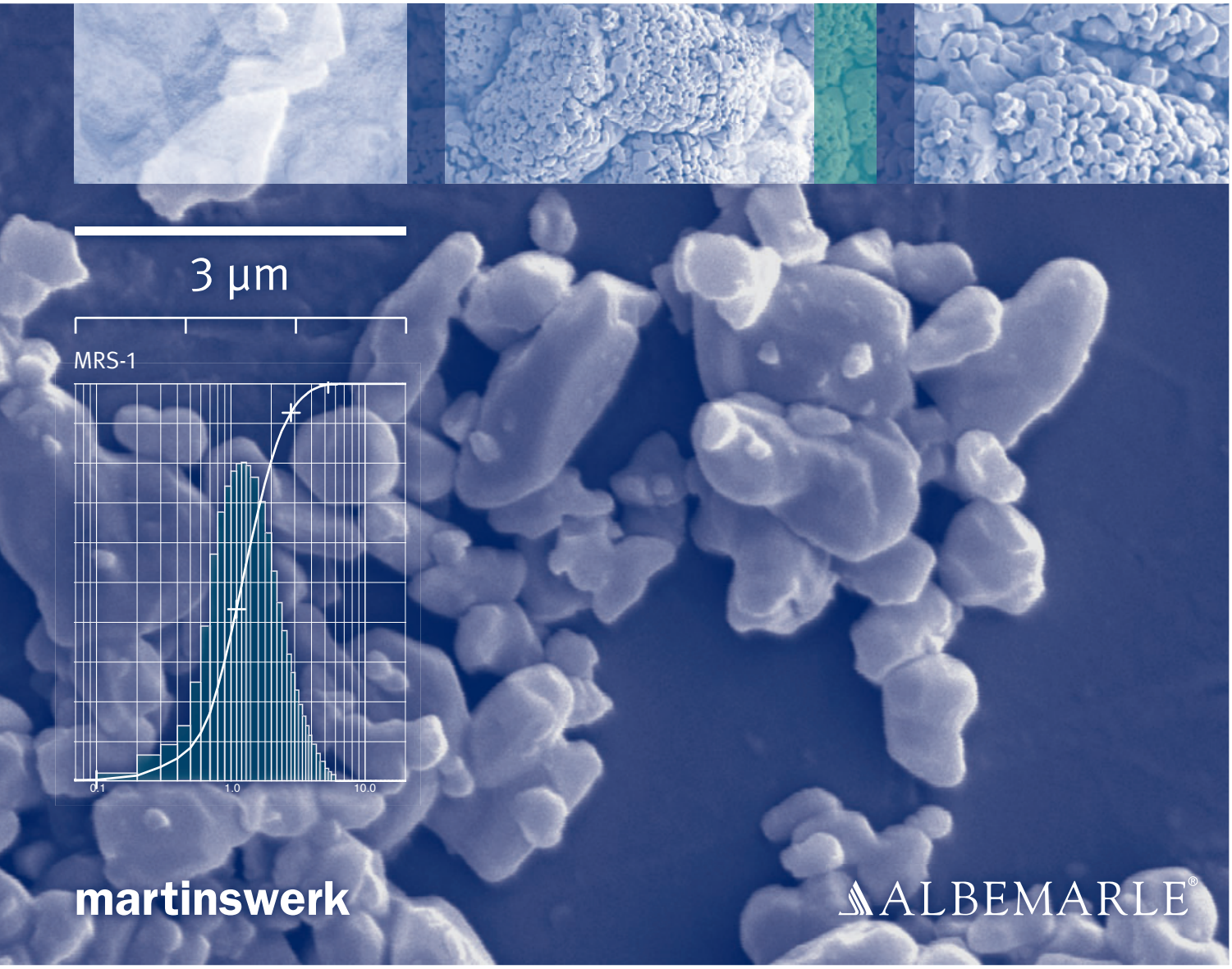
NEW

MARTOXID MRS/MRS-1

Best in class for ceramic processing

- Easy to grind
- Easy to sinter

Alumina grades



martinswerk

ALBEMARLE®

MARTOXID MRS/MRS-1

The Newest Members of Martinswerk's Very Low Soda Aluminas

MARTOXID MRS (unground) and MRS-1 (super ground) are alumina powders specifically designed to meet our customers' particular requirements in high performance applications in ceramics and refractories. They are well suited for the manufacture of performance ceramics used in sophisticated electronic applications, ballistics, and engineering components.

MARTOXID MRS

Advanced control techniques used in our specialized production process guarantee a reactive powder with a tightly controlled primary crystal size, a super low soda content, and a minimum purity of 99.9% Al_2O_3. Impurities of foreign oxides such as Fe_2O_3, SiO_2, CaO, and MgO are minimized. Its agglomerates, based upon a pattern of spherically shaped primary particles that are less inter-welded, are easy to break and to de-agglomerate into primary crystals, milling readily to a super ground powder. This characteristic produces a product, which is exceptionally easy to sinter.

MARTOXID MRS-1

The super ground version, MRS-1, meets the acceptance of many high-end ceramic applications. Its outstanding sintering properties result in a homogeneous and micro-crystallized structure free of defects. Furthermore, the well-developed microstructure promotes excellent mechanical and electrical properties. The spherical shape of MRS-1 also makes it an outstanding performer as a sub-micron filler in resins, plastics, and paints. This same morphology provides enhanced characteristics when used in medium-soft polishing applications as well.

The MRS-grades are the powders of choice when producing powders that meet the highest product quality standards.

MARTOXID MRS/MRS-1

Alumina

Purity of 99.9% Al_2O_3

Grades

- MRS
- MRS-1

Properties

- Very Low Soda (< 0.03%)
- Equigranular, Roundish Primary Crystals
- Superior Grindability
- Good Workability
- High Sintering Reactivity
- Microcrystalline Ceramic Structure
- High Mechanical Strength
- Excellent Electrical Properties
- Corrosion Resistance
- Excellent Price Performance Ratio

Applications

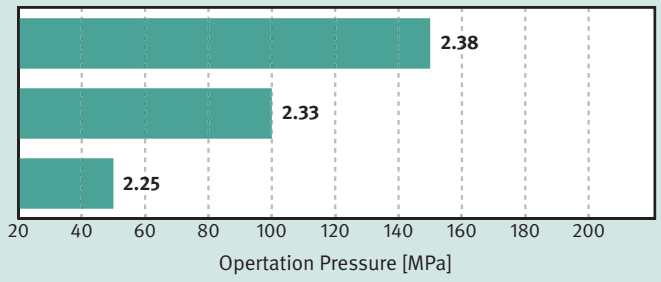
- Engineering Ceramics
- IC Substrates
- Insulators
- Housings
- Electronics
- Ballistics
- Refractories
- Catalyst Carriers
- Polishing

MARTOXID® MRS-Grades: Product Characteristics, Typical Values

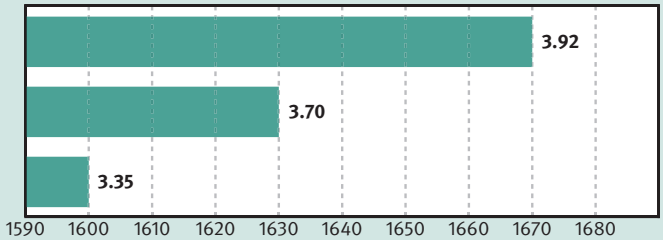
MARTOXID	MRS	MRS-1
State of Milling	Unground	Super Ground
Al_2O_3-content [%]	99.9	99.9
Na_2O-content [%]	< 0.03	< 0.03
SiO_2-content [%]	0.03	0.05
Fe_2O_3-content [%]	0.02	0.02
CaO-content [%]	0.015	0.015
Specific Surface Area (BET) [m²/g]	1.3 - 2.5	2 - 4
Bulk Density [kg/m³]	800	600
Particle Size Distribution [Cilas 1064]		
d10 [µm]	5	0.5
d50 [µm]	85	1.0 - 1.4
d90 [µm]	130	2 - 4
d100 [µm]	300	< 10
Pressed Density at 100 MPa [g/cm³]	*	2.3
Sintering Temperature [°C]	*	1600
Sintered Density**, pure [g/cm³]	*	3.3
Sintering Temperature [°C]	*	1670
Sintered Density**, pure [g/cm³]	*	3.9
Sintering Temperature [°C]	*	1670
Sintered Density**, MgO-doped [g/cm³]	*	3.93
Shrinkage [%]	*	16.4

* Not determined ** Retention time at optimum temperature 2 h

MARTOXID MRS-1, Pressed Density [g/cm³]

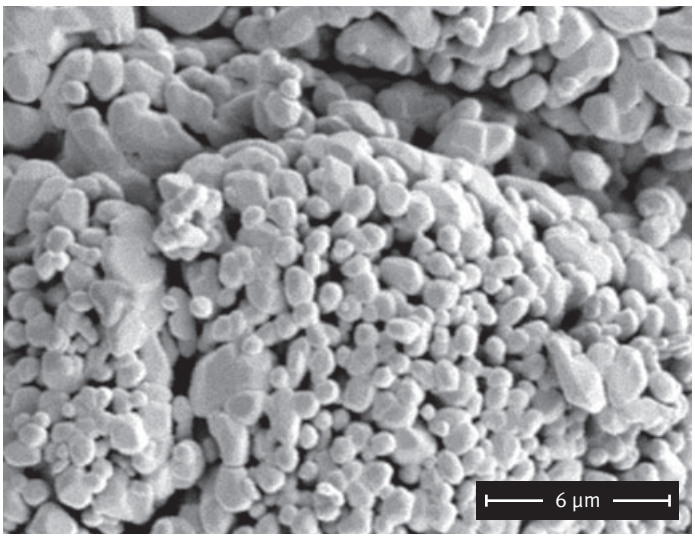


MARTOXID MRS-1, Sintered Density [g/cm³]

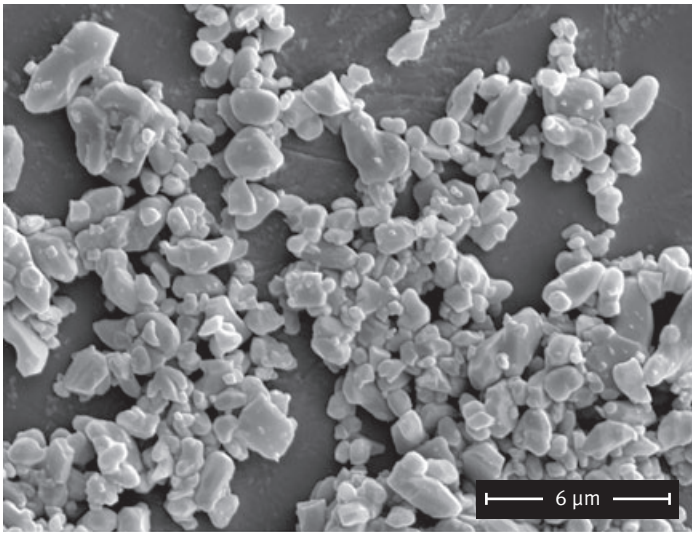


100 MPa Operation Pressure before Sintering

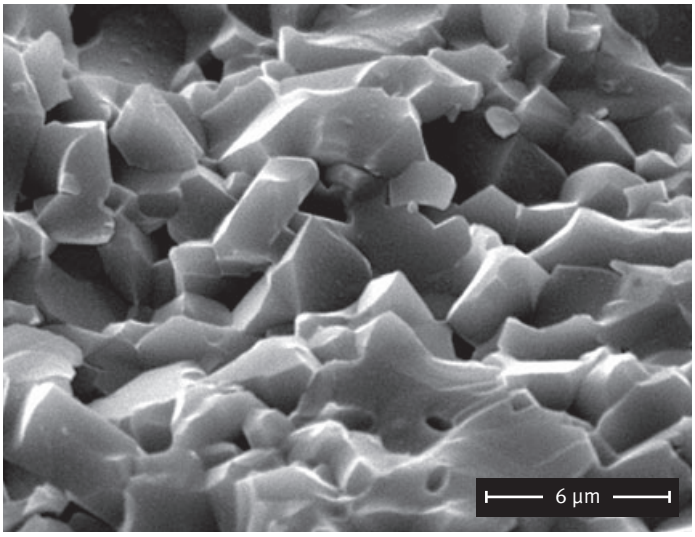
SEM photograph MARTOXID MRS (unground), 1.5 m²/g



SEM photograph MARTOXID MRS-1 (super ground), 1.5 m²/g



SEM photograph, sintered MARTOXID MRS-1 (MgO-doped):
Fracture surface of dense and ultra fine ceramic microstructure
Homogeneous grain growth, crystallite size approx. 5 µm



We are confident that we can meet your requirements for high-quality products and services, now and in the future.
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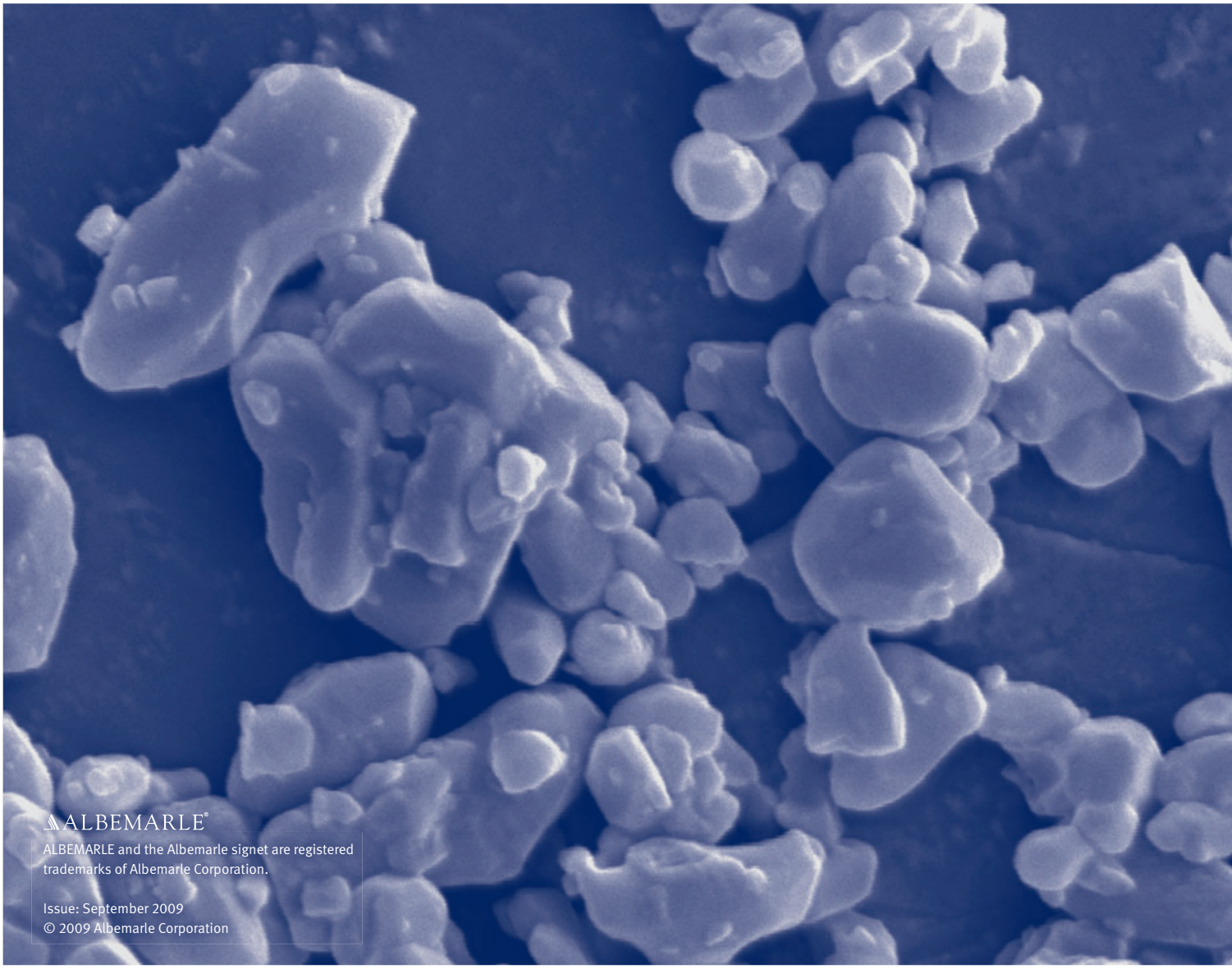

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