TAKE ADVANTAGE OF

Huber | Martinswerk’s ‘Ready to Press’ Feedstock

MARTOXID® KMS
ALUMINUM OXIDES
Huber | Martinswerk pioneered the development of a new generation of granulates to meet the specialized needs for ceramics, and in particular for uniaxial and isostatic pressing. Using our many years of experience spent fine-tuning our applications expertise, we have designed a wide range of ceramic Martoxid® ‘Ready to Press’ grades with $\text{Al}_2\text{O}_3$ content ranging from 94 to 99%. Martoxid® KMS ready-to-press products are designed to produce engineered ceramics, electronic components, anti-wear components and other high performance applications.

A carefully controlled manufacturing process combined with constant process monitoring and detailed quality control ensure the production of consistently high-grade feed stocks with reproducible product characteristics. High performing raw materials that are controlled by Huber | Martinswerk form the basis of these grades. The result culminates in a spray dried granulate that exhibits superior ceramic properties for pressed bodies. Of particular advantage is the moderate sintering temperature range, as the recommended firing temperature lies between $1550^\circ\text{C}$ and $1630^\circ\text{C}$.

Huber | Martinswerk has a proud history of being a cooperative partner with its customers. This framework has resulted in creating value-driven solutions for a variety of ceramic requirements. We have demonstrated that we have the experience and know-how along with superior customer and technical service to deal with your feedstock preparation. Now, it’s time to learn more about our specific Martoxid KMS ‘Ready to Press’ offerings.

**Martoxid® KMS Ready to Press Products and Features**

**Feedstock**

- 94 – 99% $\text{Al}_2\text{O}_3$

**Grades**

- Martoxid® KMS-99
- Martoxid® KMS-98
- Martoxid® KMS-96
- Martoxid® KMS-94

**Properties**

- Custom Made
- Superior Workability
- Good Pressability – Uniaxial and Isostatic
- Excellent Sinterability
- First-Rate Ceramic Properties
- High Wear Resistance
- High Mechanical Strength
- Excellent Price Performance Ratio

**Applications**

- Engineered Ceramics
- Electronic Components
- Functional Ceramics
- Anti-Wear Parts
# MARTOXID® KMS ALUMINUM OXIDES FOR 'READY TO PRESS'
## TYPICAL CHEMICAL AND PHYSICAL PROPERTIES

<table>
<thead>
<tr>
<th>PROPERTIES</th>
<th>KMS-99</th>
<th>KMS-98</th>
<th>KMS-96</th>
<th>KMS-94</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al₂O₃ Content (%)</td>
<td>&gt; 99</td>
<td>98</td>
<td>96</td>
<td>94</td>
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<tr>
<td>Na₂O Content (%)</td>
<td>0.03</td>
<td>0.05</td>
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<tr>
<td>Loss on Ignition (%)</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Moisture (%)</td>
<td>&lt; 0.4</td>
<td>&lt; 0.4</td>
<td>&lt; 0.4</td>
<td>&lt; 0.3</td>
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<tr>
<td>Bulk Density (kg/m³)</td>
<td>1300</td>
<td>1200</td>
<td>1100</td>
<td>1150</td>
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<tr>
<td>Average Granule Size (µm)</td>
<td>170</td>
<td>170</td>
<td>180</td>
<td>130</td>
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<tr>
<td>Pressed Density at 100 MPa (g/cm³)</td>
<td>2.45</td>
<td>2.45</td>
<td>2.37</td>
<td>2.33</td>
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<tr>
<td>Sintered Density (g/cm³)</td>
<td>3.92</td>
<td>3.88</td>
<td>3.82</td>
<td>3.72</td>
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<tr>
<td>Ideal Sintering Temperature Range (°C)</td>
<td>1600</td>
<td>1600</td>
<td>1550-1600</td>
<td>1590-1620</td>
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<tr>
<td>Longitudinal Shrinkage (%)</td>
<td>15.5</td>
<td>16</td>
<td>16</td>
<td>15.5</td>
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<tr>
<td>Bending Strength, 4-point Method (MPa)</td>
<td>&gt; 330</td>
<td>&gt; 330</td>
<td>&gt; 300</td>
<td>&gt; 280</td>
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<tr>
<td>Modulus of Elasticity E (GPa)</td>
<td>380</td>
<td>370</td>
<td>340</td>
<td>320</td>
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<td>Hardness, Vickers HV2 (kN/mm²)</td>
<td>17-20</td>
<td>17-19</td>
<td>17-19</td>
<td>16-18</td>
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<tr>
<td>Abrasion, Sand Blasting Method (%)</td>
<td>*</td>
<td>0.1</td>
<td>0.1</td>
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<tr>
<td>Dielectric Strength E₆ (kV/mm)</td>
<td>35</td>
<td>33</td>
<td>35</td>
<td>&gt; 20</td>
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</tbody>
</table>

* Not determined

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## IT'S TIME TO VISUALIZE THREE MARTOXID® KMS GRADES UNDER THE SCANNING ELECTRON MICROSCOPE (SEM)

### Martoxid® KMS-99 Aluminum Oxide
Operation Pressure 140 MPa @ 1620°C  
Sintered Density 3.92 g/cm³  
Average Grain Diameter Approximately 5 µm

![Martoxid® KMS-99 Aluminum Oxide SEM](image1)

### Martoxid® KMS-98 Aluminum Oxide
Operation Pressure 140 MPa @ 1590°C  
Sintered Density 3.88 g/cm³  
Average Grain Diameter Approximately 5 µm

![Martoxid® KMS-98 Aluminum Oxide SEM](image2)

### Martoxid® KMS-96 Aluminum Oxide
Operation Pressure 130 MPa @ 1590°C  
Sintered Density 3.82 g/cm³  
Average Grain Diameter Approximately 4 µm

![Martoxid® KMS-96 Aluminum Oxide SEM](image3)
The high performing Martoxid ‘Ready to Press’ grades are designed to meet and exceed your most demanding requirements for a variety of high-end ceramic applications. We’ve got a Ready to Press product with the exacting physical properties you’re looking for to take your application and formulation to the next level. Huber | Martinswerk has more than half a century of experience supplying aluminum oxides and calcined aluminas and in addition to the individual product grades we’ve discussed, we provide superior technical service and expertise along with our dedicated and personalized customer care that’s second-to-none. Contact us today for more information and to obtain samples of our Martoxid Ready to Press products.

**LET US GO TO WORK FOR YOU! CONTACT US TODAY!**

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**EMAIL:** hubermaterials@huber.com  
**CLICK:** hubermaterials.com/ceramics

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**MARTOXID® KMS SINTERED AND PRESSED DENSITY DATA**

The data above shows the product effectiveness of the Martoxid® KMS grades at sintered and pressed densities. This proves the cost effectiveness and the ability of the grades to produce higher performance components.

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**ISO 9001:2015 Certified Quality Management System**