

SECTION I : 1.7



Consistent use of
pure raw materials...

...higher classification, low
shrinkage, consistent quality

The consistent use of pure raw materials in all our factories worldwide has led to the 4% shrinkage temperature rising from > 1100°C (2012°F) Superwool® 607® to > 1200°C (2192°F) Superwool® Plus.

- For AES fibres the shrinkage is low at the maximum continuous use temperature
- European standard EN 1094-1 test methods are used for tensile strength, permanent linear change and temperature classification
- ASTM C-201 equipment used for thermal conductivity

Does Superwool® Plus blanket withstand high temperatures?

Permanent linear shrinkage

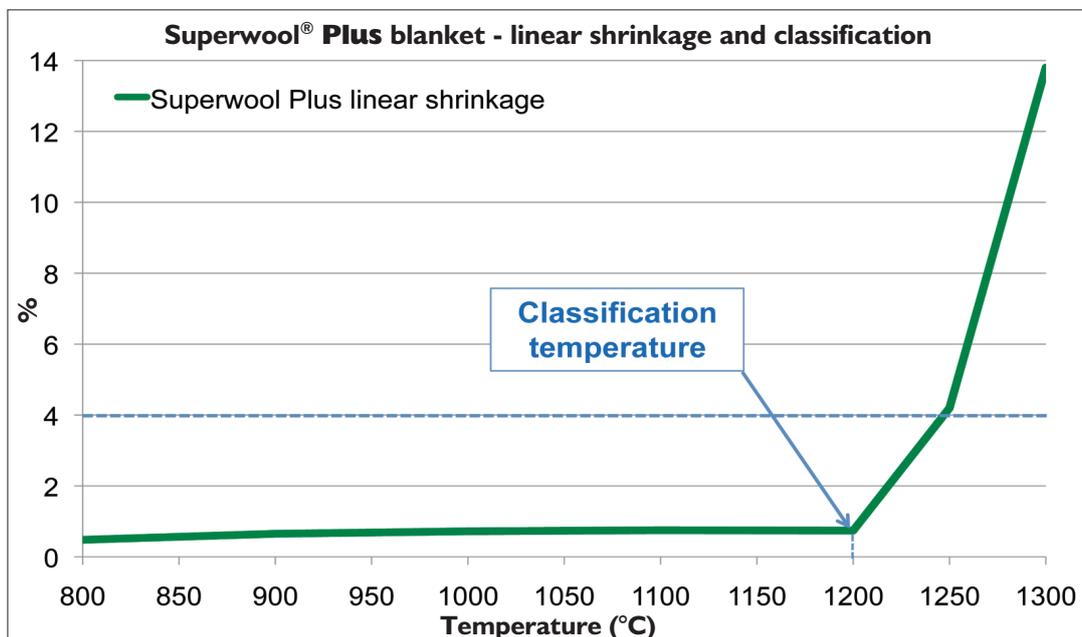
Shrinkage is generally to be avoided in designs using fibre products as it results in gap formation at joints, which can give a path for heat to penetrate deeper into the insulation structure. A low linear shrinkage is therefore highly desirable and AES fibres have a low shrinkage at the maximum continuous use temperature. With Superwool® Plus fibre, the consistent use of pure raw materials has led to the 4% shrinkage temperature rising from > 1100°C (2012°F) to > 1200°C (2192°F). For this reason, the classification temperature is now given as 1200°C in line with EN1094 norm.

What is the difference between classification temperature and maximum continuous use temperature?

- **Classification temperature (EN1094-3)** is the temperature at which the product has a linear shrinkage not exceeding 4% (for blanket, paper, felt) or 2% (for vacuum formed shapes, board).
- **Maximum continuous use temperature** is the temperature in an oxidising atmosphere (no pollution) at which products show fibrous structure and very low linear and thickness shrinkages. Above that temperature, crystallisation can occur and the mechanical properties may be reduced.

	Superwool® 607®	Superwool® Plus	Superwool® 607® HT®
Continuous use temperature	1000°C (1832°F)	1000°C (1832°F)	1150°C (2102°F)
Classification temperature	1100°C (2012°F)	1200°C (2192°F)	1300°C (2372°F)
Benefits	Original Superwool®, over 15 years market experience	New manufacturing process gives improved insulation and energy savings	Higher temperature allows additional applications

The Classification temperature 1200°C (2192°F) does not imply that the product can be used continuously at this temperature. In practice, as for Superwool® 607®, the maximum continuous use temperature for Superwool® Plus is 1000°C (1832°F) (this applies only under oxidising atmosphere without presence of contaminants).



What is melting point and why is it important?

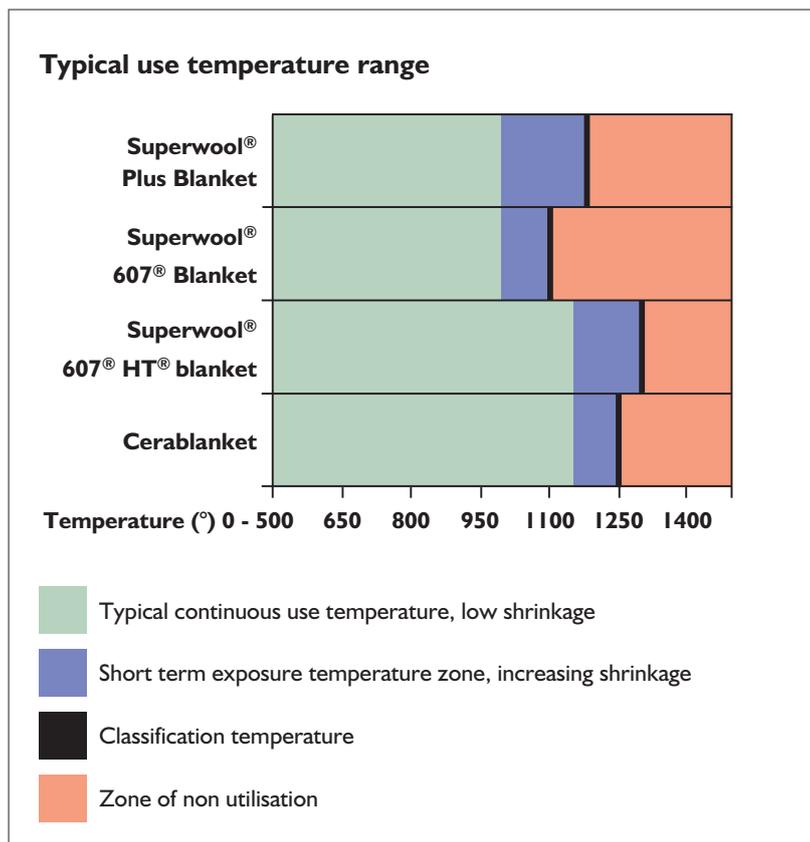
The melting point of Superwool® Plus blankets (or similar products) is defined as the temperature when the material exceeds 20% linear shrinkage. At this level of shrinkage the blanket will have lost virtually all of its thermal insulation properties and will become liquid with only a relatively small increase in temperature. It is therefore important to know the temperature of the melting point to ensure that the material is only installed into appropriate areas where the melting point will not be exceeded.

Testing methods (ASTM C-201 and EN 1094-I)

For test methods measuring the properties of high temperature insulation wools (HTIW), the European standard EN 1094-I (2008) is used for the test methods where appropriate. Superwool® Plus data sheets refer to measurements such as tensile strength, permanent linear change and temperature classification.

These characterisations are made according to the test methods given in this standard. However there are several test procedures for HTIW products which are currently in development and will not be included into the EN 1094-I standard until they have been ratified.

Some tests, such as thermal conductivity and leachable chloride use the ASTM methods. In particular the thermal conductivity test uses the methods based on the ASTM C-201 equipment as it is believed that this gives the most accurate data for high temperature insulation. The thermal conductivity method given in the draft European Standard EN 1094-I has been withdrawn as it was inaccurate and so was not included in the current standard.



Superwool® Plus

Insulating fibre

Features

Benefits

An engineered solution (unique)	Takes insulation beyond normal performance
Patented technology	Proven chemical formulation
High temperature insulating wools (Superwool® range of products) not classified according to European Regulation (EC) 1272/2008	Restrictions on use do not apply. No special requirements for dust control, can be supplied to the general public and considered as non-hazardous waste for disposal
Lower thermal conductivity	Improves insulation by 20%
Up to 30% more fibres	Efficient prevention of heat transfer and greater strength
Less shot	Cleaner workplace
High Fibre Index	Up to 20% reduction in thermal conductivity giving energy saving
Stronger with good handleability (no tearing)	Ease of installation saving time and waste
Improved handling	Operator satisfaction
Soft & smooth feel	Less mechanical skin irritation
Consistent use of pure raw materials	Higher classification temperature, low shrinkage and consistent quality
Lower density grade for the same result	Material weight savings up to 25%
Thinner lining for the same result	Create more working space within unit
Resistant to vibration	Allows long lifetime under vibration conditions where other products fail
An environmental solution	Potential savings on waste disposal
Worldwide production	Availability