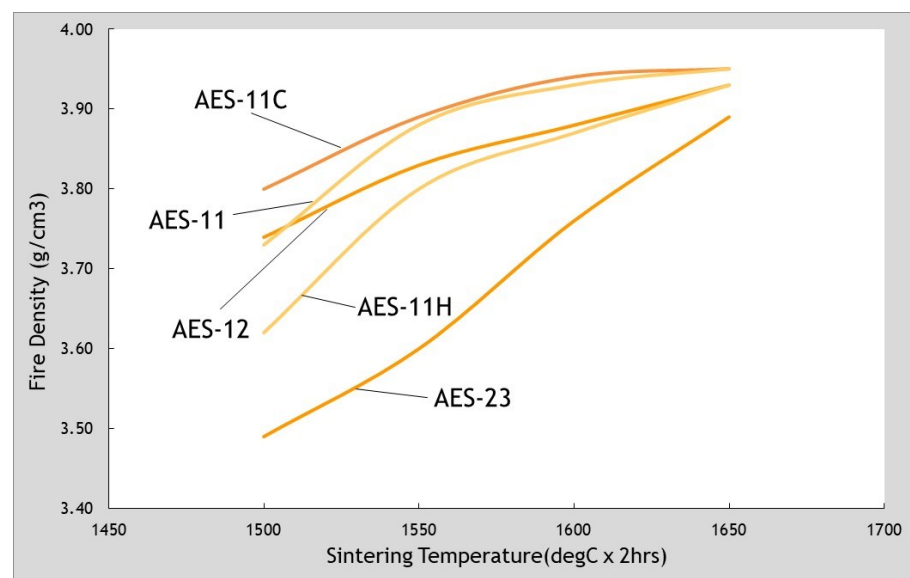
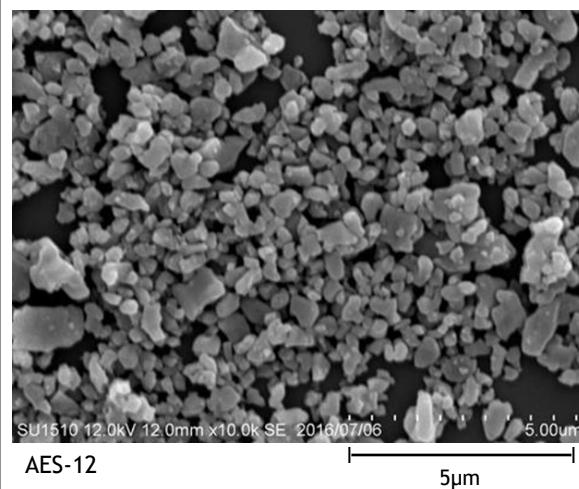
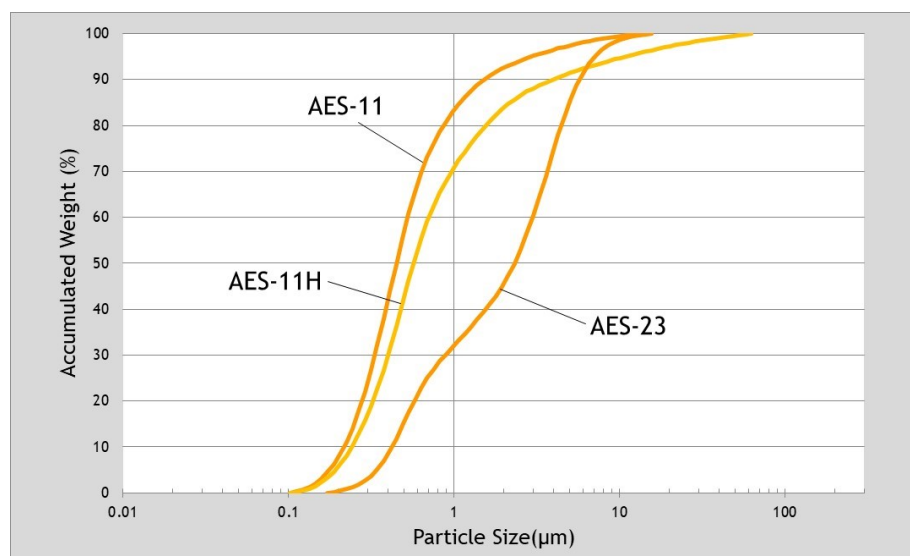
**No flux added, 29.4MPa (300kg/cm²), sample sintered at 1600 deg C.

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.



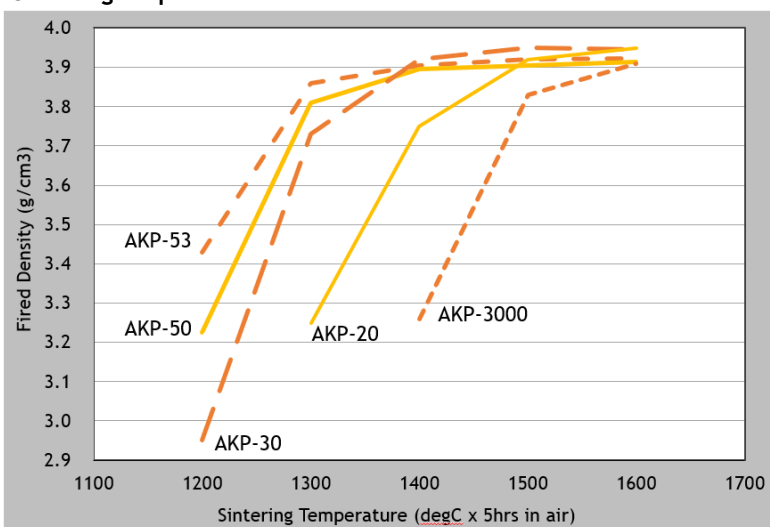
3. High Purity Alumina - HPA

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.

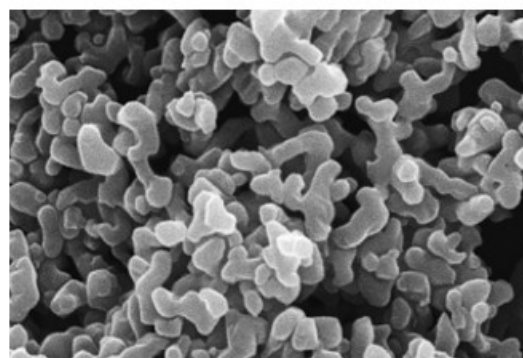
AKP Series

Product		AKP-15	AKP-20	AKP-30	AKP-50	AKP-53	AKP-3000	
Typical Properties								
Crystal Structure		α	α	α	α	α	α	
Purity(Al2O3)	[%]	≧ 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	0.43	
Tapped Bulk Density	[g/cm3]	1.5	1.4	1.3	1.3	1.4	0.81	
BET Specific Surface Area	[m2/g]	3.6	4.6	7.4	11.1	13.7	4.4	
Impurity	Si	[ppm]	20	16	9	10	36	3
	Na		6	3	3	3	3	2
	Mg		3	3	2	2	6	1
	Cu		1	1	1	1	1	1
	Fe		2	2	2	2	3	2
Packing	PE Bag	20kg	20kg	20kg	20kg	20kg	10kg	
	Pail Can							
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

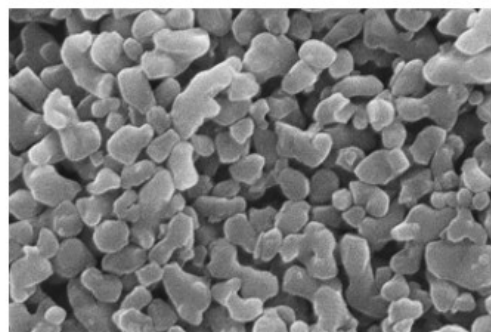


1μm

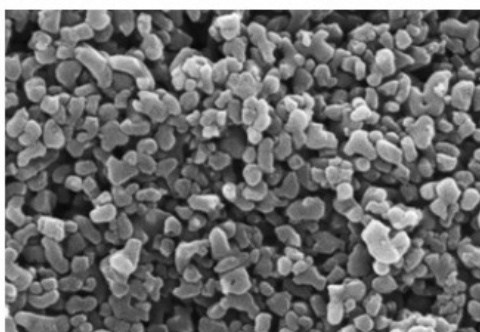
AKP-20

AKP-30

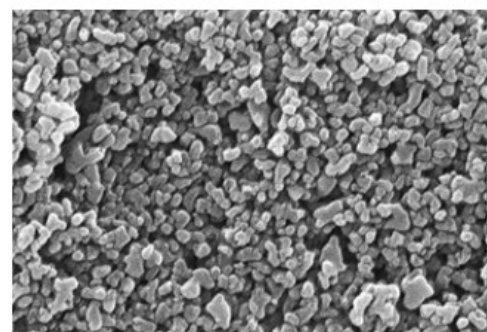
AKP-50



1μm



1μm



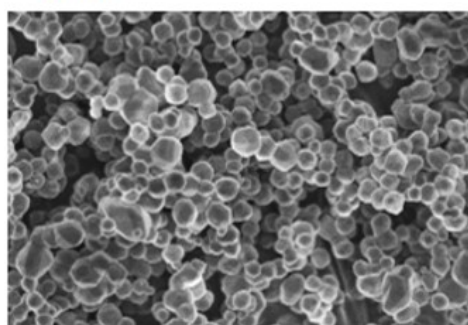
1μm

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

Advanced Alumina (AA)

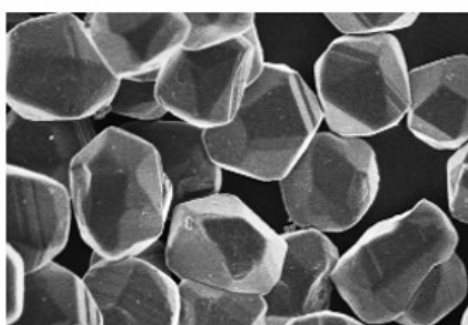
Product		AA-03F	AA-03	AA-04	AA-05	AA-07	AA-1.5	AA-2	AA-3	AA-5	AA-18
Typical Properties											
Crystal structure		α	α	α	α	α	α	α	α	α	α
Purity(Al_2O_3)	[%]	≥ 99.99	≥ 99.99	≥ 99.99	≥ 99.99	≥ 99.99	≥ 99.99	≥ 99.99	≥ 99.99	≥ 99.99	≥ 99.99
D50 (MT3300)	[μm]	0.26	0.40	0.47	0.58	0.88	1.7	2.2	3.5	6.6	20.3
Loose Bulk Density	[g/cm ³]	1.1	0.5	0.5	0.6	0.6	0.6	0.7	0.7	1.3	1.9
Tapped Bulk Density	[g/cm ³]	1.4	0.9	1.0	1.1	1.2	1.5	1.5	1.5	2.0	2.4
BET Specific Surface Area	[m ² /g]	6.2	5.6	4.6	3.2	2.2	1.3	1.1	0.6	0.4	0.2
Impurity	Si	[ppm]	14	4	4	4	9	11	22	22	17
	Fe	[ppm]	4	2	2	2	3	2	3	2	2
	Na	[ppm]	3	3	3	3	3	3	3	3	3
	Mg	[ppm]	1	1	1	1	1	1	1	1	1
	Cu	[ppm]	1	1	1	1	1	1	1	1	1
Packing	PE Bag	20kg	20kg	20kg	20kg	20kg	20kg	20kg	20kg	20kg	
	Pail Can										20kg
Application		High-strength and High-density Ceramics, Translucent Ceramics, Resin filler(Thermal Conductive Materials), Plasma Spray, Ceramic Filter, etc.									

AA-04



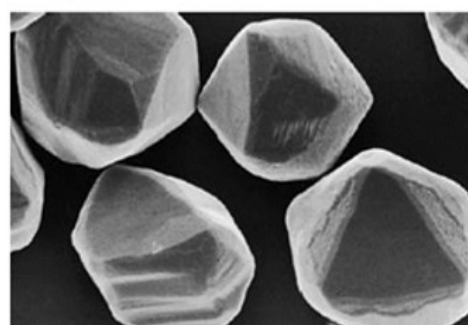
1 μm

AA-3



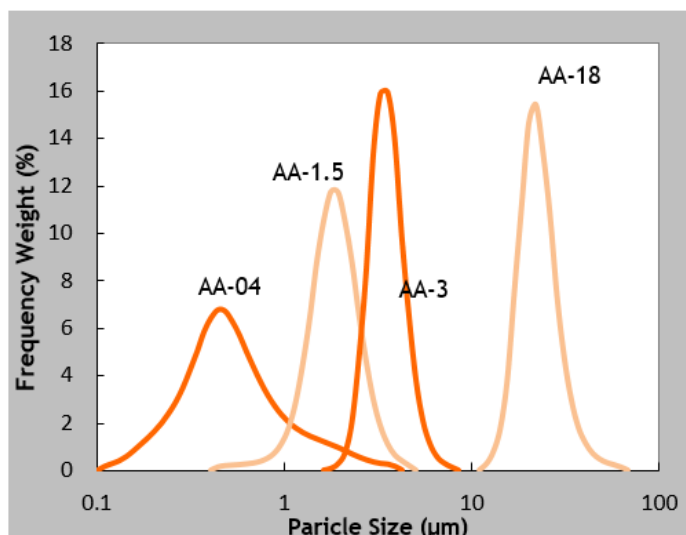
2 μm

AA-18

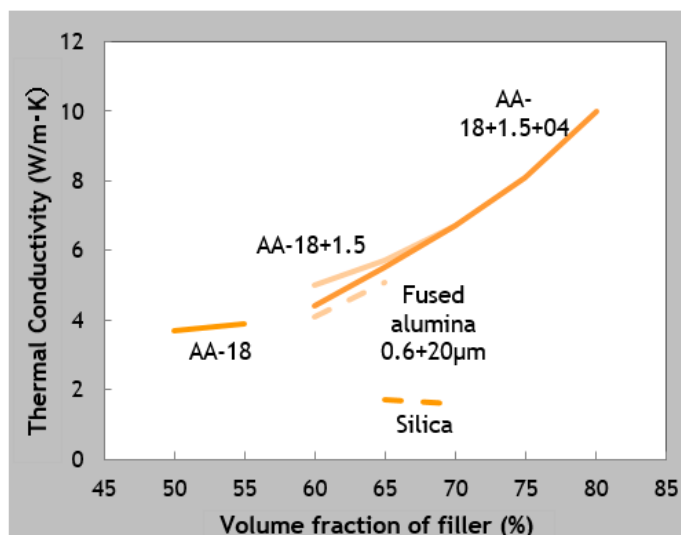


20 μm

Particle Size Distribution



Thermal Conductivity

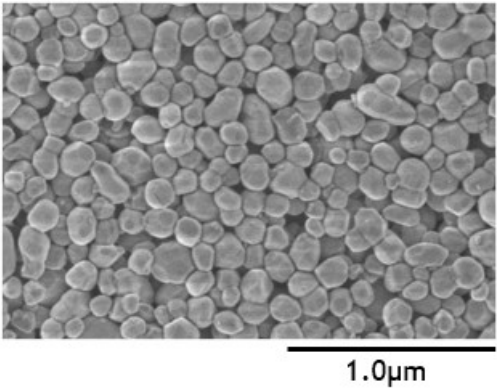


NXA is almost-spherical fine α -alumina crystals with good dispersion. New Product, NXA-E, with even better dispersion is also available (data sheet is upon request.)

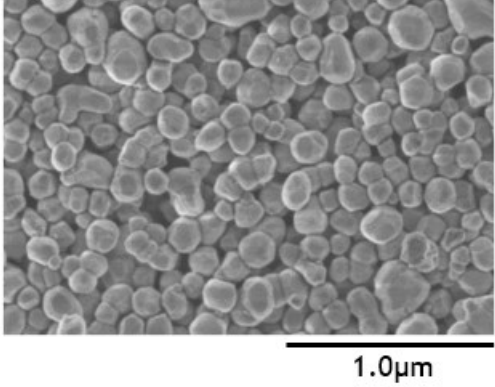
NXA Series

Product		NXA-100	NXA-150
Typical Properties			
Crystal structure		α	α
Purity(Al2O3)	[%]	≥ 99.99	≥ 99.99
D50 (MT3300)	[μm]	0.21	0.23
Loose Bulk Density	[g/cm3]	1.0	1.0
Tapped Bulk Density	[g/cm3]	1.3	1.3
BET Specific Surface Area	[m2/g]	10.8	9.7
Impurity	Si	[ppm]	12
	Fe	[ppm]	3
	Na	[ppm]	< 3
	Mg	[ppm]	2
	Cu	[ppm]	< 1
Packing	AL Laminated Bag	20kg	20kg
Application		High-strength and High-density Ceramics, Translucent Ceramics, Resin Filler(Thermal Conductive Materials), Precision Abrasives, etc.	

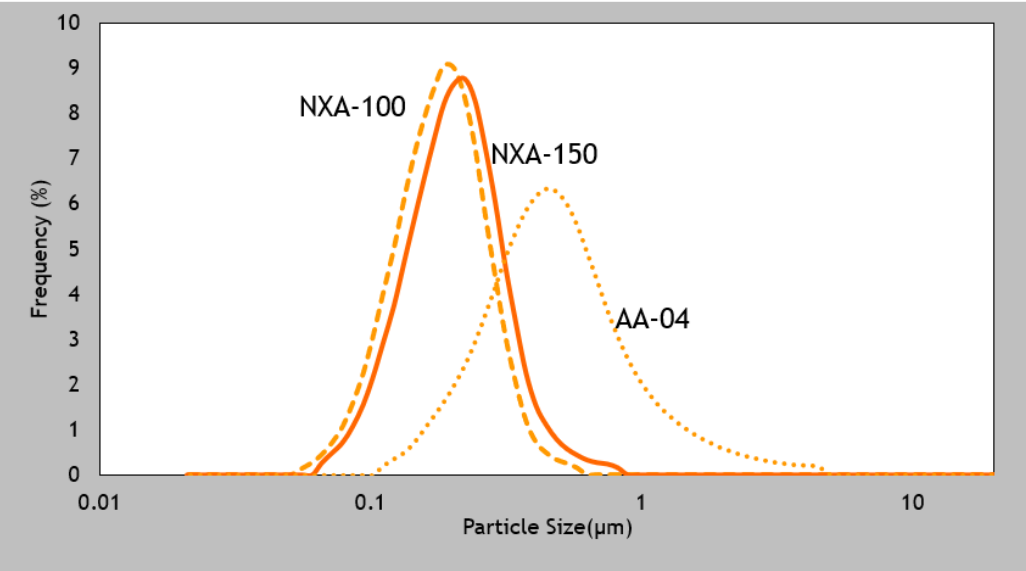
NXA-100



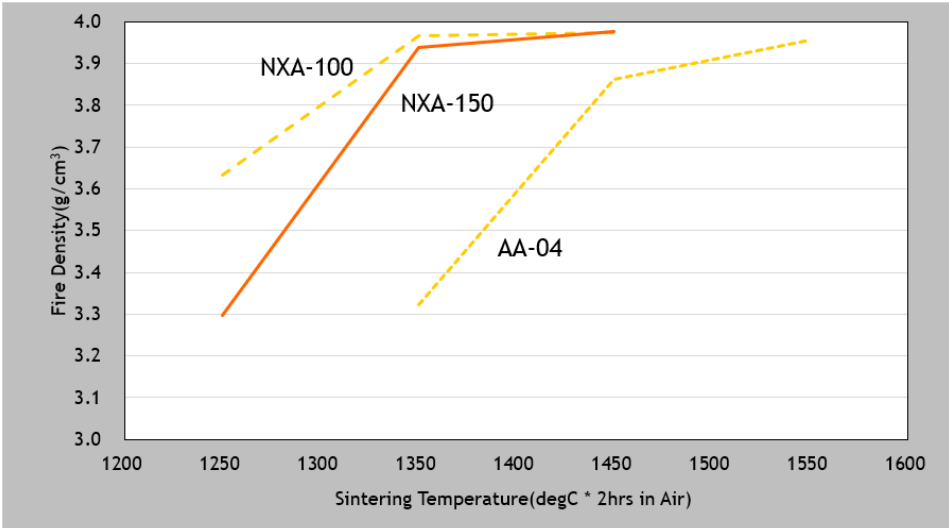
NXA-150



Particle Size Distribution



Sintering Properties



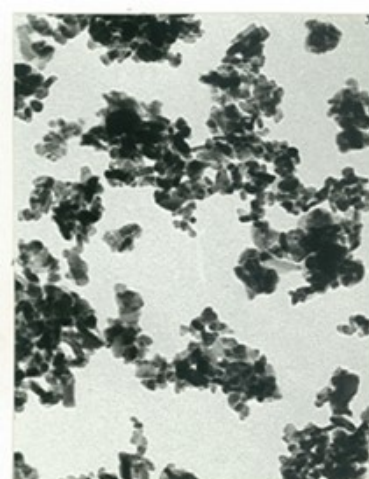
Gamma HPA

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



AKP-G15

0.1μm

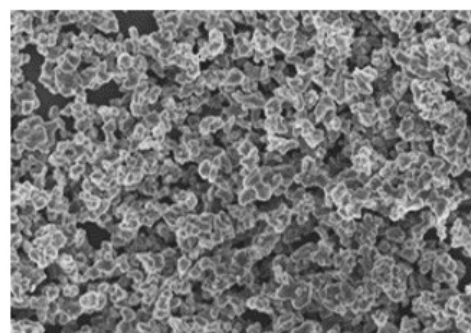


AKP-G07

0.1μm

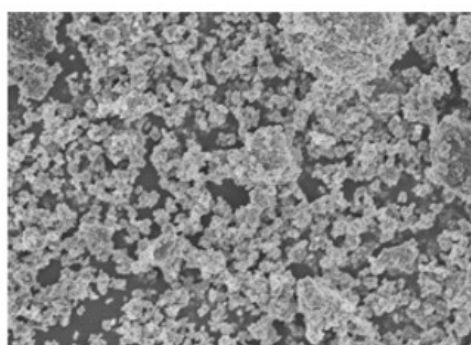
HIT Series

Product		HIT-60A	HIT-100
Typical Properties			
Crystal Structure		α	α
Loose Bulk Density	[g/cm ³]	0.8	0.9
Tapped Bulk Density	[g/cm ³]	1.1	1.2
BET Specific Surface Area	[m ² /g]	12.5	36.1
Packing		15kg PE Bag	20kg Pail Can
Application		Abrasive, etc.	



HIT-60A

1μm

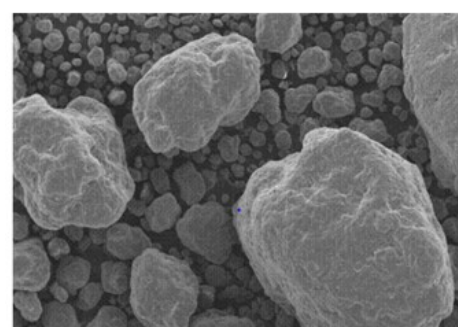


HIT-100

1μm

High Bulk Density for Single Crystal

Product		AKX-5	
Typical Properties			
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
	Na	[ppm]	3
	Mg	[ppm]	1
	Cu	[ppm]	1
	Fe	[ppm]	3
Packing		100kg Fiber Drum	
Application		Single Crystal	



AKX-5

1mm

4. Activated Alumina / Hydraulic Alumina

Activated Alumina : Powder Shape

Product			Powders				Chromatography Grade	
Typical Properties			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
	Fe ₂ O ₃	[%]	0.01	0.02	0.02	0.02	0.02	0.02
	SiO ₂	[%]	0.02	0.02	0.02	0.02	0.02	0.02
	Na ₂ O	[%]	0.45	0.26	0.26	0.26	0.26	0.26
	Al ₂ O ₃	[%]	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/cm ³]	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	[m ² /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 adsorbed ↑	organic acid	PO ₄ ⁻³	F ⁻
	water		
	alcohol	F ⁻	
	amine		
	mercaptan	[Fe (CN) ₆] ⁻⁴	
	aldehyde		
	ketone	SO ₄ ⁻²	Cl ⁻
	ester		
	ether	[Fe (CN) ₆] ⁻³	
	aromatic hydrocarbon	Cr ₂ O ₇ ⁻²	Br ⁻
Difficult to be adsorbed ↓	sulfide	Cl ⁻	
	organic halogen		
	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.

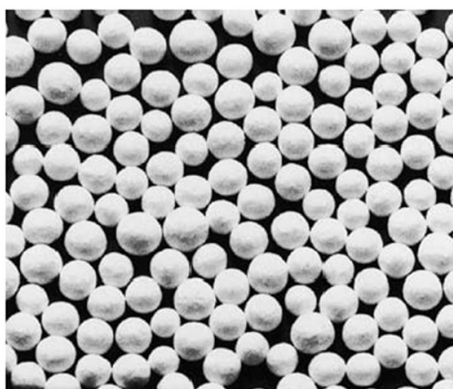
Adsorption order example as follows.
 -SO₃H > -COOH > -OH, -NH₂, -SH > -CHO
 > -CO > -COOR > -S-, -O- > -X
 > Unsaturated hydrocarbons
 > Saturated hydrocarbons

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.

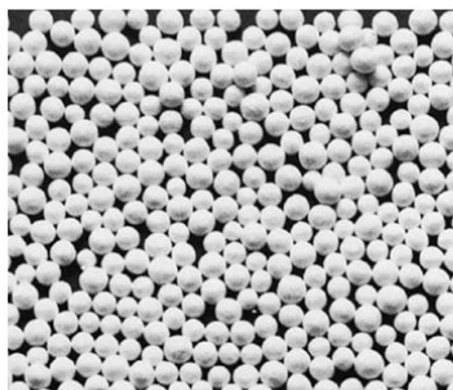
Activated Alumina : Spherical Shape

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
	Fe ₂ O ₃	[%]	0.05
	SiO ₂	[%]	0.01
	Na ₂ O	[%]	0.25
	Al ₂ O ₃	[%]	99.7
Physical Properties	True specific gravity		3.0
	Apparent specific gravity (Packed bulk density)	[g/cm ³]	1.0
	Mean particle size	[μm]	16
Packing		Drum	150kg
		Pail Can	15kg
		Paper Bag	20kg

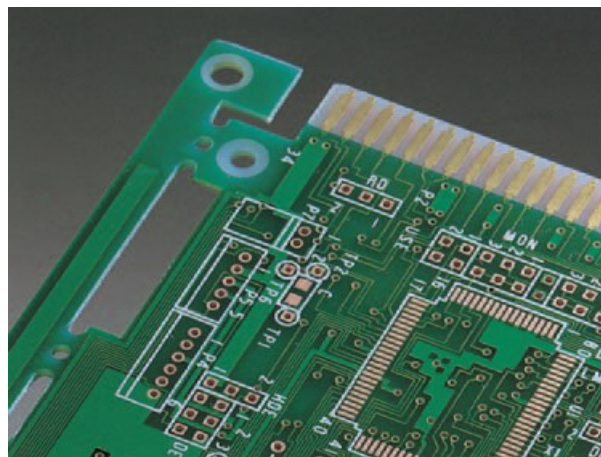
An alumina powder with a large surface area and some crystal water.

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-Al ₂ O ₃)	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.



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
2-7-1, Nihonbashi, Chuo-ku, Tokyo, 103-6020, Japan
Alumina Products Dept. +81 3 5201 0259
High Purity Material Dept. +81 3 5201 0260



◆ Activated Alumina / Hydraulic Alumina Sumika Alchem Co., Ltd.

1-8, Nihonbashi Koamicho, Chuo-ku, Tokyo, 103-0016, Japan
TEL +81 3 6837 9340 FAX +81 3 6837 9341

