INSULATING VACUUM-FORMED SHAPES
CONTENT

PRODUCT DESCRIPTION  4
PRODUCT OVERVIEW  6
PRODUCT GROUPS  8
ACS - REFRACTORY MODULAR COMPOSITE SYSTEM  10
INSULATING VACUUM-FORMED SHAPES

The shapes are vacuum formed from high-quality mineral or high-temperature wool.

The formulations and post treatment of the vacuum-formed products depend on application requirements. Upon request, the products can be fired, surface-hardened or through-hardened.

Features

› Great thermal insulation properties
› Lightweight
› High temperature resistance
› Low heat storage capacity
› Good corrosion resistance
› Comprehensive range of custom-designed shapes
› Easy to install
› Excellent machinability

Typical applications

› Dental, laboratory and industrial furnaces
› Insulation for boilers and heaters
› Thermal insulation in household appliances
› Vacuum furnaces
› Hardening furnaces
› Microwave furnaces
› Stack Linings
› Expansion joints and seals
› Casting tubes and cones
› Kiln furniture
› Thermal insulation with integrated heating elements
› Hot gas filtration
› Thermal Analytical Equipment

Advantages of Rath’s vacuum-formed products

› Designed to meet specific application and requirements.
› Low heat storage capacity and excellent thermal shock resistance allow fastest heating and cooling curves and short firing cycles.
› Long service life due to high chemical and thermal stability.
› Use of bio-soluble high-temperature wool represents an alternative to ceramic fibres.
### Information in the product designation

The information to be found in the product designation is explained using the example of Altraform® KVF 161:

<table>
<thead>
<tr>
<th>Altraform®</th>
<th>Product Name</th>
<th>Typ</th>
<th>F - flexible</th>
<th>S - with organic components</th>
<th>R - suitable for reducing furnace atmospheres</th>
<th>16</th>
<th>Classification temperature (1/100 °C)</th>
<th>1</th>
<th>Post-treatment classes (0 to 7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KVF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 = Untreated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 = Dried</td>
<td></td>
<td>1 = Dried</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = Surface-hardened</td>
<td></td>
<td>2 = Surface-hardened</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = Through-hardened</td>
<td></td>
<td>3 = Through-hardened</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 = Fired</td>
<td></td>
<td>4 = Fired</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5 = Fired and surface-hardened</td>
<td></td>
<td>5 = Fired and surface-hardened</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6 = Fired and full-hardened</td>
<td></td>
<td>6 = Fired and full-hardened</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7 = Fired and double full-hardened</td>
<td></td>
<td>7 = Fired and double full-hardened</td>
</tr>
</tbody>
</table>

### PRODUCT OVERVIEW

#### NEWVAC

- **Basic raw material**: Mineral wool
- **Max. application temperature [°C]**: 1,000
- **Available bulk densities according to EN 1094-34 [kg/m³]**: 300
- **Typical thermal conductivity according to DIN EN 993-14 at 1,000 °C [W/mK]**: 0.25
- **Available products**: Newvac MV 10, Newvac MVF 10, Newvac MVS 10
- **Available formats**: Plates, cylinders, pre-formed shapes
- **Standard dimensions**:
  - Plates (L × W × Th in mm): 1,000 × 500 × 5...100
  - Cylinder (diameter × length in mm): 20...300 × 300
  - Pre-formed shapes: customized

#### EVAC

- **Basic raw material**: Alkaline earth silicate wool
- **Max. application temperature [°C]**: 1,300
- **Available bulk densities according to EN 1094-34 [kg/m³]**: 300-700
- **Available products**: Evac EV 12, Evac EVF 13, Evac EVS 12...13
- **Available formats**: Plates, cylinders, pre-formed shapes
- **Standard dimensions**:
  - Plates (L × W × Th in mm): 1,000 × 500 × 5...100
  - Cylinder (diameter × length in mm): 20...300 × 300
  - Pre-formed shapes: customized

#### PRIIFORM

- **Basic raw material**: Polycrystalline wool
- **Max. application temperature [°C]**: 1,400
- **Available bulk densities according to EN 1094-34 [kg/m³]**: 300-600
- **Typical thermal conductivity according to DIN EN 993-14 at 1,000 °C [W/mK]**: 0.24
- **Available products**: Priiform PVS 14
- **Available formats**: Plates, cylinders, pre-formed shapes
- **Standard dimensions**:
  - Plates (L × W × Th in mm): 900 × 600 × 20...100
  - Cylinder (diameter × length in mm): 20...600 × 50...600
  - Pre-formed shapes: customized
**Special products**

**KERFORM**
- Aluminium silicate wool
- 1,600
- 250-700
- 0.22
- Kerform KV 10...14
- Kerform KVF 10...15
- Kerform KVS 10...16
- Plates, cylinders, pre-formed shapes
- 1,000 × 500 × 5...100
- 20...600 × 50...600
- customized

**ALTRAFORM®**
- Polycrystalline wool with alumina content > 72%
- 1,800
- 100-750
- 0.18
- Altraform® KVF 16
- Altraform® KVS 16...18
- Altraform® KVR 16...17
- Plates, cylinders, pre-formed shapes
- 900 × 600 × 20...100
- 20...600 × 50...600
- customized

**KERHEAT**
- Aluminium silicate wool/Polycrystalline wool with alumina content > 72%
- 1,500
- 300-350
- 0.26
- Kerheat KVS 12...15
- Kerasetter KVS 12...18
- Plates, cylinders, half-shells with embedded heating elements
- 1,000 × 1,000 × 100
- up to 700 × 500

**KERASETTER**
- Aluminium silicate wool / Polycrystalline wool with alumina content > 72%
- 1,800
- 1000-1700
- 0.40
- Kerasetter KVS 12...18
- Kerasetter KVR 16
- Plates, customized kiln furniture
- 600 × 450 × 10...30
- up to 700 × 500
**KERFORM**

Vacuum-formed products made of high-quality aluminium silicate wool, polycrystalline wool with an alumina content greater than 72% and organic and inorganic binders. Kerform is resistant to most acids and bases with the exception of hydrofluoric acid, phosphoric acid and strong alkalis. Various finishing classes determine the applicability of the pre-formed shapes. The max. application temperature is, depending on the type, between 1,000 °C and 1,600 °C.

**Typical applications:**
- Thermal insulation in industrial furnaces
- Custom machined parts for Thermal Analytical Equipment
- Thermal Insulation for laboratory furnaces
- Thermal insulation in dental furnaces
- Foundry equipment
- Accessories for glass furnaces
- Sealing material
- Kiln furniture

**PRIOFORM**

New high-performance thermal insulation material consisting of polycrystalline wool, fillers and organic and inorganic binders. Prioform offers excellent corrosion resistance, very low thermal conductivity and good thermal shock resistance. The vacuum-formed products can be easily processed and have a very smooth surface. Various finishing classes determine the applicability of the vacuum-formed products. The max. application temperature is 1,400 °C.

**Typical applications:**
- Thermal insulation in laboratory furnaces
- Thermal insulation in thermal analysers
- Thermal insulation in dental furnaces
- Thermal insulation in industrial furnaces
- Foundry equipment
- Kiln furniture

**EVAC**

Vacuum-formed products made of high-quality alkaline earth silicate wool, fillers and organic and inorganic binders. The high-temperature insulation wool used in this product is not classified according to REACH. Various finishing classes determine the applicability of the pre-formed shapes, which are applicable only in dry and non-corrosive atmospheres. The max. application temperature reaches, depending on the type, up to 1,300 °C. Due to the properties of the wool, however, usability is to be checked carefully for any application at more than 1,000 °C. Evac is available in plate form as well as in customer-specific geometries.

**Typical applications:**
- Thermal insulation in boiler systems and household appliances
- Thermal insulation for thermal analysers and laboratory furnaces
- Thermal insulation in industrial furnaces
- Sealing material

**KERFORM KV GROUP**

**NEWVAC**

Vacuum-formed products made of high-quality mineral wool, fillers and organic and inorganic binders. The fibre used for this product is not classified according to REACH. Various finishing classes determine the applicability of the pre-formed shapes, which may be used solely in dry and non-corrosive atmospheres.

The max. application temperature is, depending on the type, between 600 °C and 1,000 °C. Newvac is available in plate form as well as in customized geometries.

**Typical applications:**
- Thermal insulation in boiler systems and household appliances
- Thermal insulation for thermal instruments and laboratory furnaces
- Sealing material

**KERFORM PLATE**

**KERFORM KV GROUP**

**KERFORM PLATE**

**EVAC EVS, EVF, CS**

**Rath**
**ALTRAFORM®**
Vacuum-formed products made of highly pure polycrystalline wool with an alumina content > 72 % and organic and inorganic binders. Altraform® offers best corrosion and thermal shock resistance. Various finishing classes determine the applicability of the pre-formed shapes.

Typical applications:
- Thermal insulation in industrial furnaces
- Thermal insulation in thermal instruments
- Foundry equipment
- Accessories for glass furnaces
- Sealing material
- Kiln furniture

Legend:
- ● from polycrystalline wool not classified according to REACH
- ■ from fibre not classified according to REACH

---

**KERSETTER**
Made of high-quality aluminium silicate and alumina wools, fillers and organic and inorganic binders. Kersetter products are used as kiln furniture in the dental, electronics and ceramics industries and as construction materials for furnaces and laboratory equipment.

**KERHEAT**
Vacuum-formed products with integrated heating elements. The pre-formed shapes are, depending on the application, produced from various high-temperature insulation wools with different Al₂O₃ contents.

The max. application temperature is 1,300 °C. The max. wall thickness for plates amounts to 100 mm. For pipes, shells and muffles, even component thicknesses up to 150 mm are possible.
ACS – ALTRA®
COMPOSITE SYSTEM

The ACS lining system is an engineered insulation system assembled from pre-formed shapes.

Depending on application and service requirements the characteristics of the various refractory materials can be combined to result in a lining with optimized thermal, physical and chemical properties. The ACS modular system eliminates the traditional problems of excessive shrinkage, stress cracking and roof sagging that often cause failure of high-temperature ceramic fiberboard insulation in furnaces and kilns.

ACS SYSTEM

› Modular composite construction designed using CAD (2D & 3D)
› Wide range of available, easily processable materials that can be machined to precise pre-formed shapes
› Flat roof construction
› Lower risk of shrinkage and stress cracking due to its modular design
› High temperature resistance
› Comprehensive range of shapes
› Application temperatures up to 1,800 °C
› Rapid thermal cycling due to excellent thermal shock resistance
› High corrosion-resistance
› Long service life
› Particular suitability for linings with integrated heating elements
› Suitable for furnaces with changing furnace atmospheres and pressures

› Typical applications
› Dental, laboratory and industrial furnaces
› Production of optical glass fibres
› Thermal treatment of touch screen glass
› Production of ceramic high-performance materials and technical ceramics
› Manufacture of microelectronic components
› Chemical vapour deposition
› Vacuum furnaces
THE RATH GROUP

OUR SALES OFFICES ALL OVER THE WORLD

AUG. RATH JUN. GMBH
Walfischgasse 14
A-1015 Vienna
T +43 1 513 44 26-0
F +43 1 513 44 26-86

RATH GMBH
Ossietzkystraße 37/38
D-01662 Meissen
T +49 3521 46 45-0
F +49 3521 46 45-86

RATH UKRAJINA TOW
Mariupol, Index 87534, Straße Gromowoi 63, Office 408
T +38 056 785 30 35
F +38 056 785 30 36

RATH GMBH
Krefelder Straße 680-682
D-41066 Moenchengladbach
T +49 2161 96 92-0
F +49 2161 96 92-61

RATH HUNGARIA KFT.
Porcelán utca 1
H-1106 Budapest
T +36 1 433 00 43
F +36 1 261 90 52

RATH ŽÁROTECHNIKA SPOL. SR.O.
Vorlesská 290
CZ-544 01 Dvur Králové n. L.
T +420 499 32 15 77
F +420 499 32 10 03

RATH SAS
3 rue du Colonel Moll
F-75017 Paris
France
T +43 1 513 44 27-0

RATH POLSKA SP. Z O.O.
ul. Budowlanych 11
PL-41 303 Dąbrowa Górnicza
T +48 32 268 47 01
F +48 32 268 47 02

RATH USA INC.
300 Ruthar Drive Suite 1
Newark, DE 19711
T +1 302 294 44 46
F +1 302 294 44 51

RATH GROUP S. DE R.L. DE C.V.
Ave. Ruiz Cortines
# 2700-14 Col. La Esperanza
Guadalupe N. L. México, CP 67192
T +52 81 14 31 15 90

RATH AG
Walfischgasse 14
A-1015 Vienna
T +43 1 513 44 27-0
F +43 1 513 44 26-86

WWW.RATH-GROUP.COM
INFO@RATH-GROUP.COM

BROCHURE OF RATH AG, NO. 350_EN, ISSUE 08/2015