

Reactive Alumina For Advanced Ceramics LISAL™

1 Description

Alumina is one of the most important oxide materials used for advanced ceramics. Alumina-based ceramics feature good mechanical strength, hardness, abrasion resistance, thermal properties and electrical insulation properties. LISAL™ alumina are designed to be low-sodium ground fines with specified particle size distribution and thermal activity.

LISAL™ R series are high-purity sub-micron grade alumina designed for applications that require high density, low firing temperature, and modest amount of flux. The unique sintering feature enables LISAL™ R to achieve high mechanical strength and homogeneous microstructure.

LISAL™ C series are high-purity micron grade (1~2um) alumina designed for electronics, electronic substrates, and wear-resistant parts. They feature high conversion rate, strictly controlled particle size distribution, good fluidity, and thermal stability, allowing them to be processed in rolling, casting, dry pressing, isostatic pressing, hot die casting, and grouting.

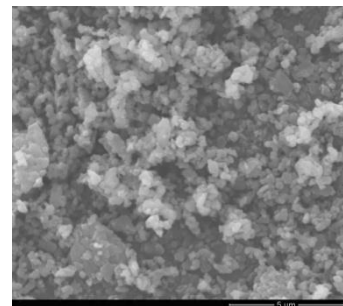
2 Application

electronics, advanced wear-resistant parts, semiconductors and other precision ceramics.

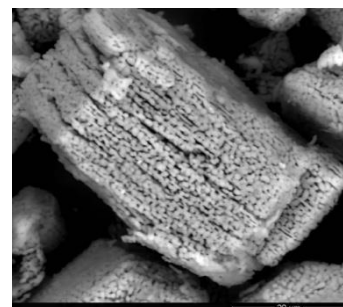


Product Information

3 Product Picture



LISAL™ R05SG



LISAL™ C15

4 Packaging and Storage

Convenient packages of 25kg paper/plastic woven bag as well as 1mt bulk bag are available. Other customized packages are provided upon request.

For best product performance and longer shelf life, re-packing is not recommended.

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Product Information

5 Chemical & Physical Properties

Method for determining the crystallite size and ceramic properties of alumina from Zhejiang Zili Advanced Materials Co., Ltd.:

Grinding conditions: 100g alumina, 900g grinding ball; capacity 1L
 Crystal size: D50 measured by Mastersizer 3000 laser particle size tester
 Green density*: Uniaxial compression 28MPa
 Sintering density*: 1670°C for 1h

Except for Lisal™ R series: Pressed at 35MPa, 2h at 1540°C

The green density and sintered density measured by the above methods may be slightly different from typical industrial values.

LISAL™ R Series

Product		LISAL™ R05SG	LISAL™ R06SG	LISAL™ R06LSG
Physical Properties				
Surface Area BET	m ² /g	7.5	6.0	6.0
Particle Size D50	μm	0.5	0.6~0.8	0.6~0.8
Chemical Properties				
Al ₂ O ₃	%	99.8	99.8	99.9
Na ₂ O	%	0.05	0.05	0.02
CaO	%	0.02	0.02	0.01
SiO ₂	%	0.03	0.03	0.02
Fe ₂ O ₃	%	0.01	0.01	0.01
MgO	%	0.05	0.045	0.04
Ceramics Properties				
Original Crystal D50	μm	0.5	0.6	0.6
Unfired Density	g/cm ³	2.10	2.12	2.12
Sintering Density	g/cm ³	3.90	3.85	3.86
Linear Shrinkage	%	18.7	17.5	17.7

*Mastersizer 3000 Laser Particle Size Analyzer is used to measure particle size/D50, and Micromeritics Gemini VII 2390 Specific Surface Area and Porosity Analyzer is used to measure the specific surface.

** The green density is tested at 35 Mpa of pressure; The sintered density and linear shrinkage is measured after firing at 1540°C for 2h without flux.

All data is based upon Zhejiang Zili Advanced Materials Co., Ltd standard test methods. The typical properties are based upon the actual averages from the production data.

6 Chemical & Physical Properties

LISAL™ C series

Products		LISAL™ C15SG	LISAL™ C20FG	LISAL™ C25FG
Physical Properties				
Surface Areas BET	m ² /g	3.0	2.0	1.8
D50 Granularity D50	μm	1.4	1.9	2.3
Chemical Properties				
Al ₂ O ₃	%	99.7	99.7	99.7
Linear Shrinkage	%	16.0	15.0	12.2
Na ₂ O	%	0.06	0.06	0.08
CaO	%	0.05	0.03	0.03
SiO ₂	%	0.08	0.08	0.09
Fe ₂ O ₃	%	0.02	0.02	0.02
Ceramic Properties				
D50 Original Crystal Grain Size D50	μm	1.2	1.5	2.0
Unfired Density	g/cm ³	2.23	2.21	2.20
Sintering Density	g/cm ³	3.82	3.41	3.23

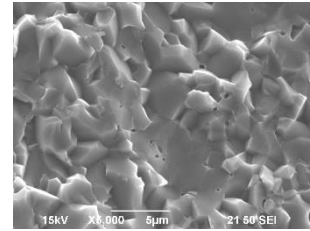
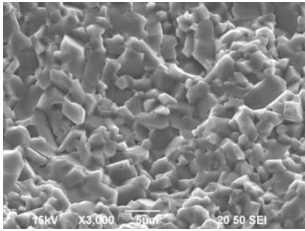
*Mastersizer 3000 Laser Particle Size Analyzer is used to measure particle size/D50, and Micromeritics Gemini VII 2390 Specific Surface Area and Porosity Analyzer is used to measure the specific surface.

** The green density is tested at 28 Mpa of pressure; The sintered density and linear shrinkage is measured after firing at 1670°C for 1h without flux.

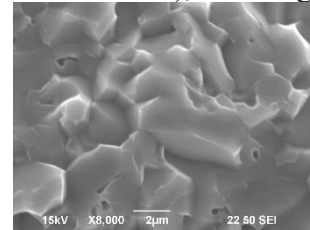
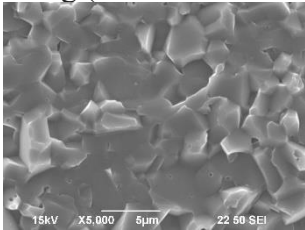
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7 Application Example

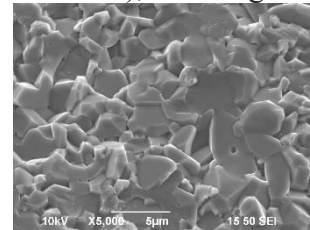
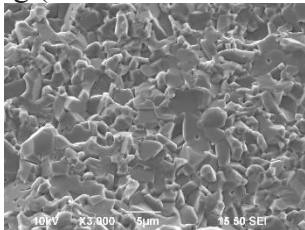
Microstructure of wet-formed ceramic:



Wet forming (solid content 56vol%, PAA dispersion pressure 0.1 MPa*2h), sintering at 1550°C*2h



Wet forming (solid content 56vol%, PAA dispersion pressure 0.4 MPa*2h), sintering at 1550°C*2h



Wet forming (solid content 56vol%, PIBM dispersion pressure 0.4 MPa*2h), sintering at 1550°C*2h

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Certification



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Shipping



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Contacts for Sales, Technical Service

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