

# Heat protection products

# Product selection table

## Anamet heat protection products

PRODUCT	MATERIAL	MATERIAL	TEMPERATURE CONTINUE		TEMPERATURE SHORT TERM		RESISTANCE		APPROVALS	PAGE
Type	Core	Cover	Min.	Max.	20 min.	15-30 sec.	Oil	Splash		
<b>Hiprojacket Aero</b>	Glass fibre	Silicone Halogen free RoHS	-55 °C	+260 °C	+800 °C	+1640 °C	++++	++++	  	10 - 4 till 10 - 5
<b>Hiprojacket Industrial</b>	Glass fibre	Silicone Halogen free RoHS	-55 °C	+260 °C	+800 °C	+1640 °C	++++	++++		10 - 6 till 10 - 7
<b>Hiprojacket Light</b>	Glass fibre	Silicone Halogen free RoHS	-55 °C	+260 °C	+538 °C	+1200 °C	++++	++		10 - 10
<b>Hiprosiltape</b>	Silicone	Silicone Halogen free RoHS	-55 °C	+260 °C	-	-	++++	++		10 - 11
<b>Hiprotape</b>	Glass fibre	Silicone Halogen free RoHS	-55 °C	+260 °C	+800 °C	+1640 °C	++++	++++		10 - 12 till 10 - 13
<b>Hiproblanket Wrap H</b>	Glass fibre	Silicone Halogen free RoHS	-55 °C	+260 °C	+800 °C	+1640 °C	++++	++++		10 - 14 till 10 - 15
<b>Hiproblanket Wrap M</b>	Glass fibre	Silicone Halogen free RoHS	-55 °C	+230 °C	+800 °C	+1640 °C	++++	++		10 - 16
<b>Hiproblanket Wrap Light</b>	Glass fibre	Silicone Halogen free RoHS	-55 °C	+260 °C	+538 °C	+1200 °C	++++	++		10 - 17
<b>Thermojet</b>	Glass fibre saturated	-	-55 °C	+538 °C	-	-	-	-		10 - 18
<b>Silicajacket</b>	Silica fibre	-	-55 °C	+980 °C	-	-	-	-		10 - 22
<b>Basaltjacket</b>	Knitted basalt yarn	-	-260 °C	+750 °C	-	+980 °C	-	-		10 - 23
<b>Hiproblanket Heavy</b>	Glass fibre	Silicone Halogen free RoHS	-55 °C	+260 °C	+800 °C	+1640 °C	++++	++++		10 - 24
<b>Hiproblanket Medium</b>	Glass fibre	Silicone Halogen free RoHS	-55 °C	+260 °C	+800 °C	+1640 °C	++++	++++		10 - 25
<b>Hiproblanket Medium Aluminum</b>	Glass fibre	Aluminum	-55 °C	+200 °C	600 °C	-	-	-		10 - 27
<b>Hiproblanket Light</b>	Glass fibre	Silicone Halogen free RoHS	-55 °C	+260 °C	+800 °C	+1200 °C	++++	++		10 - 28
<b>Silicablanket</b>	Silica fibre	-	-55 °C	+1090 °C	-	-	-	-		10 - 29

# Hipro products engineering data

## Heat protection products

The right choice of heat protection materials is important for the functioning and durability of the equipment.

The heat protection materials of Anamet Europe B.V. can basically be divided into 3 groups:

1. Hipro-products, consisting of an E-glass fibre base, covered with iron-oxide silicon rubber.  
Temperature range: -55 °C till +260 °C continuous, +800 °C for approx. 20 minutes and +1640 °C for 15 - 30 seconds  
Flammability: UL-94 V1.
2. Thermo-products, consisting completely of E-glass fibre.  
Temperature range: -55 °C till +538 °C continuous.
3. Silica-products consisting of completely amorphous silica fibres. Temperature range: -55 °C till +1090 °C continuous. Each product groups are available in various grades and executions, like sleeving, tape, blankets and remountable wraps.

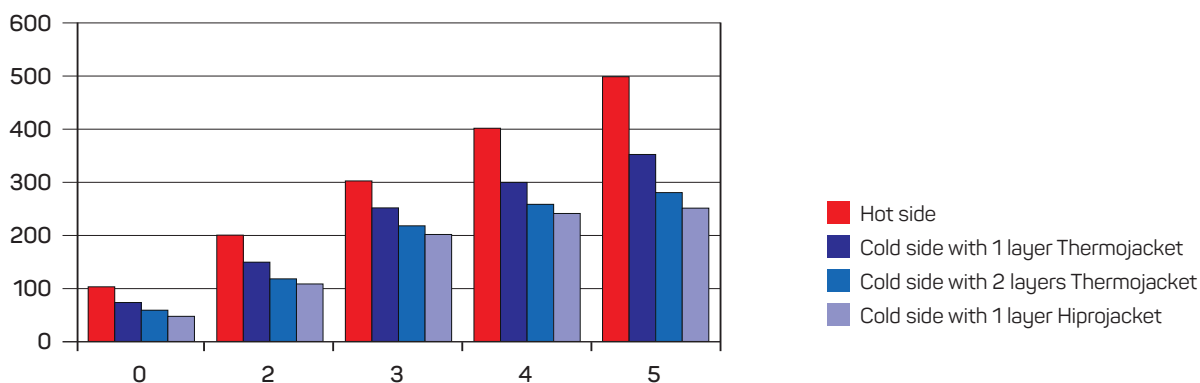
The choice of which product offers the best solution is strongly depending on the exact application.

Thermo- and Silica-products don't withstand open flame exposure and molten splash, like the Hipro-products do.

At the other hand Thermo-and Silica-products offer a good heat protection at higher continuous temperatures than are possible for Hipro-products.

Next to the temperature resistance, there is also a difference in insulation characteristics for the Hipro- and Thermo-products, as shown in the graph below. If however a higher level of insulation is required please refer to page 31 where we have our special high temperature insulation wraps shown.

## Thermal protection - hot side versus cold side (Temp. in °C)



Note: Above mentioned values are based on respectively Hiprojacket Aero and Thermo jacket S (saturated) with the heat source at the inside of the sleeving. For additional information on specific conditions, please contact your Anamet representative.

When Hipro products exposed to flame, the silicone rubber transforms into crust, creating a protective SiO<sub>2</sub> refractory layer. Hipro products withstands repeated exposures to molten steel, molten aluminum and molten glass up to +1650 °C.



The heavy coating of our proprietary iron oxide red silicone compound sheds molten metal splashes immediately, so very little heat transfer occurs.

The fibre glass will not burn, retains 75% of it's tensile at 343 °C, softens at 732 °C till 877 °C and melts at 1121 °C till 1182 °C.

The theoretical dielectric strength of our Hipro products is 16.000 V per mm cover thickness, being the characteristic of Silicone rubber. However as the liquid process, to coat the sleeveings, tapes and blankets, allows for possible inclusions of tiny airbubbles or pinholes we cannot guarantee a minimum dielectric strength of the finished product.

# MSDS for Hipro-, Thermo and Silicajacket



## HIPRO- THERMO- AND SILICA INSTRUCTION:

The heatprotection products of Anamet Europe BV can be easily cut with a pair of scissors or a craft knife. Please note however the under mentioned safety regulations.

## SAFETY AND HEALTH PRECAUTIONS FOR HANDELING HIPRO- AND THERMO PRODUCTS

For the Hipro products there are no additional safety pre-cautions needed in addition to the Thermo products. The difference between these product groups is the silicone cover. Silicone can be classified as not dangerous. In case of E-Glass fibre, precautions under certain circumstances might be needed.

### Personal safety:

**Breath safety:** In situations where large quantities of fibre dust occur, it is advised to wear at least an European commission approved FP1 or FP2 dusk mask. We recommend using types like 3M8710 or 33M9900 or similar, being approved by the American National Institute for Occupational Safety and Health (NIOSH).

**Eye protection:** Safety glasses or mask.

**Hand protection:** Safety hand gloves.

**Body protection:** Using long sleeved clothes (shirt and trousers) in order to avoid irritation. Persons with a sensible skin are recommended to protect free falling skin areas with a protective crème.

**Instruction for labour hygiene:** The regulation as stated in TRGS 521 - glass fibre dust - as published on November 1997, Nr. 5, general statement, for fibres with a diameter larger than 3 µm which will occur during handling or machining a product, should be followed up accordingly.

### Toxicologic instructions:

**Local effects:** Short term itch possible. The itch is from mechanical art and short term, they can be applicable for skin, eyes and the upper respiration. The influence will however decrease by leaving the production area. Classification according Norm 67 / 548 / EEC is not needed as glass filaments are according Norm 97 / 69 / EC not classified as being itchy (Class Xi).

**Irritation:** Very seldom allergic reactions. The statement of allergies is given in general. In order to avoid any risk we advise to handle the products in a moist environment.

**Risk of cancer:** The high quality E-glassfibers used in the Hipro- and Thermo-products are having a diameter of more than 3 micron (typical diameter of 9 micron average) and are therefore classified as non-respirable!! This means that these fibers do not penetrate in the lower lungs. Respirable fibers are defined as "... fibers with a length of more than 5 micron, with a diameter smaller than 3 micron and a length / diameter ratio of more than 3/1 ..." (definition according to the World Health Organization).

**Details towards risk of cancer:** The fact that E-Glass fibres are a non-cancer risk are, independently from each other, stated by various official authorities. The WHO (World Health Organisation) has, through its International Cancer Investigation Centre (CIRC), in addition to the congress in June 1987, checked all relevant laboratory tests on animals with reflection to glass fibres analysis. The results are that Glass fibres are judged as a non-risk in relation to cancer. They belong to the group MMF (Man made Mineral Fibres). The European commission has, in Norm 97 / 69 / EC, included that Glass fibres are a non-risk element and for this reason do not need any classification or labelling.

### Risk Substances:

**E-Glass fibre:** CAS-Nr.: 65977-17-3, R-Type not applicable, mass quantity 98,5 - 99 %.

**Coating:** Non-subscribed, R-Type not applicable, mass quantity 1,5 - 1,0 %.

### First aid method:

**Description first aid method:** Cleaning activities in order to remove fibres from respiration, skin and mucous membrane.

**After inhalation:** Forcing coughing by using slime developing or stimulating damp (like water damp inhalation).

**After skin contact:** Cleaning the skin by using water and soap.

**After eye contact:** Large fibres by mechanical cleaning. Small fibres by flushing water from the nose to the eye corner.

**After eating:** Meaningless.

**Instruction for first aid or medical assistance:** No specific medical treatment is needed.

**Instructions for fire fighting:** The burning gasses from glass fibres are in basic; Carbon Dioxide and water damp. It is however possible that small amounts of Carbon Monoxide and other substances will occur. In case of large fires the use of protection equipment is needed.