MATERIAL SPECIFICATIONS

PREFABRICATED STAINLESS STEEL, HIGH POSITIVE PRESSURE, DOUBLE WALL VENTS

A. General:
POLIEDRA breeching is a complete system of prefabricated, pre-insulated, double wall manufactured under strict factory control and complete with all accessories. The vertical seem of the inner wall is continuously laser welded under shielding gas to reduce corrosion. This system complies with NFPA 211 and is suitable for use with heating equipment and generators burning gas, solid or liquid fuels. No site fabrication or modification of any parts is allowed.

B. Construction:
Inner and outer shell are separated by 25, 50, 60, or 100mm of prefabricated mineral wool insulation of density 125 Kg/m^3.

C. Inner Shell:
Made of stainless steel 316L (low carbon) with 0.5mm thickness as standard. Thicknesses up to 3mm are also available.

D. Outer Jacket:
Standard product uses 0.5mm thick Stainless Steel 304L Shells. Aluminized and galvanized steel shells are also available as lower grade options.

E. Accessories:
All accessories such as wall supports, wall guides, elbows, TEE sections, expansion joints, access panels, fire safety spacers, wall and roof penetrations, terminations, etc. necessary for proper installation and operation are available and are all constructed from Stainless Steel 304L.

F. Operating Pressure:
Standard operating pressure without the use of seals, rubber or otherwise, is 200Pa.
For applications with pressures exceeding 1000Pa. , 1200ºC ceramic sealant is added at every joint to ensure continuous positive working pressure of 5000Pa. minimum.

G. Operating Temperature
Continuous operating temperature 600°C
Intermittent operating temperature 750°C
Short intermittent operating temperature (<1hr) 1000ºC

INTERNATIONAL QUALITY STANDARDS

POLIEDRA chimneys are CE marked and fully meet or exceed the requirements of following standards:

- **UNI EN ISO 9002, 1994**
- **IMQ-QUALITY CIG**
- **VKF, AEAI N 10401**
- **TUV prEN 1856 – UNI 7129/92, UNI 9731/90**
- **CSTB N RA98-129**
- **ISTITUTO GIORDANO s.pa. N 118122**
- **AQM RT 03-009**

CERAMIC SEAL

1.1 Field of Application: Hot gas generator with gas temperature greater than 350°C
1.2 Continuous working temperature: 750°C
1.3 Peak Temperature: 1200°C
1.4 Chemical composition: Sodium Silicate (30%), mix with inert material (70%)
1.5 Physical state: Porous
1.6 Color: Black
1.7 Density: (at 20°C) 1gm/cm^3
1.8 Inflammability Point: Not Flammable
1.9 Ph: 5~7
1.10 Auto-ignition Point: Not Combustible

The ceramic seal insures high pressure tightness (≥5000Pa) without thermal collapse at high temperature. **NO SILICONE OR VITON COMPONENTS** can be adopted if the gas temperature exceeds 350°C.

2.1 Vibration: Adopting the **POLIEDRA** double wall system (Patented), which is based on the fact that the inner wall is not welded on the outer wall and at the same time it can move with temperature or vibrations, **NO CRITICAL STRESS CAN BE REPORTED ON THE MALE FEMALE ENDS**. This means that the sealant will be stressed less with respect to the standard solution (flanged ends). This method of joining reduces worries related to flanged ends, if vibration arises. Problems with screws and welding lines due to dynamic fatigue are eliminated.

INSULATION

Results: **According to DIN 18 147-5**
Test Laboratory: **TÜV Süddeutschland Bau und Betrieb GmbH**
Zentralabteilung Feuerungs-und Wärmetechnik Püfstelle für Abgastechnik

Description: Shells of insulation material used in the production process of double wall elements for chimneys by the manufacturer. These samples are made of mineral fibre, have a length of 1.20m and thickness of 50mm. The cross section is shaped as a 120° arc.

Density: The nominal density of the insulation shells is 125kg/m3. The density of the actual material could go up to 133kg/m3.

Thermal Conductivity:
The values documented in the test report are:
0.037W/mK for a mean temperature of 24°C
0.041W/mK for a mean temperature of 50°C
0.050W/mK for a mean temperature of 100°C
0.058W/mK for a mean temperature of 150°C
0.068W/mK for a mean temperature of 200°C
0.0078W/mK for a mean temperature of 250°C

Other Tests: The face temperature of the chimney was measured in two cases, namely with inside temperatures of 400°C and 800°C. For 25mm of insulation, the results were:

Face T°C / Inside T°C	1m from source	2m from source	3m from source	4m from source
400°C	57.0°C	56.4°C	50.08°C	49.4°C
800°C	166.4°C	153.5°C	141.7°C	143.1°C

SEISMIC CHARACTERISTICS

Poliedra ISOSLIM and ISOMIDI have been vibration-tested according to EN1859 and are able to withstand the following, without failure:

Acceleration: **1g**
Frequency: **10Hz**
Amplitude: **2.5mm**
Time: **2Hours**

P.S. Original documents are available upon request.