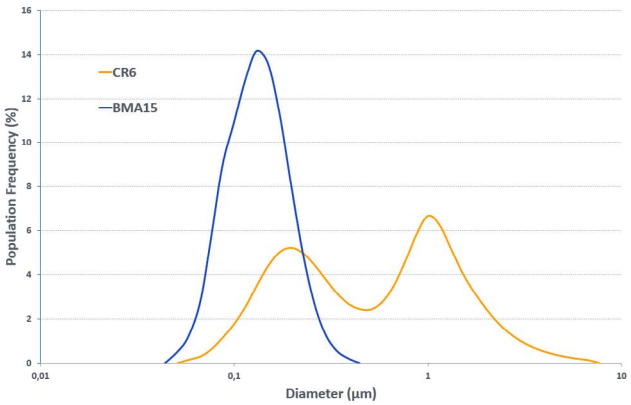
Characteristics

> Thanks to our use of three different Baikowski® **process routes** (Alum, Bayer Modified and Aluminium Hydrolysis), all our High Purity Alumina products are **controlled in**:

- Particle size & particle size distribution (PSD)
- Chemical purity (3N, 4N and beyond)
- Crystalline phase
- Specific surface area (wide range of SSA available)
- Morphology

> Example of particle size distributions



Baikalox® range

Process route		Alum route													
Baikalox® products (Typical values)		**A**	**GE**			**CR**				**BA**		**BRA**	**BMA**	**SM**	**SMA**
Product name		A125	GE30	GE6	GEA6	CR125	CR30F	CR6	CR1	BA20	BA15	BRA105	BMA15	SM8	SMA6
Chemical Purity		4N													
Crystalline phase (%) γ/α		100/0	20/80	0/100		100/0	20/80	0/100		3/97	0/100	90/10	0/100		
Specific Surface Area (m^2/g) *BET*		106	25	6	6	105	26	6	3	21	15	95	15	10	7
PSD (µm)	d_{50}	2.0	4.5	8.0	8.0	1.0	0.2	0.5	1.0	4.5	4.5	1.0	0.1	0.2	0.2
Bulk density (g/cm^3)		0.2	0.3	0.4	0.3	0.1	0.3	0.6	0.6	0.3	0.3	0.2	0.8	0.8	0.9
Tapped density (g/cm^3)		0.3	0.6	0.7	0.4	0.2	0.5	0.8	1.0	0.5	0.5	0.3	1.1	1.1	1.3
Elemental Analysis (ppm) *ICP*	Na	10	12			12				13		12	10	13	
	Si	12	18			20				12		15	5	22	
	Fe	4	4			4				5		4	5	6	
	Ca	2	2			2				2		2	4	4	
	K	20	18			20				18		20	15	11	

This is only an overview of the existing range.
Please contact our sales department for more information.


Baikowski®

Process route		Bayer Modified route									Aluminium Hydrolysis route		
Baikalox® products (Typical values)		HP		TCP				LS	PB		SA		
Product name		HP DBM	HPT DBM	TCP DBM	TCP-LS DBM	TCPT DBM	TCPT-LS DBM	LSDBM	PB8 DBM	PB12 DBM	SA80	SA8 DBM	SA5 DBM
Chemical Purity		3N									4N		
Crystalline phase		α									Transition	α	
Specific Surface Area (m^2/g) *BET*		8	4	7	9	4	4	3	8	12	80	8	5
PSD (µm)	d_{50}	0.4	0.8	0.4	0.4	0.8	0.8	1.2	0.3	0.3	20.6	0.3	0.8
Green density (g/cm^3) *(Uniaxial pressing at 350 bar)*		2.2	2.3	2.2	2.2	2.3	2.3	2.3	2.2	2.0	-	2.2	2.2
Fired density (g/cm^3) *(Sintered at 1510°C for 2h)*		3.95	3.85	3.90	3.90	3.85	3.85	3.80*	3.95	3.92	-	3.94**	3.82
Linear Shrinkage (%)		17.5	16.0	17.5	17.5	16.0	16.0	15.4	18.5	20.7	-	17.4	15.6
Elemental Analysis (ppm) *ICP*	Na	30		600	30	600	90	175	43		5		
	Si	30		15		25		340	10		15		
	Fe	40		80				90	80		3		
	Ca	25		45				380	50		3		

This is only an overview of the existing range.
Please contact our sales department for more information.

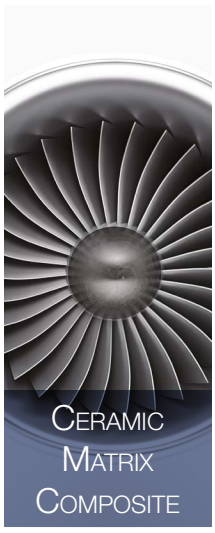
**Sintered at 1620°C for 1.5h*

*** With MgO addition (500ppm)*

Applications

> Baikalox® is designed for:

- **Thermal** conductivity
- **Dielectric** properties
- **Mechanical** properties (as a filler in a matrix, or in a ready to use polishing solution thanks to alumina intrinsic hardness)
- **Optical** properties (visible & IR)
- **Sintering** properties (high reactivity at low temperature)



SLAz | Baikalox® Alumina Slurries & Nano-Zirconia Doping

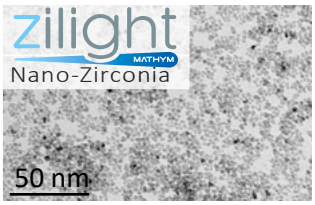
Characteristics

> SLAz are tailor made slurries of high purity fine alpha alumina with nano-zirconia:

- Customized ratio of nano-zirconia in fine alpha alumina matrix
- Customized solid loading

***For specific uses, Baikowski® can provide ready-to-disperse powders*

> Particle size distribution



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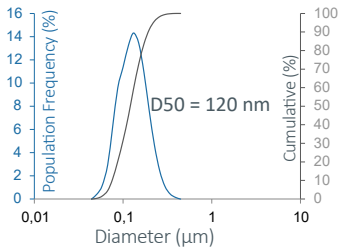
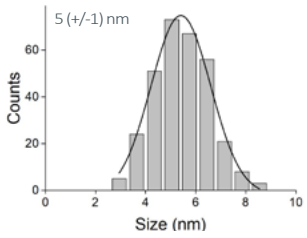
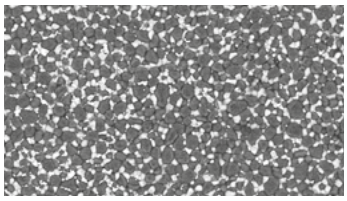


PSD – Laser Diffraction

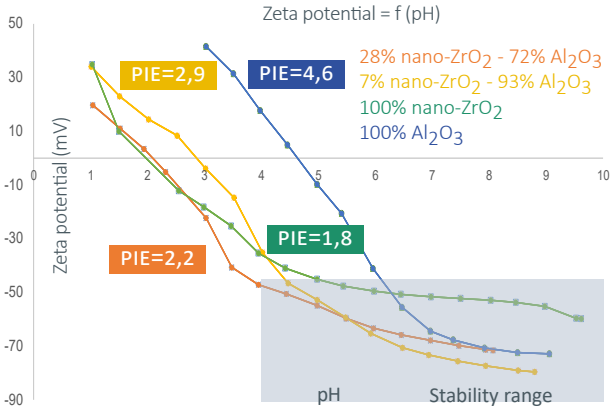


PSD – DLS

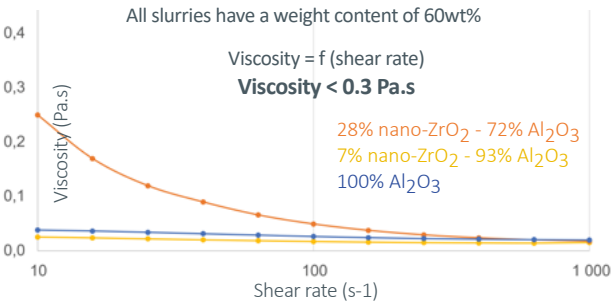
> Nano-Zirconia is homogeneously reparted into the alumina matrix



> The SLAz slurries are stable on a large range of pH : from 4 to 10



> Low viscous slurries (η< 0.3 Pa.s) and small impact of the nano-ZrO_2 on the viscosity for slurry's processability.



Applications

> The SLAz range highlights exceptional properties, especially for CMC applications.

Product Design

Any technical challenges? Ask for a custom SLAz slurry design that suits your process and application.

Baikowski

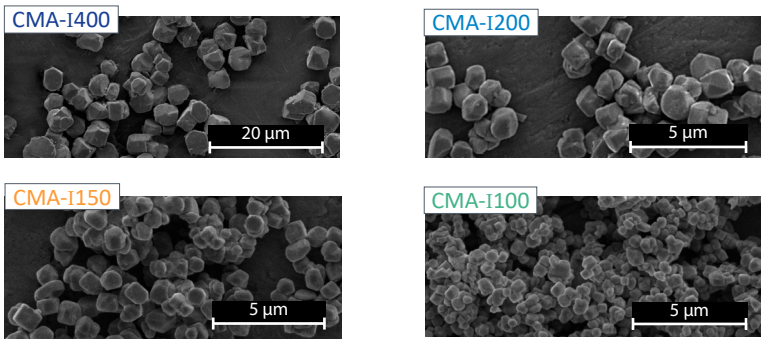
CMA® Controlled Morphology Alumina

Characteristics

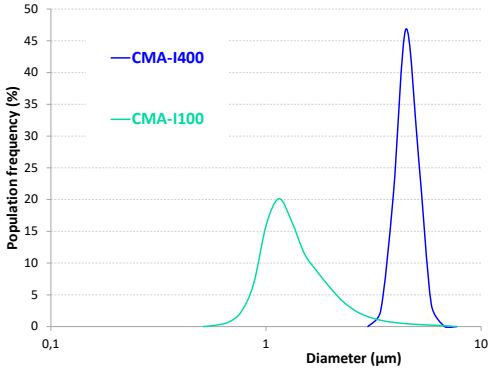
Standard CMA® products (Typical values)		CMA-I400	CMA-I200	CMA-I150	CMA-I100
Crystalline phase (%)		100% α			
Specific Surface Area (m^2/g) *BET*		0.7	1.8	2.0	3.1
PSD (µm)	d_{50}	4.0	2.0	1.5	1.0
Bulk Density (g/cm^3)		1.0	0.7	0.6	0.6
Tapped Density (g/cm^3)		1.9	1.3	1.2	1.0
Elemental Analysis (ppm) *ICP*	Na	14	14	14	14
	Si	350	250	150	150
	Fe	4.0	4.0	4.0	4.0
	Ca	40	40	44	42
	K	15	15	15	15

> CMA® Controlled Morphology Alumina characteristics include all the Baikalox® specifications, plus:

- Shape and Morphology control: **Icosahedral form**
- Monomodal distribution
- Range of mean particle size from 0.5 to 5µm
- High crystallinity
- Low viscosity



> Particle Size Distribution



Applications

> CMA® range has a **high sintering reactivity at low temperature** thanks to its high tapped density, icosahedral form and its tight PSD.

It enables **maximized powder stacking** by reducing intergranular spaces.

Thus, **the porosity** of your ceramic parts and your coatings can be **well controlled**.

Baikowski® can also design **CMA® upon request** with **other shapes**, close to ideal structures:

- Spherical (CMA-S)
- Ellipsoidal (CMA-E)

Baikowski®

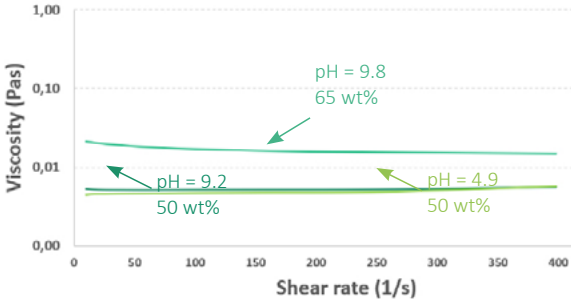
Ready-To-Use Solutions
SLA | Alumina Slurries

Characteristics

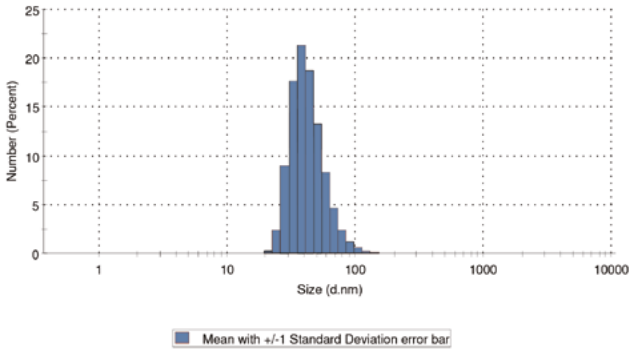
> SLA products are high purity alumina slurries featuring **submicronic particles**. The SLA range has the particularity to offer **customized** characteristics:

- Controlled particle size and size distribution
- pH (acidic or basic)
- Solid loading
- Viscosity
- Crystalline phase (α, γ)
- Chemical purity (3N, 4N and beyond)
- Specific surface area (wide range of SSA available)

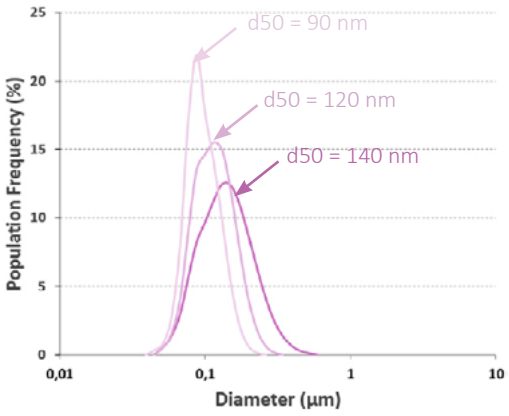
> Example of viscosity curves for **alpha alumina slurries**



> Particle size distribution of a **gamma alumina slurry** (DLS)



> Particle size distribution of **alpha slurries** (Horiba)



Applications

> Baikowski® is able to design fine alumina slurries upon request to match your application needs & process such as:

- Chemical compatibility (pH...)
- Viscosity
- Particle Size Distribution (PSD)
- Doping
- Crystalline phase


Coating


CMC


Technical Ceramics

Any particular process issue? Looking for an acidic or basic slurry with low viscosity & high solid loading? Let us know your requirements and we will design, together, the best solution for your needs.

Baikowski®

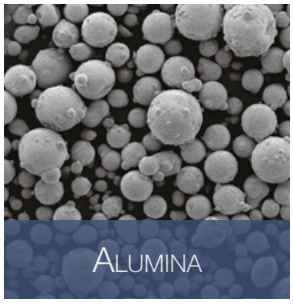
High Purity Alumina | ZTA/ATZ | Spinel

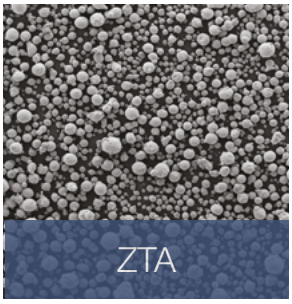
Ready-To-Use Solutions
Spray-Dried Powders
(including Ready-To-Press powders)

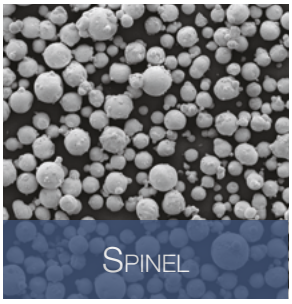
Characteristics

> Whatever your needs, we manufacture wet, jet and ball milled powders, as well as **spray-dried (binder free) and Ready-To-Press (RTP)** solutions for our main product ranges : **high purity alumina, ZTA/ATZ, zirconia, mullite and spinel.**

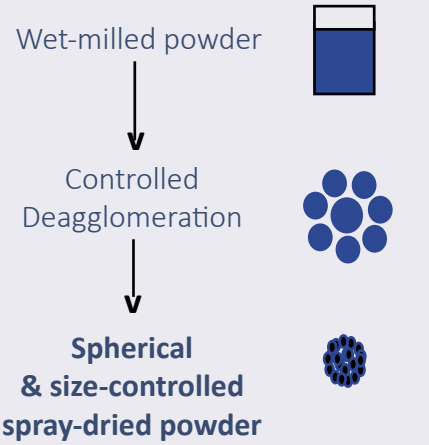
> Thanks to the very good **flowability** of these ready-to-use products, outstanding **sintered density parts** can be produced.







> Spray-drying process



Applications

> Spray-dried powders enable the design of **innovative materials** in many applications, including bioceramics, technical ceramics, injection molding, 3D printing, batteries and provide a perfect **consistency** of your final products.

Baikowski® can design custom spray-dried solutions that meet the physichochemical properties required for your application & process such as:

- Particle Size Distribution (PSD)
- Sinterability
- Flowability
- Optimized ceramic shaping behaviour
- Doping (mechanical reinforcement, coloring...)

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