

Data sheet

Superwool® Plus Heat Shield

ENGLISH

Metric/Imperial information - Page 2

Description

Superwool Plus Heat Shield is uniquely designed from needled fleece free from organics. Superwool Plus Heat Shield is specially processed to offer excellent performance in high temperature applications.

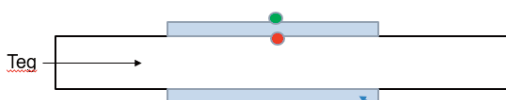
Superwool Plus Heat Shield is specifically developed for high vibration automotive applications. Superwool Plus Heat Shield features exceptional performance in high vibration conditions at 40g (see vibration profile in annex). Superwool Plus Heat Shield offers continuous temperature up to 750°C (1382°F). See below temperature range limited

Superwool provides stability and resistance to chemical attack. Exceptions include hydrofluoric acid, phosphoric acid and strong alkalies (i.e. NaOH, KOH). Superwool is unaffected by incidental spills of oil or water. Thermal and physical properties are restored after drying.

Superwool Plus Heat Shield is flexible and resistant to tearing which makes it ideally suited for applications requiring additional processing; laminated composites, die-cutting, rolling, or folding.

Temperature Range Limits:

- Exhaust Gas Temperature: max 800°C - 850°C (1472°F - 1562°F)
- Max Skin Hot Temperature: 750°C (1382°F)



- Teg: Exhaust Gas Temperature
- Hot skin temperature (on the surface of component to insulate)
 - Cold skin temperature (on the exterior surface of the heat shield)

Type

Blanket manufactured from high temperature insulation wool.

Hot Skin Continuous Use Temperature

750°C (1382°F) for automotive heat shields

Hot Skin Peak Use Temperature

850°C (1562°F) for short term exposure in automotive heat shield applications

The maximum continuous use temperature depends on the application. For further advise please contact your local Morgan Advanced Materials partner.

Incombustible Materials per ASTM E-84 Method

- Flame Spread: zero
- Fuel contributed: zero
- Smoke developed: zero

Compression Ratio

Superwool Plus Heat Shield blanket has to be compressed between 40% and 60% for an automotive heat shield application.

Applications, typical

- Automotive heat shields

Benefits

- Low biopersistence
- Thin, flexible high temperature insulation
- Very low thermal conductivity
- Thermal stability
- Excellent thermal insulating performances and low heat storage
- Immune to thermal shock
- Does not form crystalline silica when exposed to high temperatures
- Low shot content
- Excellent tensile strength
- Easily die-cut to form complex shapes for high temperature gasketing
- Good resistance to tearing
- Precise thickness
- Smooth on both sides
- Superwool fibres are exonerated and 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 NOTA Q of European Directive 67/548. All Superwool fibre products are therefore exempt from the classification and labelling regulation in Europe.

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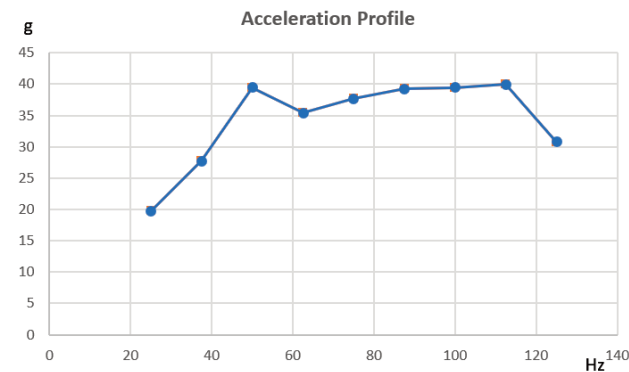
Superwool® Plus Heat Shield

Superwool Plus Heat Shield				
Colour	white			
Density, kg/m ³ (pcf)	96 uncompressed	128 uncompressed	188 (96 compressed ~50%)	225 (128 compressed ~40%)
Tensile strength, EN 1094-1, kPa (psi)	55	75	-	-
Permanent Linear Shrinkage, EN 1094-1, % after 24hours isothermal heating @ 850°C (1562°F)	< 1			
Thermal Conductivity, ASTM C-201, W/m•K ((BTU•in/hr•ft ²))				
200°C (392°F)	0.05	0.05	0.05	0.06
400°C (752°F)	0.09	0.08	0.08	0.08
600°C (1112°F)	0.14	0.12	0.11	0.11
800°C (1475°F)	0.21	0.18	0.16	0.15
Chemical Composition, %				
SiO ₂	62-68			
CaO	26-32			
MgO	3-7			
Other Oxides	< 1			

Vibration profile

The vibration resistance of Superwool Plus Blanket has been proven using the below acceleration profile of an IC engine.

Frequency, Hz	Acceleration, g
25	19.72
37.5	27.73
50	39.44
62.5	35.43
75	37.71
87.5	39.25
100	39.44
112.5	39.93
125	30.81



Thermal performance of Superwool Plus Blanket in heatshield application was measured in a high temperature gas burner test using direct insulation design on a 60 mm diameter pipe.

Gas Temperature, °C (°F)	Temperature Drop, °C (°F)
750 (1382)	359 (678)
800 (1472)	378 (712)
850 (1562)	413 (775)



Insulation material: Superwool Plus Blanket, 13 mm (0.52in), 96 kg/m³ (6 pcf) compressed to 6 mm (0.24in); mounted density: 208 kg/m³ (13 pcf)
Temperature Drop = Hot skin Temperature – Cold skin Temperature

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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.

SUPERWOOL® is a patented technology for high temperature insulation wools which have been developed to have a low bio persistence (information upon request). **SUPERWOOL® HT** products may be covered by one or more of the following patents, or their foreign equivalents:

SUPERWOOL® PLUS and **SUPERWOOL® HT** products are covered by patent numbers: US5714421 and US7470641, US7651965, US7875566, EP1544177 and EP1725503 respectively.

A list of foreign patent numbers is available upon request to Morgan Advanced Materials plc.

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Superwool® Plus Heat Shield

Availability and Packaging

Superwool Plus Blankets are packed in cartons and palletized for shipping. Please check with your local Morgan Advanced Materials partner to receive your regional packaging details.

Superwool Plus Heat Shield blanket

This table currently represents material availability specific to Europe.

Thickness, mm (in)	Density, kg/m ³ (pcf)		Length, mm (in)	Width, mm (in)	Carton, m ² (ft ²)
	96 (6)	128 (8)			
10 (0.4)	•	•	18500 (740)	610 (24.4)	11.28 (37.2)
13 (0.52)	•	•	14640 (585.6)	610 (24.4)	8.93 (29.5)
19 (0.76)	•	•	9760 (390.4)	610 (24.4)	5.95 (19.6)
25 (1)	•	•	7320 (292.8)	610 (24.4)	4.46 (14.7)

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