



# Superwool<sup>®</sup> Pyro-Fold<sup>™</sup> and Pyro-Stack<sup>™</sup> Modules

## Product Data Sheet

### Product Description

Superwool Plus and Superwool HT Pyro-Fold and Pyro-Stack Bloc Modules feature exceptional thermal and physical properties. With classification temperatures of 1200°C (2190°F) and 1300°C (2370°F), Superwool Pyro-Fold and Pyro-Stack Modules are made from our Superwool Plus and Superwool HT Blankets that are manufactured using patented low biopersistent fibre manufacturing technology that produces a low shot fibre product that features an improved handleability and nuisance dust is eliminated.

Superwool Plus and Superwool HT Pyro-Fold and Pyro-Stack Modules come standard with a Y-Anchor or M-Anchor system for an easy installation and affixing to furnace, boiler or kiln linings. Superwool Pyro-Fold and Pyro-Stack Modules exhibit outstanding insulating properties at elevated temperatures and have excellent thermal stability and retain their original soft fibrous structure up to its maximum continuous use temperature. Superwool Pyro-Fold and Pyro-Stack Modules do not contain binder or lubricant and do not emit any fumes or smell during the first firing.

Please review the best internal anchoring hardware options with your regional Morgan Advanced Materials Sales Representative and Applications Engineering team. Additionally, we recommend following the Pyro-Fold and Pyro-Stack Design and Installation Guidelines for either Y-Anchor or M-Anchor hardware.

### Features

- Excellent thermal stability results in reliable and consistent thermal insulating performances
- Immune to thermal shock
- Binder or lubricant free
- Thermal stability
- Low heat storage
- High erosion resistance no damage up to 50 m/sec:
  - Superwool Plus Pyro-Bloc tested at 1200°C (2190°F)
  - Superwool HT Pyro-Bloc tested at 1300°C (2370°F)
- Excellent resistance to chemicals and pollutants, especially alkali metals
- Excellent tensile strength
- Good sound absorption

### Applications

- Power generation especially HRSG stack and duct insulation
- Petrochemical and Refinery applications:
  - Ethylene Cracking Furnaces
  - Ammonia, Hydrogen and Methanol Reformers
  - Delayed Cokers and Refinery Heaters
  - Flare Stacks
- Industrial Furnace, Boiler and Heater linings
  - Iron & Steel
  - Ceramics

### Environmental & Health Safety

Superwool low biopersistent fibres manufactured by Morgan Advanced Materials are not classified as carcinogenic by IARC or under any national regulations on a global basis. They have no requirements for warning labels under GHS (Globally Harmonised System for the classification and labelling of chemicals).

In Europe, Superwool fibres meet the requirements specified under Note Q of European Regulation EC/1272/2008 (on Classification, Labelling and Packaging of substances and mixtures). All Morgan Advanced Materials Superwool low biopersistent fibre products are therefore exonerated from classification and labelling as hazardous in Europe.

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Properties	Superwool Plus Pyro-Stack Modules	Superwool HT Pyro-Stack Modules	Superwool Plus Pyro-Fold Modules	Superwool HT Pyro-Fold Modules
Colour	white	white	white	white
Classification Temperature, °C (°F), EN 1094-1 (2008)	1200 (2190)	1300 (2370)	1200 (2190)	1300 (2370)
Continuous Use Temperature, °C (°F)	1000 (1830)	1150 (2100)	1000 (1830)	1150 (2100)
Density, kg/m <sup>3</sup> (pcf), EN 1094-1 (2008)	128, 149, 172 (8, 9.3, 10.7)	128, 149, 172 (8, 9.3, 10.7)	170 (10.7)	170 (10.7)
Specific heat capacity, kJ/kg·K, 1090°C (1994°F)	1.05	1.22	1.05	1.22
<b>Chemical Analysis, %</b>				
Silica, SiO <sub>2</sub>	62-68	70-80	62-68	70-80
Calcium Oxide, CaO	26-32	18-26	26-32	18-26
Magnesium Oxide, MgO	3-7	<5	3-7	<5
Other	<1	<3	<1	<3
<b>Thermal Conductivity, W/m·K, ASTM C201</b>				
Density, kg/m <sup>3</sup> (pcf)	192 (12)	192 (12)	170 (10.7)	170 (10.7)
200°C	0.06	0.08	0.07	0.07
400°C	0.09	0.12	0.10	0.12
600°C	0.14	0.19	0.15	0.19
800°C	0.22	0.29	0.22	0.30
1000°C	0.32	0.41	0.31	0.43
1200°C		0.57		0.59
<b>Thermal Conductivity, BTU·in/hr·ft<sup>2</sup>·°F, ASTM C201</b>				
500°F	0.49	0.62	0.57	0.57
1000°F	0.86	1.14	0.94	1.15
1500°F	1.56	2.05	1.59	2.12
1832°F	2.22	2.84	2.15	2.98
2000°F	2.60	3.35	2.50	3.48
2200°F		3.98		4.12

### Product Availability

Pyro-Fold and Pyro-Stack Modules are manufactured and available globally, but packaging, density and thickness availability will vary by region.

Please contact your regional Morgan Advanced Materials - Thermal Ceramics representative to support providing specific packaging availability for your local business needs.

Whilst the values and application information in this datasheet are typical, they are given for guidance only. The values and the information given are subject to normal manufacturing variation and may be subject to change without notice. Morgan Advanced Materials – Thermal Ceramics makes no guarantees and gives no warranties about the suitability of a product and you should seek advice to confirm the product's suitability for use with Morgan Advanced Materials - Thermal Ceramics.