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INDUSTRIAL INSULATION
CATALOGUE

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Supros is a trusted partner in delivering engineering solutions and supplying high-quality materials for industrial insulation. We are committed to enhancing energy efficiency, fostering sustainability, and driving innovation.

Our catalog presents a curated selection ofproducts from leading global brands, designed to meet the highest standards in the oil & gas, industrial power, and construction sectors.

Together we build solutions that protect our planet while maximizing profitability for our clients.

About PAROC

Paroc is a leading European manufacturer of energy-efficient and fire-resistant stone wool insulation solutions. The company offers products for building construction, HVAC systems, marine and offshore applications, as well as acoustic and industrial uses.

PRODUCT DATA SHEET

PAROC Pro Section (WR) 100

Stone wool pipe section with outstanding water

repellence. Thermal insulation in industrial pipework.

The superior water repellency of PAROC WR products at elevated temperatures reduces the risk of corrosion under insulation. PAROC

WR products are also safe to use in combination with painting operations: PAROC WR products are 3rd party tested and certified according to the most stringent class of the LABS conformity (paint wetting impairment) standard, VDMA 24364.

PAROC stone wool products are capable of withstanding high temperatures. The binder starts to evaporate when its temperature exceeds approximately 200°C. The insulating properties remain unchanged, but the compressive stress weakens. The softening temperature of stone wool products is over 1000°C.

Certification Number	0809-CPR-1016 Eurofins Expert Services Ltd, Kivimiehentie 4, FI-02150
Espoo. Designation	Finland
Code Nominal Density Package Type	MW-EN 14303-T8/T9-ST(+)640-WS1-CL10 100 kg/m^3 Plastic packs on pallet

DIMENSIONS		
THICKNESS	INNER DIAMETER	PIPE SECTION LENGTH
20 - 160 mm	12 - 1016 mm	1200 mm
According to EN 13467	According to EN 13467	According to EN 13467
T8 for outer diameter < 150 mm, T9 for outer diameter ≥ 150 mm		

PROPERTY	VALUE	ACCORDING TO
DIMENSIONAL STABILITY		
Maximum Service Temperature - Dimensional Stability	640 °C	EN 14303:2009+A1:2013 (EN 14707)

Properties

PROPERTY	VALUE	ACCORDING TO
FIRE PROPERTIES		
Reaction to Fire, Euroclass	$A1_L$	EN 14303:2009+A1:2013 (EN 13501-1)
Continuous Glowing Combustion	NPD	EN 14303:2009+A1:2013
THERMAL PROPERTIES		
Thermal Conductivity in 10 °C, λ_{10}	0,036 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Thermal Conductivity in 50 °C, λ_{50}	0,039 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Thermal Conductivity in 100 °C, λ_{100}	0,045 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Thermal Conductivity in 150 °C, λ_{150}	0,054 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Thermal Conductivity in 200 °C, λ_{200}	0,064 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Thermal Conductivity in 300 °C, λ_{300}	0,092 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Dimensions and Tolerances	T8/T9	EN 14303:2009+A1:2013 (EN 823)
MOISTURE PROPERTIES		
Water Absorption, Short Term WS, (W_p)	≤ 1 kg/m^2	EN 14303:2009+A1:2013 (EN 13472)
Water Vapour Diffusion Resistance	NPD	EN 14303:2009+A1:2013 (EN 13469)
Chloride Ions, Cl-	< 10 ppm	EN 14303:2009+A1:2013 (EN 13468)
PAROC WR Pipe Sections are providing very low water absorption at elevated temperatures according to EN 13472.		
SOUND PROPERTIES		
Sound Absorption	NPD	EN 14303:2009+A1:2013 (EN ISO 354)
EMISSIONS		
Release of Dangerous Substances	NPD	EN 14303:2009+A1:2013
DURABILITY OF FIRE AND THERMAL PROPERTIES		
Durabilityof Reaction to Fire Against Ageing/Degradation	No change in reaction to fire properties for mineral wool products. The fire performance of mineral wool does not deteriorate with time. The Euroclass classification of the product is related to the organic content, which cannot increase with time.	
Durabilityof Reaction to Fire Against High Temperature	The fire performance of mineral wool does not deteriorate with high temperature. The Euroclass classification of the product is related to the organic content, which remains constant or decreases with high temperature.	
Durabilityof Thermal Resistance Against Ageing/Degradation	Thermal conductivity of mineral wool products does not change with time, experience has shown the fibre structure to be stable and the porositycontains no other gases than atmospheric air.	

PRODUCT DATA SHEET

PAROC Pro Section (WR) 140

Stone wool pipe section with outstanding water

repellence. Thermal insulation in industrial pipework.

The superior water repellency of PAROC WR products at elevated temperatures reduces the risk of corrosion under insulation. PAROC

WR products are also safe to use in combination with painting operations: PAROC WR products are 3rd party tested and certified according to the most stringent class of the LABS conformity (paint wetting impairment) standard, VDMA 24364.

PAROC stone wool products are capable of withstanding high temperatures. The binder starts to evaporate when its temperature exceeds approximately 200°C. The insulating properties remain unchanged, but the compressive stress weakens. The softening temperature of stone wool products is over 1000°C.

Certification Number	0809-CPR-1016 Eurofins Expert Services Ltd, Kivimiehentie 4, FI-02150
Espoo. Designation	Finland
Code Nominal Density Package Type	MW-EN 14303-T8/T9-ST(+)680-WS1-CL10 140 kg/m^3 Plastic packs on pallet

DIMENSIONS		
THICKNESS	INNER DIAMETER	PIPE SECTION LENGTH
20 - 160 mm	12 - 1016 mm	1200 mm
According to EN 13467	According to EN 13467	According to EN 13467

PROPERTY	VALUE	ACCORDING TO
DIMENSIONAL STABILITY		
Maximum Service Temperature - Dimensional Stability	680 °C	EN 14303:2009+A1:2013 (EN 14707)

Properties

PROPERTY	VALUE	ACCORDING TO
FIRE PROPERTIES		
Reaction to Fire, Euroclass	$A1_L$	EN 14303:2009+A1:2013 (EN 13501-1)
Continuous Glowing Combustion	NPD	EN 14303:2009+A1:2013
THERMAL PROPERTIES		
Thermal Conductivity in 10 °C, λ_{10}	0,038 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Thermal Conductivity in 50 °C, λ_{50}	0,041 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Thermal Conductivity in 100 °C, λ_{100}	0,047 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Thermal Conductivity in 150 °C, λ_{150}	0,054 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Thermal Conductivity in 200 °C, λ_{200}	0,063 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Thermal Conductivity in 300 °C, λ_{300}	0,085 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Thermal Conductivity in 400 °C, λ_{400}	0,110 W/mK	EN 14303:2009+A1:2013 (EN ISO 8497)
Dimensions and Tolerances	T8/T9	EN 14303:2009+A1:2013 (EN 823)
MOISTURE PROPERTIES		
Water Absorption, Short Term WS, (W_p)	≤ 1 kg/m^2	EN 14303:2009+A1:2013 (EN 13472)
Water Vapour Diffusion Resistance	NPD	EN 14303:2009+A1:2013 (EN 13469)
Chloride Ions, Cl-	< 10 ppm	EN 14303:2009+A1:2013 (EN 13468)
PAROC WR Pipe Sections are providing very low water absorption at elevated temperatures according to EN 13472.		
SOUND PROPERTIES		
Sound Absorption	NPD	EN 14303:2009+A1:2013 (EN ISO 354)
EMISSIONS		
Release of Dangerous Substances	NPD	EN 14303:2009+A1:2013
DURABILITY OF FIRE AND THERMAL PROPERTIES		
Durabilityof Reaction to Fire Against Ageing/Degradation	No change in reaction to fire properties for mineral wool products. The fire performance of mineral wool does not deteriorate with time. The Euroclass classification of the product is related to the organic content, which cannot increase with time.	
Durabilityof Reaction to Fire Against High Temperature	The fire performance of mineral wool does not deteriorate with high temperature. The Euroclass classification of the product is related to the organic content, which remains constant or decreases with high temperature.	
Durabilityof Thermal Resistance Against Ageing/Degradation	Thermal conductivity of mineral wool products does not change with time, experience has shown the fibre structure to be stable and the porositycontains no other gases than atmospheric air.	

PRODUCT DATA SHEET

PAROC Pro Wired Mat (WR) 550

Stone wool wired mat with outstanding water repellence and galvanized net.

Even available with stainless steel net and/or sewing wire.

Thermal insulation of cylindrical, conic and flat surfaces.

The superior water repellency of PAROC WR products at elevated temperatures reduces the risk of corrosion under insulation. PAROC WR products are also safe to use in combination with painting operations: PAROC WR products are 3rd party tested and certified according to the most stringent class of the LABS conformity (paint wetting impairment) standard, VDMA 24364.

Maximum temperature exposure of the galvanized mesh: 300°C. For higher temperatures we recommend choosing stainless steel (W2) or black iron mesh (W1).
PAROC stone wool products are capable of withstanding high temperatures. The binder starts to evaporate when its temperature exceeds approximately 200 °C. The insulating properties remain unchanged, but the compressive stress weakens. The softening temperature of stone wool products is over 1000 °C.

Certification Number
0809-CPR-1016 Eurofins Expert Services Ltd, Kivimiehentie 4, FI-02150

Espoo. Designation Code Nominal Density Package Type
Finland
MW-EN 14303-T2-ST(+)600-WS1-CL10 70 kg/m^3
Plastic Packs on Pallet

DIMENSIONS	
WIDTH X LENGTH	THICKNESS
Width 500/600/900/1000 mm, length 2000 - 8000 mm depending on thickness. mm	30 - 120 mm
According to EN 822	According to EN 823

PROPERTY	VALUE	ACCORDING TO
DIMENSIONAL STABILITY		
Maximum Service Temperature - Dimensional Stability	600 °C	EN 14303:2009+A1:2013 (EN 14706)

Properties

PROPERTY	VALUE	ACCORDING TO
FIRE PROPERTIES		
Reaction to Fire, Euroclass	A1	EN 14303:2009+A1:2013 (EN 13501-1)
Continuous Glowing Combustion	NPD	EN 14303:2009+A1:2013
THERMAL PROPERTIES		
Thermal Conductivity in 10 °C, λ_{10}	0,037 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 50 °C, λ_{50}	0,042 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 100 °C, λ_{100}	0,049 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 150 °C, λ_{150}	0,057 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 200 °C, λ_{200}	0,067 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 300 °C, λ_{300}	0,093 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 400 °C, λ_{400}	0,126 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 500 °C, λ_{500}	0,166 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 600 °C, λ_{600}	0,215 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Dimensions and Tolerances	T2	EN 14303:2009+A1:2013 (EN 823)
MOISTURE PROPERTIES		
Water Absorption, Short Term WS, (W_p)	≤ 1 kg/m^2	EN 14303:2009+A1:2013 (EN 1609)
Water Vapour Diffusion Resistance	NPD	EN 14303:2009+A1:2013 (EN 12086)
Chloride Ions, Cl-	< 10 ppm	EN 14303:2009+A1:2013 (EN 13468)
PAROC WR Wired Mats are providing very low water absorption at elevated temperatures according to EN 1609		
SOUND PROPERTIES		
Sound Absorption	NPD	EN 14303:2009+A1:2013 (EN ISO 354)
MECHANICAL PROPERTIES		
Compressive Stress at 10 % deformation CS(10), σ_{10}	NPD	EN 14303:2009+A1:2013 (EN 826)
EMISSIONS		
Release of Dangerous Substances	NPD	EN 14303:2009+A1:2013
DURABILITY OF FIRE AND THERMAL PROPERTIES		
Durabilityof Reaction to Fire Against Ageing/Degradation	No change in reaction to fire properties for mineral wool products. The fire performance of mineral wool does not deteriorate with time. The Euroclass classification of the product is related to the organic content, which cannot increase with time.	
Durabilityof Reaction to Fire Against High Temperature	The fire performance of mineral wool does not deteriorate with high temperature. The Euroclass classification of the product is related to the organic content, which remains constant or decreases with high temperature.	
Durabilityof Thermal Resistance Against Ageing/Degradation	Thermal conductivity of mineral wool products does not change with time, experience has shown the fibre structure to be stable and the porositycontains no other gases than atmospheric air.	

Appearance

Facing Material	Galvanized wire mesh and sewing wire.

PRODUCT DATA SHEET

PAROC Pro Wired Mat (WR) 660

Stone wool wired mat with outstanding water repellence and galvanized net.

Even available with stainless steel net and/or sewing wire.

Thermal insulation of cylindrical, conic and flat surfaces.

The superior water repellency of PAROC WR products at elevated

temperatures reduces the risk of corrosion under insulation. PAROC WR products are also safe to use in combination with painting operations: PAROC WR products are 3rd party tested and certified according to the most stringent class of the LABS conformity (paint wetting impairment) standard, VDMA 24364.

Maximum temperature exposure of the galvanized mesh: 300°C. For higher temperatures we recommend choosing stainless steel (W2) or black iron mesh (W1).

PAROC stone wool products are capable of withstanding high temperatures. The binder starts to evaporate when its temperature exceeds approximately 200 °C. The insulating properties remain unchanged, but the compressive stress weakens. The softening temperature of stone wool products is over 1000 °C.

Certification Number
0809-CPR-1016 Eurofins Expert Services Ltd, Kivimiehentie 4, FI-02150

Espoo. Designation Code
Finland
MW-EN 14303-T2-ST(+)660-WS1-CL10

Nominal Density
80 kg/m^3

Package Type
Plastic Packs on Pallet

DIMENSIONS	
WIDTH X LENGTH	THICKNESS
Width 500/600/900/1000 mm, length 2000 - 8000 mm depending on thickness. mm	30 - 120 mm
According to EN 822	According to EN 823

PROPERTY	VALUE	ACCORDING TO
DIMENSIONAL STABILITY		
Maximum Service Temperature - Dimensional Stability	660 °C	EN 14303:2009+A1:2013 (EN 14706)

Properties

PROPERTY	VALUE	ACCORDING TO
FIRE PROPERTIES		
Reaction to Fire, Euroclass	A1	EN 14303:2009+A1:2013 (EN 13501-1)
Continuous Glowing Combustion	NPD	EN 14303:2009+A1:2013
THERMAL PROPERTIES		
Thermal Conductivity in 10 °C, λ_{10}	0,035 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 50 °C, λ_{50}	0,040 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 100 °C, λ_{100}	0,046 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 150 °C, λ_{150}	0,053 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 200 °C, λ_{200}	0,062 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 300 °C, λ_{300}	0,084 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 400 °C, λ_{400}	0,111 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 500 °C, λ_{500}	0,146 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 600 °C, λ_{600}	0,190 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 660 °C, λ_{660}	0,213 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Dimensions and Tolerances	T2	EN 14303:2009+A1:2013 (EN 823)
MOISTURE PROPERTIES		
Water Absorption, Short Term WS, (W_p)	≤ 1 kg/m^2	EN 14303:2009+A1:2013 (EN 1609)
Water Vapour Diffusion Resistance	NPD	EN 14303:2009+A1:2013 (EN 12086)
Chloride Ions, Cl-	< 10 ppm	EN 14303:2009+A1:2013 (EN 13468)
PAROC WR Wired Mats are providing very low water absorption at elevated temperatures according to EN 1609		
SOUND PROPERTIES		
Sound Absorption	NPD	EN 14303:2009+A1:2013 (EN ISO 354)
MECHANICAL PROPERTIES		
Compressive Stress at 10 % deformation CS(10), σ_{10}	NPD	EN 14303:2009+A1:2013 (EN 826)
EMISSIONS		
Release of Dangerous Substances	NPD	EN 14303:2009+A1:2013
DURABILITY OF FIRE AND THERMAL PROPERTIES		
Durabilityof Reaction to Fire Against Ageing/Degradation	No change in reaction to fire properties for mineral wool products. The fire performance of mineral wool does not deteriorate with time. The Euroclass classification of the product is related to the organic content, which cannot increase with time.	
Durabilityof Reaction to Fire Against High Temperature	The fire performance of mineral wool does not deteriorate with high temperature. The Euroclass classification of the product is related to the organic content, which remains constant or decreases with high temperature.	
Durabilityof Thermal Resistance Against Ageing/Degradation	Thermal conductivity of mineral wool products does not change with time, experience has shown the fibre structure to be stable and the porositycontains no other gases than atmospheric air.	

Appearance

Facing Material	Galvanized wire mesh and sewing wire.

PRODUCT DATA SHEET

PAROC Pro Wired Mat (WR) 680

Stone wool wired mat with outstanding water repellence and galvanized net.
Even available with stainless steel net and/or sewing wire.
Thermal insulation of cylindrical, conic and flat surfaces.
The superior water repellency of PAROC WR products at elevated

temperatures reduces the risk of corrosion under insulation. PAROC WR products are also safe to use in combination with painting operations: PAROC WR products are 3rd party tested and certified according to the most stringent class of the LABS conformity (paint wetting impairment) standard, VDMA 24364.

Maximum temperature exposure of the galvanized mesh: 300°C. For higher temperatures we recommend choosing stainless steel (W2) or black iron mesh (W1).
PAROC stone wool products are capable of withstanding high temperatures. The binder starts to evaporate when its temperature exceeds approximately 200 °C. The insulating properties remain unchanged, but the compressive stress weakens. The softening temperature of stone wool products is over 1000 °C.

Certification Number
0809-CPR-1016 Eurofins Expert Services Ltd, Kivimiehentie 4, FI-02150

Espoo. Designation
Finland

Code Nominal
MW-EN 14303-T2-ST(+)680-WS1-CL10 100 kg/m^3

Density Package
Plastic Packs on Pallet

Type

DIMENSIONS	
WIDTH X LENGTH	THICKNESS
Width 500/600/900/1000 mm, length 2000 - 8000 mm depending on thickness.	30 - 120 mm
According to EN 822	According to EN 823

PROPERTY	VALUE	ACCORDING TO
DIMENSIONAL STABILITY		
Maximum Service Temperature - Dimensional Stability	680 °C	EN 14303:2009+A1:2013 (EN 14706)

Properties

PROPERTY	VALUE	ACCORDING TO
FIRE PROPERTIES		
Reaction to Fire, Euroclass	A1	EN 14303:2009+A1:2013 (EN 13501-1)
Continuous Glowing Combustion	NPD	EN 14303:2009+A1:2013
THERMAL PROPERTIES		
Thermal Conductivity in 10 °C, λ_{10}	0,035 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 50 °C, λ_{50}	0,039 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 100 °C, λ_{100}	0,045 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 150 °C, λ_{150}	0,051 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 200 °C, λ_{200}	0,059 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 300 °C, λ_{300}	0,078 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 400 °C, λ_{400}	0,102 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 500 °C, λ_{500}	0,131 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 600 °C, λ_{600}	0,167 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 680 °C, λ_{680}	0,196 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Dimensions and Tolerances	T2	EN 14303:2009+A1:2013 (EN 823)
MOISTURE PROPERTIES		
Water Absorption, Short Term WS, (W_p)	≤ 1 kg/m^2	EN 14303:2009+A1:2013 (EN 1609)
Water Vapour Diffusion Resistance	NPD	EN 14303:2009+A1:2013 (EN 12086)
Chloride Ions, Cl-	< 10 ppm	EN 14303:2009+A1:2013 (EN 13468)
PAROC WR Wired Mats are providing very low water absorption at elevated temperatures according to EN 1609		
SOUND PROPERTIES		
Sound Absorption	NPD	EN 14303:2009+A1:2013 (EN ISO 354)
MECHANICAL PROPERTIES		
Compressive Stress at 10 % deformation CS(10), σ_{10}	NPD	EN 14303:2009+A1:2013 (EN 826)
EMISSIONS		
Release of Dangerous Substances	NPD	EN 14303:2009+A1:2013
DURABILITY OF FIRE AND THERMAL PROPERTIES		
Durabilityof Reaction to Fire Against Ageing/Degradation	No change in reaction to fire properties for mineral wool products. The fire performance of mineral wool does not deteriorate with time. The Euroclass classification of the product is related to the organic content, which cannot increase with time.	
Durabilityof Reaction to Fire Against High Temperature	The fire performance of mineral wool does not deteriorate with high temperature. The Euroclass classification of the product is related to the organic content, which remains constant or decreases with high temperature.	
Durabilityof Thermal Resistance Against Ageing/Degradation	Thermal conductivity of mineral wool products does not change with time, experience has shown the fibre structure to be stable and the porositycontains no other gases than atmospheric air.	

Appearance

Facing Material	Galvanized wire mesh and sewing wire.

PRODUCT DATA SHEET

PAROC Pro Wired Mat (WR) 700 TH1

Stone wool wired mat with outstanding water repellence and galvanized net. Thermal insulation of cylindrical, conic and flat surfaces.

The superior water repellency of PAROC WR products at elevated temperatures reduces the risk of corrosion under insulation. PAROC

WR products are also safe to use in combination with painting operations: PAROC WR products are 3rd party tested and certified according to the most stringent class of the LABS conformity (paint wetting impairment) standard, VDMA 24364.

Maximum temperature exposure of the galvanized mesh: 300°C. For higher temperatures we recommend choosing stainless steel (W2) or black iron mesh (W1).

PAROC stone wool products are capable of withstanding high temperatures. The binder starts to evaporate when its temperature exceeds approximately 200°C. The insulating properties remain unchanged, but the compressive stress weakens. The softening temperature of stone wool products is over 1000°C.

Certification Number	0809-CPR-1016 Eurofins Expert Services Ltd, Kivimiehentie 4, FI-02150
Espoo. Designation	Finland
Code Nominal Density Package Type	MW-EN 14303-T2-ST(+)700-WS1-CL10 130 kg/m^3 Plastic packs on pallet

DIMENSIONS	
WIDTH X LENGTH	THICKNESS
1000/(500) x 6000 mm	30 mm
1000/(500) x 5000 mm	40 mm
1000/(500) x 4500 mm	50 mm
1000/(500) x 4000 mm	60 mm
1000/(500) x 3000 mm	70 mm
1000/(500) x 2500 mm	80 mm
1000/(500) x 2000 mm	100 mm
According to EN 822	According to EN 823

PROPERTY	VALUE	ACCORDING TO
DIMENSIONAL STABILITY		
Maximum Service Temperature - Dimensional Stability	700 °C	EN 14303:2009+A1:2013 (EN 14706)

Properties

PROPERTY	VALUE	ACCORDING TO
FIRE PROPERTIES		
Reaction to Fire, Euroclass	A1	EN 14303:2009+A1:2013 (EN 13501-1)
Continuous Glowing Combustion	NPD	EN 14303:2009+A1:2013
THERMAL PROPERTIES		
Thermal Conductivity in 10 °C, λ_{10}	0,038 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 50 °C, λ_{50}	0,041 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 100 °C, λ_{100}	0,046 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 150 °C, λ_{150}	0,052 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 200 °C, λ_{200}	0,059 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 300 °C, λ_{300}	0,077 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 400 °C, λ_{400}	0,100 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 500 °C, λ_{500}	0,128 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 600 °C, λ_{600}	0,161 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 700 °C, λ_{700}	0,196 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Dimensions and Tolerances	T2	EN 14303:2009+A1:2013 (EN 823)
MOISTURE PROPERTIES		
Water Absorption, Short Term WS, (W_p)	≤ 1 kg/m^2	EN 14303:2009+A1:2013 (EN 1609)
Water Vapour Diffusion Resistance	NPD	EN 14303:2009+A1:2013 (EN 12086)
Chloride Ions, Cl-	< 10 ppm	EN 14303:2009+A1:2013 (EN 13468)
PAROC WR Wired Mats are providing very low water absorption at elevated temperatures according to EN 1609		
SOUND PROPERTIES		
Sound Absorption	NPD	EN 14303:2009+A1:2013 (EN ISO 354)
MECHANICAL PROPERTIES		
Compressive Stress at 10 % deformation CS(10), σ_{10}	NPD	EN 14303:2009+A1:2013 (EN 826)
EMISSIONS		
Release of Dangerous Substances	NPD	EN 14303:2009+A1:2013
DURABILITY OF FIRE AND THERMAL PROPERTIES		
Durabilityof Reaction to Fire Against Ageing/Degradation	No change in reaction to fire properties for mineral wool products. The fire performance of mineral wool does not deteriorate with time. The Euroclass classification of the product is related to the organic content, which cannot increase with time.	
Durabilityof Reaction to Fire Against High Temperature	The fire performance of mineral wool does not deteriorate with high temperature. The Euroclass classification of the product is related to the organic content, which remains constant or decreases with high temperature.	
Durabilityof Thermal Resistance Against Ageing/Degradation	Thermal conductivity of mineral wool products does not change with time, experience has shown the fibre structure to be stable and the porositycontains no other gases than atmospheric air.	

Appearance

Facing Material	Galvanized wire mesh and sewing wire.

PRODUCT DATA SHEET

PAROC Pro Slab (WR) 640

Non-combustible stone wool insulation slab with outstanding water repellence.

Thermal insulation of industrial flue ducts, vessels, boiler walls, boiler penthouses, filters and other industrial equipment.

The superior water repellency of PAROC WR products at elevated temperatures reduces the risk of corrosion under insulation. PAROC WR products are also safe to use in combination with painting operations: PAROC WR products are 3rd party tested and certified according to the most stringent class of the LABS conformity (paint wetting impairment) standard, VDMA 24364.

PAROC stone wool products are capable of withstanding high temperatures. The binder starts to evaporate when its temperature exceeds approximately 200 °C. The insulating properties remain unchanged, but the compressive stress weakens. The softening temperature of stone wool products is over 1000 °C.

Certification Number
0809-CPR-1016 Eurofins Expert Services Ltd, Kivimiehentie 4, FI-02150

Espoo. Designation
Finland

Code Nominal Density Package Type
MW-EN 14303-T5-ST(+)640-WS1-CL10 80 kg/m^3
Plastic packs on pallet

DIMENSIONS	
WIDTH X LENGTH	THICKNESS
600 x 1200 mm	20 - 250 mm
According to EN 822	According to EN 823
Other Dimensions: Available on request.	

PROPERTY	VALUE	ACCORDING TO
DIMENSIONAL STABILITY		
Maximum Service Temperature - Dimensional Stability	640 °C	EN 14303:2009+A1:2013 (EN 14706)

Properties

PROPERTY	VALUE	ACCORDING TO
FIRE PROPERTIES		
Reaction to Fire, Euroclass	A1	EN 14303:2009+A1:2013 (EN 13501-1)
Continuous Glowing Combustion	NPD	EN 14303:2009+A1:2013
THERMAL PROPERTIES		
Thermal Conductivity in 10 °C, λ_{10}	0,035 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 50 °C, λ_{50}	0,039 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 100 °C, λ_{100}	0,045 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 150 °C, λ_{150}	0,053 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 200 °C, λ_{200}	0,062 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 300 °C, λ_{300}	0,084 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 400 °C, λ_{400}	0,112 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 500 °C, λ_{500}	0,144 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 600 °C, λ_{600}	0,185 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 640 °C, λ_{640}	0,203 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Dimensions and Tolerances	T5	EN 14303:2009+A1:2013 (EN 823)
MOISTURE PROPERTIES		
Water Absorption, Short Term WS, (W_p)	≤ 1 kg/m^2	EN 14303:2009+A1:2013 (EN 1609)
Water Vapour Diffusion Resistance	NPD	EN 14303:2009+A1:2013 (EN 12086)
Chloride Ions, Cl-	< 10 ppm	EN 14303:2009+A1:2013 (EN 13468)
PAROC WR Slabs are providing very low water absorption at elevated temperatures according to EN 1609		
SOUND PROPERTIES		
Sound Absorption	NPD	EN 14303:2009+A1:2013 (EN ISO 354)
MECHANICAL PROPERTIES		
Compressive Stress at 10 % deformation CS(10), σ_{10}	NPD	EN 14303:2009+A1:2013 (EN 826)
EMISSIONS		
Release of Dangerous Substances	NPD	EN 14303:2009+A1:2013
DURABILITY OF FIRE AND THERMAL PROPERTIES		
Durabilityof Reaction to Fire Against Ageing/Degradation	No change in reaction to fire properties for mineral wool products. The fire performance of mineral wool does not deteriorate with time. The Euroclass classification of the product is related to the organic content, which cannot increase with time.	
Durabilityof Reaction to Fire Against High Temperature	The fire performance of mineral wool does not deteriorate with high temperature. The Euroclass classification of the product is related to the organic content, which remains constant or decreases with high temperature.	
Durabilityof Thermal Resistance Against Ageing/Degradation	Thermal conductivity of mineral wool products does not change with time, experience has shown the fibre structure to be stable and the porositycontains no other gases than atmospheric air.	

PRODUCT DATA SHEET

PAROC Pro Slab (WR) 660

Certification Number
Espoo. Designation
Code Nominal
Density Package
Type

Non-combustible stone wool insulation slab with outstanding water repellence.

Thermal insulation of industrial flue ducts, vessels, boiler walls, boiler penthouses, filters and other industrial equipment.

The superior water repellency of PAROC WR products at elevated temperatures reduces the risk of corrosion under insulation. PAROC WR products are also safe to use in combination with painting operations: PAROC WR products are 3rd party tested and certified according to the most stringent class of the LABS conformity (paint wetting impairment) standard, VDMA 24364.

PAROC stone wool products are capable of withstanding high temperatures. The binder starts to evaporate when its temperature exceeds approximately 200 °C. The insulating properties remain unchanged, but the compressive stress weakens. The softening temperature of stone wool products is over 1000 °C.
0809-CPR-1016 Eurofins Expert Services Ltd, Kivimiehentie 4, FI-02150

Finland
MW-EN 14303-T5-ST(+)660-WS1-CL10 100 kg/m^3
Plastic packs on pallet

DIMENSIONS	
WIDTH X LENGTH	THICKNESS
600 x 1200 mm	25 - 210 mm
According to EN 822	According to EN 823
Other Dimensions: Other dimensions available on request.	

PROPERTY	VALUE	ACCORDING TO
DIMENSIONAL STABILITY		
Maximum Service Temperature - Dimensional Stability	660 °C	EN 14303:2009+A1:2013 (EN 14706)

Properties

PROPERTY	VALUE	ACCORDING TO
FIRE PROPERTIES		
Reaction to Fire, Euroclass	A1	EN 14303:2009+A1:2013 (EN 13501-1)
Continuous Glowing Combustion	NPD	EN 14303:2009+A1:2013
THERMAL PROPERTIES		
Thermal Conductivity in 10 °C, λ_{10}	0,035 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 50 °C, λ_{50}	0,039 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 100 °C, λ_{100}	0,045 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 150 °C, λ_{150}	0,052 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 200 °C, λ_{200}	0,060 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 300 °C, λ_{300}	0,081 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 400 °C, λ_{400}	0,107 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 500 °C, λ_{500}	0,140 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 600 °C, λ_{600}	0,175 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 660 °C, λ_{660}	0,200 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Dimensions and Tolerances	T5	EN 14303:2009+A1:2013 (EN 823)
MOISTURE PROPERTIES		
Water Absorption, Short Term WS, (W_p)	≤ 1 kg/m^2	EN 14303:2009+A1:2013 (EN 1609)
Water Vapour Diffusion Resistance	NPD	EN 14303:2009+A1:2013 (EN 12086)
Chloride Ions, Cl-	< 10 ppm	EN 14303:2009+A1:2013 (EN 13468)
PAROC WR Slabs are providing very low water absorption at elevated temperatures according to EN 1609		
SOUND PROPERTIES		
Sound Absorption	NPD	EN 14303:2009+A1:2013 (EN ISO 354)
MECHANICAL PROPERTIES		
Compressive Stress at 10 % deformation CS(10), σ_{10}	NPD	EN 14303:2009+A1:2013 (EN 826)
EMISSIONS		
Release of Dangerous Substances	NPD	EN 14303:2009+A1:2013
DURABILITY OF FIRE AND THERMAL PROPERTIES		
Durabilityof Reaction to Fire Against Ageing/Degradation	No change in reaction to fire properties for mineral wool products. The fire performance of mineral wool does not deteriorate with time. The Euroclass classification of the product is related to the organic content, which cannot increase with time.	
Durabilityof Reaction to Fire Against High Temperature	The fire performance of mineral wool does not deteriorate with high temperature. The Euroclass classification of the product is related to the organic content, which remains constant or decreases with high temperature.	
Durabilityof Thermal Resistance Against Ageing/Degradation	Thermal conductivity of mineral wool products does not change with time, experience has shown the fibre structure to be stable and the porositycontains no other gases than atmospheric air.	

PRODUCT DATA SHEET

PAROC Pro Slab (WR) 680

Certification Number
Espoo. Designation Code Nominal Density Package Type

Non-combustible stone wool insulation slab with outstanding water repellence.

Thermal insulation of industrial flue ducts, vessels, boiler walls, boiler penthouses, filters and other industrial equipment.

The superior water repellency of PAROC WR products at elevated temperatures reduces the risk of corrosion under insulation. PAROC WR products are also safe to use in combination with painting operations: PAROC WR products are 3rd party tested and certified according to the most stringent class of the LABS conformity (paint wetting impairment) standard, VDMA 24364.

PAROC stone wool products are capable of withstanding high temperatures. The binder starts to evaporate when its temperature exceeds approximately 200 °C. The insulating properties remain unchanged, but the compressive stress weakens. The softening temperature of stone wool products is over 1000 °C.
0809-CPR-1016 Eurofins Expert Services Ltd, Kivimiehentie 4, FI-02150

Finland
MW-EN 14303-T5-ST(+)680-WS1-CL10 120 kg/m^3
Plastic packs on pallet

DIMENSIONS	
WIDTH X LENGTH	THICKNESS
600 x 1200 mm	20 - 175 mm
According to EN 822	According to EN 823
Other Dimensions: Available on request.	

PROPERTY	VALUE	ACCORDING TO
DIMENSIONAL STABILITY		
Maximum Service Temperature - Dimensional Stability	680 °C	EN 14303:2009+A1:2013 (EN 14706)

Properties

PROPERTY	VALUE	ACCORDING TO
FIRE PROPERTIES		
Reaction to Fire, Euroclass	A1	EN 14303:2009+A1:2013 (EN 13501-1)
Continuous Glowing Combustion	NPD	EN 14303:2009+A1:2013
THERMAL PROPERTIES		
Thermal Conductivity in 10 °C, λ_{10}	0,037 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 50 °C, λ_{50}	0,041 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 100 °C, λ_{100}	0,046 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 150 °C, λ_{150}	0,052 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 200 °C, λ_{200}	0,059 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 300 °C, λ_{300}	0,077 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 400 °C, λ_{400}	0,099 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 500 °C, λ_{500}	0,128 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 600 °C, λ_{600}	0,162 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 680 °C, λ_{680}	0,192 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Dimensions and Tolerances	T5	EN 14303:2009+A1:2013 (EN 823)
MOISTURE PROPERTIES		
Water Absorption, Short Term WS, (W_p)	≤ 1 kg/m^2	EN 14303:2009+A1:2013 (EN 1609)
Water Vapour Diffusion Resistance	NPD	EN 14303:2009+A1:2013 (EN 12086)
Chloride Ions, Cl-	< 10 ppm	EN 14303:2009+A1:2013 (EN 13468)
PAROC WR Slabs are providing very low water absorption at elevated temperatures according to EN 1609		
SOUND PROPERTIES		
Sound Absorption	NPD	EN 14303:2009+A1:2013 (EN ISO 354)
MECHANICAL PROPERTIES		
Compressive Stress at 10 % deformation CS(10), σ_{10}	NPD	EN 14303:2009+A1:2013 (EN 826)
EMISSIONS		
Release of Dangerous Substances	NPD	EN 14303:2009+A1:2013
DURABILITY OF FIRE AND THERMAL PROPERTIES		
Durabilityof Reaction to Fire Against Ageing/Degradation	No change in reaction to fire properties for mineral wool products. The fire performance of mineral wool does not deteriorate with time. The Euroclass classification of the product is related to the organic content, which cannot increase with time.	
Durabilityof Reaction to Fire Against High Temperature	The fire performance of mineral wool does not deteriorate with high temperature. The Euroclass classification of the product is related to the organic content, which remains constant or decreases with high temperature.	
Durabilityof Thermal Resistance Against Ageing/Degradation	Thermal conductivity of mineral wool products does not change with time, experience has shown the fibre structure to be stable and the porositycontains no other gases than atmospheric air.	

PRODUCT DATA SHEET

PAROC Pro Slab (WR) 700

Certification Number
Espoo. Designation
Code Nominal
Density Package
Type

Non-combustible stone wool insulation slab with outstanding water repellence.

Thermal insulation of process tank walls, vessels, smaller rounded and other large cylindrical or flat surfaces.

The superior water repellency of PAROC WR products at elevated temperatures reduces the risk of corrosion under insulation. PAROC WR products are also safe to use in combination with painting operations: PAROC WR products are 3rd party tested and certified according to the most stringent class of the LABS conformity (paint wetting impairment) standard, VDMA 24364.

PAROC stone wool products are capable of withstanding high temperatures. The binder starts to evaporate when its temperature exceeds approximately 200 °C. The insulating properties remain unchanged, but the compressive stress weakens. The softening temperature of stone wool products is over 1000 °C.
0809-CPR-1016 Eurofins Expert Services Ltd, Kivimiehentie 4, FI-02150

Finland
MW-EN 14303-T5-ST(+)700-WS1-CL10 150 kg/m^3
Plastic packs on pallet

DIMENSIONS	
WIDTH X LENGTH	THICKNESS
600 x 1200 mm	25 - 140 mm
According to EN 822	According to EN 823
Other Dimensions: Other dimensions available on request.	

PROPERTY	VALUE	ACCORDING TO
DIMENSIONAL STABILITY		
Maximum Service Temperature - Dimensional Stability	700 °C	EN 14303:2009+A1:2013 (EN 14706)

Properties

PROPERTY	VALUE	ACCORDING TO
FIRE PROPERTIES		
Reaction to Fire, Euroclass	A1	EN 14303:2009+A1:2013 (EN 13501-1)
Continuous Glowing Combustion	NPD	EN 14303:2009+A1:2013
THERMAL PROPERTIES		
Thermal Conductivity in 10 °C, λ_{10}	0,037 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 50 °C, λ_{50}	0,041 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 100 °C, λ_{100}	0,046 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 150 °C, λ_{150}	0,052 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 200 °C, λ_{200}	0,059 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 300 °C, λ_{300}	0,077 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 400 °C, λ_{400}	0,099 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 500 °C, λ_{500}	0,128 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 600 °C, λ_{600}	0,162 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Thermal Conductivity in 700 °C, λ_{700}	0,200 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Dimensions and Tolerances	T5	EN 14303:2009+A1:2013 (EN 823)
MOISTURE PROPERTIES		
Water Absorption, Short Term WS, (W_p)	≤ 1 kg/m^2	EN 14303:2009+A1:2013 (EN 1609)
Water Vapour Diffusion Resistance	NPD	EN 14303:2009+A1:2013 (EN 12086)
Chloride Ions, Cl-	< 10 ppm	EN 14303:2009+A1:2013 (EN 13468)
PAROC WR Slabs are providing very low water absorption at elevated temperatures according to EN 1609		
SOUND PROPERTIES		
Sound Absorption	NPD	EN 14303:2009+A1:2013 (EN ISO 354)
MECHANICAL PROPERTIES		
Compressive Stress at 10 % deformation CS(10), σ_{10}	NPD	EN 14303:2009+A1:2013 (EN 826)
EMISSIONS		
Release of Dangerous Substances	NPD	EN 14303:2009+A1:2013
DURABILITY OF FIRE AND THERMAL PROPERTIES		
Durabilityof Reaction to Fire Against Ageing/Degradation	No change in reaction to fire properties for mineral wool products. The fire performance of mineral wool does not deteriorate with time. The Euroclass classification of the product is related to the organic content, which cannot increase with time.	
Durabilityof Reaction to Fire Against High Temperature	The fire performance of mineral wool does not deteriorate with high temperature. The Euroclass classification of the product is related to the organic content, which remains constant or decreases with high temperature.	
Durabilityof Thermal Resistance Against Ageing/Degradation	Thermal conductivity of mineral wool products does not change with time, experience has shown the fibre structure to be stable and the porositycontains no other gases than atmospheric air.	

PRODUCT DATA SHEET

PAROC Clad Alu Tape

PAROC Clad Alu Tape is UV and weather resistance acrylic adhesive tape based on a special thermoplastic laminate compound with pure aluminum and PVC with excellent ageing resistance. It is used amongst others for masking of Clad faced products.

It is ideal for sealing the joints when using PAROC Clad faced elbows. Permanently seal pipes and ventilation ducts facings in heating, ventilation and air conditioning engineering. PAROC Clad Alu Tape gives a great finish and safe installation.

Application temperature range: -40°C to +120°C.

Package Type 50 mm: 24 rolls/box

DIMENSIONS	
Width	50 mm
Length	50 m

Properties

PROPERTY	VALUE	ACCORDING TO
OTHER PROPERTIES		
Backing: Release liner: Adhesive: Application temperature: Installation temperature: Storage temperature:	Special 4-plylaminate of aluminum foil, thermoplastic film and PVC Siliconized film Polyacrylic -40C°-+120°C +5°C-+40°C +5°C-+35°C	

Appearance

Facing Material	Special 4-plylaminate of aluminum foil, thermoplastic film and PVC
COLOURS	
Aluminum, bright	

Handling

INSTALLATION	
Work Descriptions	During the installation, the insulation material to be taped should be at a minimum temperature of +5°C. Allow the temperature of the insulating material to adjust to the ambient installation temperature. Make sure that the surfaces to be joined with tape are clean, dryfree of dust and grease. Surface must be free from oil, fat, dust and solvents before film/tape application. Do not use cleaners containing anti-adhesive agents. Some plastics and paints maydischarge anti-adhesive agents leading to bonding failure. Rough and uneven surfaces mayweaken bonding. The adhesion maybe improved byapplying higher pressure. Not to be used for bonding's under mechanical load. Not resistant against oil, manyorganic solvents, e.g. mineral spirits.
Handling and Storage	Product should be stored in original packaging, laid flat on the slit edge of the roll. Storage in dryand clean areas, at normal temperature, protected from direct sunlight and heat sources.

We strongly advise users to test the product's suitability for their own particular requirement. All data and recommendations contained in this Technical Data Sheet are based on our own test results and practical experience and are aimed at helping customers select the appropriate tape for a given application. This information is provided without liability. We reserve the right to change the technical specification without prior notice.

ROCKWOOL®

About ROCKWOOL

Rockwool, headquartered in Denmark, is a global leader in stone wool insulation, providing solutions that enhance energy efficiency and acoustic performance in construction and industrial sectors. Their products are utilized in residential, commercial, and industrial buildings, ensuring durability and safety.

ProRox® PS 960

with WR-Tech

ProRox PS 960 is a mandrel wound pipe section. The insulation sections are made out of stone wool and are produced with an innovative water repellent binder called WR-Tech to mitigate the risk of corrosion under insulation. A reinforced aluminum foil facing is available upon request.

Application

The highly durable insulation sections are supplied split and hinged for easy snap-on assembly and are especially suitable for thermal and acoustic insulation of industrial pipe work.

Product properties in accordance with EN 14303

Properties	Performance								Norms
Thermal conductivity at mean temperature	T_m (°C)	50	100	150	200	250	300	350	EN ISO 8497
	λ (W/mK)	0,040	0,046	0,054	0,064	0,077	0,092	0,112	
Maximum Service Temperature	650°C								EN 14707
Melting point	>1000°C								DIN 4102-17
Reaction to fire	Euroclass $A1_L$ Non combustible								EN 13501-1 IMO 2010 FTPC
Nominal density (*)	≥ 100 kg/m³								EN 13470
Corrosion resistance	Trace quantity of water leachable chloride ions: ≤ 10 ppm								EN 13468
Water absorption	≤ 0,2 kg/m² ≤ 0,2 kg/m² (After 24 hrs. pre-heating at 250°C)								EN 13472
Water vapour diffusion resistance	μ = 1								EN 14303
Influence on coating systems	Free from substances (e.g. silicone oil) that might impair surface wetting								VW 3.10.7
EN 14303 Designation code	MW EN 14303-T9(T8 if Do <150)-ST(+)650-WS1-CL10								EN 14303

(*) ProRox insulation fully complies with EN 14303. Density is not an insulation property in itself, it only reflects the actual weight of the product per cubic meter.

Compliance

- ProRox PS 960 Pipe Sections fully comply with the requirements as set by internationally recognized standards like EN 14303, CINI 2.2.03, VDI 2055, ASTM C795, ASTM C547: Grade A for Type I, II, IV.
- Above product properties reflect only to European (EN) standards. Compliance and Performance according to ASTM standards can be found on our website. Please contact our sales representatives for an extended list of approvals & certifications.
- Validity of CE Marking & (AGI) designation code is restricted to the European production facilities.

+ Noise reduction data available in accordance to ISO 15665

ProRox® PS 970

with WR-Tech

ProRox PS 970 is a mandrel wound pipe section. The insulation sections are made out of stone wool and are produced with an innovative water repellent binder called WR-Tech to mitigate the risk of corrosion under insulation. A reinforced aluminum foil facing is available upon request.

Application

The highly durable insulation sections are supplied split and hinged for easy snap-on assembly and are especially suitable for thermal and acoustic insulation of high temperature industrial pipe work which is subjected to mechanical loads.

Product properties in accordance with EN 14303

Properties	Performance								Norms
Thermal conductivity at mean temperature	T_m (°C)	50	100	150	200	250	300	350	EN ISO 8497
	λ (W/mK)	0,040	0,046	0,053	0,062	0,073	0,085	0,099	
Maximum Service Temperature	680°C								EN 14707
Melting point	>1000°C								DIN 4102-17
Reaction to fire	Euroclass $A1_L$ Non-Combustible								EN 13501-1 IMO 2010 FTPC
Nominal density (*)	140 kg/m³								EN 13470
Corrosion resistance	Trace quantity of water leachable chloride ions: ≤ 10 ppm								EN 13468
Water absorption	≤ 0,2 kg/m² ≤ 0,2 kg/m² (After 24 hrs. pre-heating at 250°C)								EN 13472
Water vapour diffusion resistance	μ = 1								EN 14303
Influence on coating systems	Free from substances (e.g. silicone oil) that might impair surface wetting								VW 3.10.7
EN 14303 Designation code	MW EN 14303-T9(T8 if Do <150)-ST(+)680-WS1-CL10								EN 14303

(*) ProRox insulation fully complies with EN 14303. Density is not an insulation property in itself, it only reflects the actual weight of the product per cubic meter.

Compliance

- ProRox PS 970 Pipe Sections fully comply with the requirements as set by internationally recognized standards like EN 14303, CINI 2.2.03, VDI 2055, ASTM C795, ASTM C547: Grade A for Type I, II, IV.
- Above product properties reflect only to European (EN) standards. Compliance and Performance according to ASTM standards can be found on our website. Please contact our sales representatives for an extended list of approvals & certifications.
- Validity of CE Marking is restricted to the European production facilities.

+ Noise reduction data available in accordance to ISO 15665.

ProRox® PS 978

with WR-Tech

ProRox PS 978 is a pre-formed high density stone wool pipe section. The sections are supplied split and hinged for easy snap-on assembly, and are especially suitable for the thermal and acoustic insulation of industrial pipe work which is exposed to high temperature and light (e.g. vibrations) mechanical loads

Application

The highly durable insulation sections are supplied split and hinged for easy snap-on assembly and are especially suitable for thermal and acoustic insulation of high temperature industrial pipe work which is subjected to mechanical loads.

Product properties in accordance with ASTM C547

Properties	Performance								Norms
Thermal conductivity at mean temperature	$_{m}$T (°C)	50	100	150	200	250	300	350	ASTM C335
	λ (W/mK)	0.038	0.043	0.049	0.057	0.066	0.076	0.087	
Nominal Density	150 kg/m^3								ASTM C302
Maximum use temperature	1,200°F (650°C)								ASTM C447
Sag resistance	≤ 5% at 1,200°F (650°C)								ASTM C411
Linear schrinkage	≤ 2% at 1,200°F (650°C)								ASTM C356
Surface burning characteristics	Flame spread index = passed; Smoke development index = Passed								ASTM E84
Reaction to fire	Euroclass A1/Non-combustible								EN 13501-1 / IMO 2010 FTPC
Corrosion resistance	Evaluation on external stress corrosion cracking tendency of austenitic stainless steel = Passed Chemical analysis for Cl- , Fl- , Na^+, SiO_4: Results fall within acceptability limits of ASTM C795 Trace quantity of water leachable chloride ions: ≤ 10 ppm								ASTM C692 / ASTM C795 ASTM C871 / ASTM C795 EN 13468
Water absorption	≤ 0.04 lb/ft^2 (≤ 0.2 kg/m^2) ≤ 0.04 lb/ft2 (≤ 0.2 kg/m^2) (After 24 hrs. pre-heating at 482°F (250°C))								EN 13472
Vapor sorption	< 1% Weight								ASTM C1104
Influence on coating systems	Free from substances (e.g. silicone oil) that might impair surface wetting								VW 3.10.7

Compliance

- ProRox PS 978 Pipe Sections fully comply with the requirements as set by internationally recognized standards like EN 14303, CINI 2.2.03, VDI 2055, ASTM C795, ASTM C547: Grade A for Type I, II, IV.
- Above product properties reflect only to ASTM standards. Compliance and

Performance according to Indian Standards (IS) can be found on our website. Please contact our sales representatives for an extended list of approvals & certifications.

As ROCKWOOL has no control over insulation design and workmanship, accessory materials or applications conditions, ROCKWOOL does not warranty the performance or result of any installation containing ROCKWOOL products. ROCKWOOL's overall liability and the remedies available are limited by the general terms and conditions of sale. This warranty in lieu of all other warranties and conditions expressed or implied, including the warranties of merchantability and fitness for a particular purpose. ROCKWOOL Technical Insulation reserves the right to make necessary product changes at any time.
Technical specifications are thus stated subject to change

ProRox® PS 980NA
with WR-Tech

ProRox PS 980 is a mandrel wound pipe section. The insulation sections are made out of stone wool and are produced with an innovative water repellent binder called WR-Tech to mitigate the risk of corrosion under insulation.

Application

ProRox PS 980 is engineered to deliver exceptional compressive strength without susceptibility of the breakage and the dust associated with calcium silicate for a cleaner, safer wokring environment.
Made of stonewool, this proven, costs effective product
is ideal for steam and process pipe systems operating at temperatures up to 1,400 °F (760°C) where energy conservation, personal protection and fire control are concerns.

Product properties in accordance with ASTM C547[1)]

Property	Performance							Test standard
Thermal conductivity	T_m (°F) λ (BTU.in/hr.ft².°F) T_m (°C) λ (W/mK)	200 0.31 93 0.045	300 0.36 150 0.052	400 0.41 204 0.059	500 0.47 260 0.068	600 0.54 316 0.077	700 0.61 371 0.089	ASTM C335
Maximum use temperature	1400°F (760°C)							ASTM C411 / C447
Sag resistance	≤ 2% at 1400°F (750°C)							ASTM C411
Linear shrinkage	≤ 2% at 1400°F (760°C)							ASTM C356
Reaction to fire	Flame spread index = 0 Smoke development = 0							ASTM E84 UL723 / CAN ULC 102
Corrosion resistance	Stress corrosion cracking tendency of austenitic stainless steel = passed Chemical analysis (Cl^-, Fl^-, Na^+, SiO_4^{4-}): results fall within acceptability limits of ASTM C795 Trace quantities of water soluble chloride ions: ≤ 10 ppm							ASTM C692 ASTM C871 / ASTM C795 EN 13468 / ISO 12624
Water absorption	≤ 0.04 lb/ft² (≤ 0.2 kg/m²) at ambient conditions ≤ 0.04 lb/ft² (≤ 0.2 kg/m²) after 24 hrs pre-heating at 482°F (250°C)							EN 13472 / ISO 12623
Vapor sorption	< 1% Weight							ASTM C1104
Density	Actual density 11.2 lb/ft³ (180 kg/m³)							ASTM C302
Compressive strength	≥ 8 psi (≥ 53 kPa) at 10% compression							ASTM C165
Influence on coating systems	Free from substances that may impair surface wetting							VW 3.10.7 / VDMA 24364

1) All values are nominal values for standard industrial production. Standard industrial production tolerances applicable.

Compliance

- ProRox PS 980 full fills the requirements as set by ASTM C 547 Grade A type I, II, IV, V, CINI 2.2.03 and EN 14303 within a temperature range of Tm 200°F up to TM 700°F.
- ROCKWOOL stone wool insulation is made from volcanic rock and is not classified as a hazardous substance in accordance with Note Q, regulation (EC) No. 1272/2008.

Disclaimer

As ROCKWOOL has no control over insulation design and workmanship, accessory materials or applications conditions, ROCKWOOL does not warranty the performance or result of any installation containing ROCKWOOL products. ROCKWOOL's overall liability and the remedies available are limited by the general terms and conditions of sale. This warranty in lieu of all other warranties and conditions expressed or implied, including the warranties of merchantability and fitness for a particular purpose. ROCKWOOL Technical Insulation reserves the right to make necessary product changes at any time. Technical specifications are thus stated subject to change.

ROCKWOOL®
Technical Insulation

ProRox® WM 950

ProRox WM 950 is a lightly bonded stone wool insulation mat stitched on galvanized wire mesh with galvanized wire. Stainless steel mesh and binding wire (SW), and/or reinforced aluminium foil (ALU) facing are available upon request.

The wired mats are produced with an innovative water-repellent binder, known as WR-Tech™, to mitigate the risk of corrosion under insulation (CUI). WR-Tech ensures our stone wool maintains its superior water repellency even at elevated operating temperatures within the CUI range, while preserving its excellent thermal performance in use.

Application

The wired mat is suitable for the thermal and acoustic insulation of industrial installations exposed to the environment, such as outdoor industrial pipework and equipment at petrochemical plants and refineries.

Product properties in accordance with EN 14303

Properties	Performance												Norms
Thermal conductivity	T (°C)	50	100	150	200	250	300	350	400	500	600	640	EN 12667
	λ (W/mK)	0,039	0,045	0,053	0,062	0,072	0,084	0,097	0,112	0,146	0,192	0,213	
Maximum Service Temperature	640°C												EN 14706
Reaction to fire	Euroclass A1 Non-combustible												EN 13501-1 IMO 2010 FTPC
Density	80 kg/m^3												EN 1602
Corrosion resistance	Trace quantity of water leachable chloride ions: ≤ 10 mg/kg												EN 13468
Water absorption	≤ 0,2 kg/m^2 ≤ 0,2 kg/m^2 (After 24 hrs. pre-heating at 250°C)												EN 1609 EN ISO 29767
Water vapour diffusion resistance	μ = 1												EN 14303
Influence on coating systems	Free from substances (e.g. silicone oil) that might impair surface wetting												VW 3.10.7
Designation code*	MW EN 14303-T2-ST(+)640-WS1-CL10												EN 14303

* Thickness class declared under the load of 1000 Pa

Compliance

- ProRox WM 950 fully complies with the requirements as set by the internationally recognized standards like EN 14303, ASTM C592 Type III, ASTM C795, VDI 2055 , VDI 2055 and CINI 2.2.02.
- Above product declarations are also applicable for other available product variances and/or optional facings.
- ROCKWOOL stone wool insulation is made from volcanic rock and is not classified as a hazardous substance in accordance with Note Q, regulation (EC) No. 1272/2008.

ProRox® WM 960

ProRox WM 960 is a lightly bonded heavy-duty stone wool insulation mat stitched on galvanized wired mesh with galvanized wire. Stainless steel mesh and binding wire (SW), and/or reinforced aluminium foil (ALU) facing are available upon request. The wired mats are produced with an innovative water-repellent binder, known as WR-Tech™, to mitigate the risk of corrosion under insulation (CUI). WRTech ensures our stone wool maintains its superior water repellency even at elevated operating temperatures within the CUI range, while preserving its excellent thermal performance in use.

Application

The wired mat is suitable for the thermal and acoustic insulation of industrial installations exposed to the environment, such as outdoor industrial pipework, reactors and furnaces at petrochemical plants and refineries.

Product properties in accordance with EN 14303

Properties	Performance	Norms
Thermal conductivity	T (°C) 50 100 150 200 250 300 350 400 500 600 660 λ (W/mK) 0,039 0,045 0,052 0,059 0,068 0,078 0,089 0,102 0,131 0,167 0,191	EN 12667
Maximum Service Temperature	660°C	EN 14706
Reaction to fire	Euroclass A1 Non-combustible	EN 13501-1 IMO 2010 FTPC
Density	100 kg/m³	EN 1602
Corrosion resistance	Trace quantity of water leachable chloride ions: ≤ 10 mg/kg	EN 13468
Water absorption	≤ 0,2 kg/m² ≤ 0,2 kg/m² (After 24 hrs. pre-heating at 250°C)	EN 1609 EN ISO 29767
Water vapour diffusion resistance	μ = 1	EN 14303
Influence on coating systems	Free from substances (e.g. silicone oil) that might impair surface wetting	VW 3.10.7
EN 14303 Designation code*	MW EN 14303-T2-ST(+)660-WS1-CL10	EN 14303

* Thickness class declared under the load of 1000 Pa.

Compliance

- ProRox WM 960 fully complies with the requirements as set by the internationally recognized standards like EN 14303, ASTM C592 Type III, ASTM C795, VDI 2055 and CINI 2.2.02.
- Above product declarations are also applicable for other available product variances and/or optional facings.
- ROCKWOOL stone wool insulation is made from volcanic rock and is not classified as a hazardous substance in accordance with Note Q, regulation (EC) No. 1272/2008.

ProRox® WM 970

with WR-Tech

ProRox WM 970 is a lightly bonded heavy-duty stone wool insulation mat stitched on galvanized wired mesh with galvanized wire. Stainless steel mesh and binding wire (SW) and/or reinforced aluminium foil (ALU) facing are available upon request. The wired mats are produced with an innovative water-repellent binder, known as WR-Tech™, to mitigate the risk of corrosion under insulation (CUI). WR-Tech ensures our stone wool maintains its superior water repellency even at elevated operating temperatures within the CUI range, while preserving its excellent thermal performance in use.

Application

The wired mat is suitable for the thermal and acoustic insulation of industrial installations subjected to vibrations and exposed to the environment, such as outdoor industrial pipework, reactors and furnaces.

Product properties in accordance with ASTM C592-16

Properties	Performance								Norms
Thermal conductivity at mean temperature	T_m (°F)	100	200	300	400	500	600	700	ASTM C177
	λ (BTU.in/hr.ft².°F)	0.26	0.29	0.34	0.39	0.44	0.51	0.58	
	T_m (°C)	38	93	149	204	260	316	371	
	λ (W/mK)	0.037	0.042	0.049	0.056	0.064	0.074	0.084	
Maximum use temperature	1,200 °F (649°C)								ASTM C447
Linear shrinkage	≤ 2% @ 1,200 °F (649°C)								ASTM C356
Surface burning characteristics	Flame spread index ≤ 25; Smoke development index ≤ 50								ASTM E84 (UL723)
Reaction to fire	Non combustible								IMO 2010 FTPC
Density	8 lb/ft³ (128 kg/m³)								ASTM C167
Corrosion resistance	Evaluation on external stress corrosion cracking tendency of austenitic stainless steel = Pass								ASTM C692 / ASTM C795
	Chemical analysis for Cl^-, Fl^-, Na^+, SiO_4 within acceptable limits according ASTM C795								ASTM C871 / ASTM C795
Water absorption	≤ 0.04 lb/ft² (≤ 0.2 kg/m²) after 24hrs. Pre-heating at 482°F (250°C)								EN 1609 / EN ISO 29767
Water vapor sorption	< 1% weight								ASTM C1104
Influence on coating systems	Free form substances (e.g. silicone oil) that might impair surface wetting								VW 3.10.7

Compliance

- ProRox WM 970 fully complies with the requirements as set by the internationally recognized standards like EN 14303, ASTM C592 Type III, ASTM C795 and CINI 2.2.02.
- Above product declarations are also applicable for other available product variances and/or optional facings.
- ROCKWOOL stone wool insulation is made from volcanic rock and is not classified as a hazardous substance in accordance with Note Q, regulation (EC) No. 1272/2008.

ProRox® WM 988

ProRox WM 988 is a lightly bonded heavy stone wool mat stitched on galvanised wired mesh with galvanised wire. The wired mat is especially suitable for industrial installations where high temperatures up to 750°C an vibration resistance is required.

Product properties in accordance with ASTM C592

Properties[1]	Performance							Norms
Thermal conductivity[2] at mean temperature	$_{m}$T (°C)	50	100	150	200	250	300	ASTM C177
	λ (W/mK)	0.038	0.043	0.048	0.055	0.064	0.076	
Nominal density	150 kg/m^3							ASTM C167
Maximum use temperature	750°C							ASTM C411 / C447
Linear shrinkage	Less than 2% (at max service temperature)							ASTM C356
Reaction to fire	EuroClass A1 Surface burning characteristic; Flame spread = Passed, Smoke development = Passed							EN 13501-1 ASTM E84
Chloride content	Less than 10 ppm Conforms to the stainless steel corrosion specification as per ASTM C795							ASTM C871 ASTM C692 / C871
Moisture absorption	Less than 1% weight							ASTM C1104 / C1104M
Water absorption	Less than 1 kg/m^2							EN 1609

1. All information and data for nical parameters in this data sheet are based on laboratory testing tech
2. Nominal values.

Compliance

- ProRox WM 988 Wired Mats comply with the requirements as set by internationally recognized standards like CINI 2.2.02 and ASTM C592 Type I, II and III.
- Above product properties reflect only to ASTM standards. Compliance and Performance according to Indian Standards (IS) can be found on our website. Please contact our sales representatives for an extended list of approvals & certifications.

EUCEB

ProRox® LF 970

ProRox LF 970 is a lightly bonded loose-fill, impregnated stone wool insulation product.

Application

This product is especially suitable for thermal and acoustic insulation in voids, joints and irregularly formed constructions.

0575

Product properties

Properties	Performance								Norms
Thermal conductivity *	T (°C)	50	100	150	200	250	300	400	500	EN 12667
	λ (W/mK)	0,040	0,049	0,057	0,067	0,075	0,091	0,122	0,220	
Maximum service temperature	680°C									EN 14706
Reaction to fire	Euroclass A1 Non-combustible									EN 13501-1 IMO 2010 FTP Code
Corrosion resistance	Trace quantity of water leachable chloride ions: ≤ 10 mg/kg									EN 13468
Water absorption	≤ 1kg/m²									EN 1609 / EN ISO 29767

(*) Stuffing density 100 kg/m³.

Compliance

- ProRox LF 970 fully complies with the requirement as set by CINI 2.2.04.
- ROCKWOOL stone wool insulation is made from volcanic rock and complies with Note Q, regulation (EC) No. 1272/2008

ProRox® SL 540NA

ProRox® SL 540NA is a pressure resistance rigid mineral wool (stone wool) insulation board designed for high temperature applications subjected to light mechanical loads.

Product properties in accordance with ASTM C612

Properties	Performance							Norms
Thermal conductivity	T_m (°F)	100	200	300	400	500	600	700	ASTM C177
	λ (BTU.in/hr.ft².°F)	0.25	0.29	0.35	0.41	0.47	0.54	0.66	
	T_m (°C)	38	93	149	204	260	316	371	
	λ (W/mK)	0.036	0.042	0.050	0.059	0.068	0.078	0.095	
Maximum Service Temperature	Hot Surface Performance: 1200°F- (650°C) Non-Combustible Linear Shrinkage: ≤ 1 % at 1200°F- (650°C)								ASTM C411 ASTM E136 / CAN4 S114 ASTM C356
Reaction to fire	Surface burning characteristics Flame spread index = 0 ; Smoke development index = 0								ASTM E84 (UL 723) CAN/ULC S102
Density	Actual Density = 7.6 lb/ft³ - (122 kg/m³) Nominal Density = 10.0 lb/ft³								ASTM C303
Corrosion resistance**	Stress Corrosion Cracking Tendency of Austenitic Stainless Steel = Passed Corrosion of Steel = Passed								ASTM C692 ASTM C665
Chemical Analysis**	(Salts: Cl^-, Fl^-, Na^+, SiO_4^4) Results fall within acceptability limits of ASTM C795								ASTM C795 / ASTM C871
Thermal Resistance	R-Value / inch @ 75°F RSI value / 25.4mm @ 24°C				4.0 hr. ft².°F/BTU 0.74 m².K/W				ASTM C518 (C177)
Water Absorption/ Vapor Sorption	< 1 % Weight								ASTM C1104
Compressive strength	313psf (15kPa) @ 10 % compression								ASTM C165
Compliance	Complies with Type: IVB								ASTM C612

ROCKWOOL Technical Insulation offers a wide range of facings, dimensions and thicknesses. Please contact us for further information.

** Provisions for lot testing may be requried, consult manufacturer.

Surface Burning Characteristics: UL Listed to Canadian standard CAN/ULC S102 ; UL Classified to UL 723

As ROXUL® Inc has no control over installation design and workmanship, accessory materials or application conditions, ROXUL® Inc. does not warranty the performance or results of any installation containing ROXUL® Inc's products. ROXUL® Inc's overall liability and the remedies available are limited by the general terms and conditions of sale.
This warranty is in lieu of all other warranties and conditions expressed or implied, including the warranties of merchantability and fitness for a particular purpose.
®/TM: US - owner ROCKWOOL International A/S used under license; Canada - owner Roxul Inc.

ProRox® SL 560

ProRox SL 560 is a higly compression resistant stone wool slab for thermal and acoustic insulation of constructions where high temperatures
and mechanical loads (e.g. vibrations) occur.

Product properties

Properties	Performance							Standard
Thermal Conductivity	T_m (°C)	50	100	150	200	250	300	ASTM C177
	λ (W/mK)	0.037	0.042	0.048	0.055	0.063	0.074	
Nominal Density	175 kg/m^3							ASTM C303
Maximum Service Temperature	650 °C							ASTM C411/C447
Linear Shrinkage	Less than 2% (at max service temperature)							ASTM C356
Reaction to Fire	EuroClass A1 Surface burning characteristics; Flame spread = passed, Smoke development =							EN 13501-1 ASTM E84
Chloride Content	Less than 10 ppm Conforms to the stainless steel corrosion specification as per ASTM C795							ASTM C871 ASTM C692/C871
Moisture Absorption	Less than 1% weight							ASTM C1104/ C1104M
Water Absorption	Less than 1 kg/m^2							EN 1609
Compressive Strength	Up to 30kPa (At 10% deformation)							EN 826

Note: All information and data for technical parameters are based on laboratory testing.

Compliance

ProRox SL 560 Slabs comply with the requirements as set by internationally recognized standards like EN14303, CINI 2.2.01 and ASTM C612 type IA, IB, II, III and IVA.

As ROCKWOOL has no control over insulation design and workmanship, accessory materials or applications conditions, ROCKWOOL does
not warranty the performance or result of any installation containing ROCKWOOL products. ROCKWOOL's overall liability and the remedies available are limited by the general terms and conditions of sale.
This warranty in lieu of all other warranties and conditions expressed or implied, including the warranties of merchantability and fitness for a particular purpose. ROCKWOOL Technical Insulation reserves the right to make necessary product changes at any time. Technical specifications are thus stated subject to change.

ProRox® SL 580

ProRox SL 580 is a pressure resistant stone wool slab with high resistance to mechanical loads. The compression resistant slab is developed for the thermal insulation of tank roofs subjected to pedestrian traffic, and the thermal and acoustic insulation of onstructions subjected to a mechanical load.

Product properties in accordance with ASTM C612

Properties[1]	Performance							Norms
Thermal conductivity[2] at mean temperature	$_{m}$T (°C)	50	100	150	200	250	300	ASTM C177
	λ (W/mK)	0.038	0.042	0.048	0.055	0.064	0.074	
Nominal density	150 kg/m^3							ASTM C303
Maximum use temperature	250°C							ASTM C411 / C447
Linear shrinkage	Less than 2% (at max service temperature)							ASTM C356
Reaction to fire	EuroClass A1 Surface burning characteristic; Flame spread = Passed, Smoke development = Passed							EN 13501-1 ASTM E84
Chloride content	Less than 10 ppm Conforms to the stainless steel corrosion specification as per ASTM C795							ASTM C871 ASTM C692 / C871
Moisture absorption	Less than 1% weight							ASTM C1104 / C1104M
Water absorption	Less than 1 kg/m^2							EN 1609
Compressive strength	Up to 50kPa (At 10% deformation)							EN 826

1. All information and data for ni cal parameters in this data sheet are based on laboratory testing tech
2. Nominal values.

Compliance

- ProRox SL 580 slabs comply with the requirements as set by internationally recognized standards like CINI 2.2.01 and ASTM C612 Type IA,IB,II, III, IVA and IVB
- Above product properties reflect only to ASTM standards. Compliance and Performance according to Indian Standards (IS) can be found on our website. Please contact our sales representatives for an extended list of approvals & certifications.

ProRox® SL 950

ProRox SL 950 is a rigid stone wool insulation slab (board). Reinforced aluminium foil (ALU) facing is available upon request.

Application

The slab (board) is suitable for the thermal and acoustic insulation of hightemperature industrial applications, such as tank walls, vessels and columns.

Product properties in accordance with EN 14303

Properties	Performance	Norms
Thermal conductivity	T (°C) 50 100 150 200 250 300 350 400 500 600 640 λ (W/mK) 0,039 0,045 0,053 0,062 0,073 0,084 0,097 0,112 0,144 0,185 0,203	EN 12667
Maximum service temperature	640°C	EN 14706
Reaction to fire	Euroclass A1	EN 13501-1
Nominal density	80 kg/m^3	EN 1602
Corrosion resistance	Trace quantity of water leachable chloride ions: ≤ 10 mg/kg	EN 13468
Water absorption	≤ 1 kg/m^2	EN 1609 / EN ISO 29767
Water vapour diffusion resistance	μ = 1	EN 14303
Designation code	MW EN 14303-T4(T3 if t<60)-ST(+)640-WS1-CL10	EN 14303

Compliance

- ProRox SL 950 fully complies with the requirements as set by internationally recognized standards like EN 14303, CINI 2.2.01, ASTM C612.
- ROCKWOOL stone wool insulation is made from volcanic rock and complies wtih Note Q, regulation (EC) No. 1272/2008.

ProRox® SL 960

ProRox SL 960 is a strong and rigid stone wool slab and is especially suitable for the thermal and acoustic insulation of constructions up to intermediate temperatures.

Product properties in accordance with ASTM C612

Properties[1]	Performance							Norms
Thermal conductivity[2] at mean temperature	T_m (°C)	50	100	150	200	250	300	ASTM C177
	λ (W/mK)	0.038	0.044	0.051	0.059	0.069	0.080	
Nominal density	100 kg/m³							ASTM C303
Maximum use temperature	650°C							ASTM C411 / C447
Linear shrinkage	Less than 2% (at max service temperature)							ASTM C356
Reaction to fire	EuroClass A1 Surface burning characteristic; Flame spread = Passed, Smoke development = Passed							EN 13501-1 ASTM E84
Chloride content	Less than 10 ppm Conforms to the stainless steel corrosion specification as per ASTM C795							ASTM C871 ASTM C692 / C871
Moisture absorption	Less than 1% weight							ASTM C1104 / C1104M
Water absorption	Less than 1 kg/m²							EN 1609

1. All information and data for ni:al parameters in this data sheet are based on laboratory testing tech
2. Nominal values.

Compliance

- ProRox SL 960 slabs comply with the requirements as set by internationally recognized standards like CINI 2.2.01 and ASTM C612 Type IA, II, III, IVA and IVB
- Above product properties reflect only to ASTM standards. Compliance and Performance according to Indian Standards (IS) can be found on our website. Please contact our sales representatives for an extended list of approvals & certifications.

ProRox® SL 970

ProRox SL 970 is a strong and rigid stone wool slab suitable for the thermal and acoustic insulation of constructions where higher temperatures and light mechanical loads (e.g. vibrations occur). Typical examples are ovens, furnaces and exhaust ducts.

Product properties

Properties	Performance	Norms
Thermal conductivity	T (°C) 50 100 150 200 250 300 350 400 500 600 680 λ (W/mK) 0,041 0,046 0,052 0,059 0,068 0,077 0,087 0,099 0,128 0,162 0,196	EN 12667 ASTM C177
Maximum Service Temperature	680°C (1256°F) 750°C (1382°F)	EN 14706 ASTM C411
Reaction to fire	Euroclass A1 Surface burning characteristics; Flame spread=passed, Smoke development=Passed	EN 13501-1 ASTM E84 (UL 723)
Nominal density	115 kg/m^3 (7,2 lb/ft3)	EN 1602
Corrosion resistance	Conforms to the stainless steel corrosion specification as per ASTM test methods C 692 and C 871 Trace quantity of water leachable chloride ions: ≤ 10 ppm	ASTM C795 EN 13468
Water Absorption	< 1 kg/m^2 Water vapour absorption (Vapor sorption) ± 0,02%vol	EN 1609 ASTM C1104/C1104M
Water vapour diffusion resistance	μ = 1	EN 14303
Designation code	MW EN 14303-T4(T3 if t<60)-ST(+)680-WS1-CL10	EN 14303

Compliance

ProRox SL 970 Slabs fully comply with the requirements as set by internationally recognized standards like EN14303, CINI 2.2.01 and ASTM C612 Type IA, IB, II, III, IVA and IVB.

ProRox® SL 978

ProRox SL 978 is a strong and rigid stone wool slab, for the thermal and acoustic insulation of constructions where higher temperatures and light mechanical loads (e.g. vibrations) occur. Typical examples are ovens, furnaces and exhaust ducts.

Product properties in accordance with ASTM C612

Properties[1]	Performance							Norms
Thermal conductivity[2] at mean temperature	T_m (°C)	50	100	150	200	250	300	ASTM C177
	λ (W/mK)	0.038	0.043	0.049	0.056	0.066	0.078	
Nominal density	128 kg/m³							ASTM C303
Maximum use temperature	650°C							ASTM C411 / C447
Linear shrinkage	Less than 2% (at max service temperature)							ASTM C356
Reaction to fire	EuroClass A1 Surface burning characteristic; Flame spread = Passed, Smoke development = Passed							EN 13501-1 ASTM E84
Chloride content	Less than 10 ppm Conforms to the stainless steel corrosion specification as per ASTM C795							ASTM C871 ASTM C692 / C871
Moisture absorption	Less than 1% weight							ASTM C1104 / C1104M
Water absorption	Less than 1 kg/m²							EN 1609

1. All information and data for ni:al parameters in this data sheet are based on laboratory testing tech
2. Nominal values.

Compliance

- ProRox SL 978 slabs comply with the requirements as set by internationally recognized standards like CINI 2.2.01 and ASTM C612 Type IA, II, III, IVA and IVB
- Above product properties reflect only to ASTM standards. Compliance and Performance according to Indian Standards (IS) can be found on our website. Please contact our sales representatives for an extended list of approvals & certifications.

ProRox® SL 980

ProRox SL 980 is a strong and rigid stone wool slab, for the thermal and acoustic insulation of constructions where higher demands are made on the temperature resistance and mechanical loads of the insulation.

Product properties in accordance with ASTM C612

Properties[1]	Performance							Norms
Thermal conductivity[2] at mean temperature	T_m (°C)	50	100	150	200	250	300	ASTM C177
	λ (W/mK)	0.038	0.043	0.049	0.056	0.064	0.074	
Nominal density	145 kg/m³							ASTM C303
Maximum use temperature	750°C							ASTM C411 / C447
Linear schrinkage	Less than 2% (at max service temperature)							ASTM C356
Reaction to fire	EuroClass A1 Surface burning characteristic; Flame spread = Passed, Smoke development = Passed							EN 13501-1 ASTM E84
Chloride content	Less than 10 ppm Conforms to the stainless steel corrosion specification as per ASTM C795							ASTM C871 ASTM C692 / C871
Moisture absorption	Less than 1% weight							ASTM C1104 / C1104M
Water absorption	Less than 1 kg/m²							EN 1609

1. All information and data for nical parameters in this data sheet are based on laboratory testing tech
2. Nominal values.

Compliance

- ProRox SL 980 slabs comply with the requirements as set by internationally recognized standards like CINI 2.2.01 and ASTM C612 Type IA, II, III, IVA and IVB
- Above product properties reflect only to ASTM standards. Compliance and Performance according to Indian Standards (IS) can be found on our website. Please contact our sales representatives for an extended list of approvals & certifications.

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isotec

About SAINT-GOBAIN (ISOTEC)

Saint-Gobain, offers the Isotec brand specializing in mineral wool insulation materials. These products are designed for thermal and acoustic insulation in various construction and industrial applications, with a focus on energy efficiency and environmental responsibility.

Cylinders and half-cylinders

ISOTEC Section

DESCRIPTION

Thermally wound cylinders made of mineral wool based on melt basalti rocks with a longitudinal cut for easy installation. They can be produce uncoated or coated with aluminum foil.

APPLICATIONS

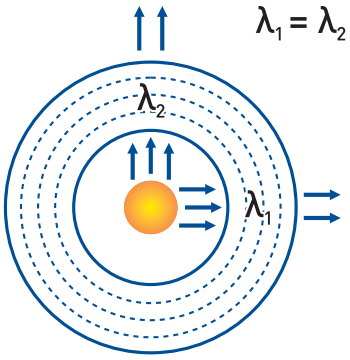
Thermal insulation of various-purpose pipelines operated at:

- power generation sector facilities;
- facilities of various industries;
- pipeline transport systems;
- heat supply sector facilities;
- heating, ventilation and air conditioning (HVAC).

ADVANTAGES

- Validated thermal conductivity coefficient according to GOST 32025-2012: T hermal insulation. Method for determination of steady-state transmission properties of thermal insulation for circular pipes.
- Thermally wound cylinder technology provides cylinder wall thickness reduction by up to 30%* due to higher density and the uniform thermal conductivity over the entire cylinder surface.

* compared to standard cutout cylinders



The uniform thermal conductivity over the entire cylinder surface

TECHNICAL SPECIFICATIONS

Material type		ISOTEC Section				
Length, mm		1200				
Thickness, mm		20	30	Other standard sizes	70–100	100
Inner diameter, mm		18–273	18–114 inclusive		219 inclusive and over	159–169 inclusive
Density, kg/m^3		160±10 %		125±10 %	100±10 %	
Heat conductivity coefficient, W/(m·K), max.	λ_{10} λ_{25} λ_{125} λ_{300}	0,036 0,038 0,048 0,087		0,036 0,039 0,049 0,089	0,036 0,039 0,050 0,090	
Fire hazard class		KM0 / KM1[1]				
Flammability class		NG / G1[1]				
Maximum operating temperature, °C		680[2]		640[2]	620[2]	

1) After the slash, the fire hazard class and flammability group is shown for the AL-coated product (reinforced aluminum foil with aluminum thickness of up to 20 μm).
2) For products with AL-type coating, the maximum foil temperature is 100°C.

Cylinders and half-cylinders

ISOTEC Section

DIMENSIONS AND PACKING

Cylinders packaging options in cardboard boxes or plastic wrap with hand packing are available.

Quantity per package (pcs.)

Inner diameter	Thickness, mm								
	20	30	40	50	60	70	80	90	100
18	30	15	12	6	4	—	—	—	—
21	24	12	9	6	4	1	1	1	1
25	24	12	8	6	4	1	1	1	1
28	20	12	7	6	4	1	1	1	1
32	15	12	7	5	1	1	1	1	1
35	15	12	7	5	1	1	1	1	1
38	15	9	6	5	1	1	1	1	1
42	12	8	6	4	1	1	1	1	1
45	12	8	6	4	1	1	1	1	1
48	12	7	6	4	1	1	1	1	1
54	12	6	5	1	1	1	1	1	1
57	9	6	5	1	1	1	1	1	1
60	9	6	5	1	1	1	1	1	1
64	8	6	4	1	1	1	1	1	1
70	6	6	4	1	1	1	1	1	1
76	6	5	4	1	1	1	1	1	1
83	6	4	1	1	1	1	1	1	1
89	6	4	1	1	1	1	1	1	1
102	4	1	1	1	1	1	1	1	1
108	4	1	1	1	1	1	1	1	1
114	1	1	1	1	1	1	1	1	1
133	1	1	1	1	1	1	1	1	1
140	1	1	1	1	1	1	1	1	1
159	1	1	1	1	1	1	1	1	1
169	1	1	1	1	1	1	1	1	—
194	1	1	1	1	1	—	—	—	—
219	1	1	1	1	1	1	1	—	—
273	1	1	1	1	1	—	—	—	—

CERTIFICATES

- Certificate of compliance with GOST
- Fire safety certificate
- Sanitary and epidemiological inspection report

Manufacture according to **TU 23.99.19-104-56846022-2016**

EXAMPLE OF DESIGNATION

ISOTEC Cylinder-AL-20x18/Ch-1200 — product of ISOTEC Company, product name — cylinder, product design — coated with aluminum foil with aluminum thickness of up to 20μm, wall thickness — 20 mm, product inner diameter — 18 mm, manufacturer — Chelyabinsk, product length — 1200 mm.

Non-flammable foil-coated cylinders

ISOTEC Section AL2

DESCRIPTION

Non-flammable thermally wound unreinforced foil-coated cylinders with a longitudinal cut for easy installation. Made of basalt melt-based mineral wool.

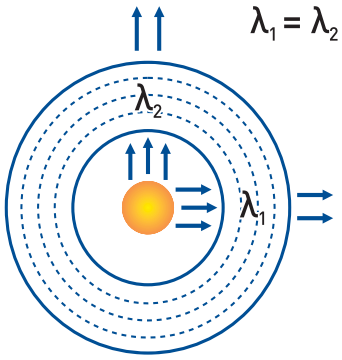
APPLICATIONS

Thermal insulation of various-purpose pipelines built into residential and public buildings including those operated at the heat-supply, power-generating and various industries facilities.

ADVANTAGES

- Compliance with the requirements for non-flammable thermal insulation according to SP 4110195 Heating Plant Design.
- Validated thermal conductivity coefficient according to GOST 32025 2012: Thermal insulation. Method for determination of steady-state transmission properties of thermal insulation for circular pipes.
- Thermally wound cylinder technology provides cylinder wall thickness reduction by up to 30 %* due to higher density and the uniform thermal conductivity over the entire cylinder surface.
- Optimization is provided of the installation cost and time consumption for the foil-coated thermal insulation subject to the “NG” requirement.

* compared to standard cutout cylinders



The uniform thermal conductivity over the entire cylinder surface

TECHNICAL SPECIFICATIONS

Material type		ISOTEC Section AL2				
Length, mm		1200				
Thickness, mm		20	30	Other standard sizes	70–100	100
Inner diameter, mm		18–273	18–114 inclusive		219 inclusive and over	159–169 inclusive
Density, kg/m³		160±10 %		125±10 %	100±10 %	
Heat conductivity coefficient, W/(m·K), max.	λ_{10} λ_{25} λ_{125} λ_{300}	0,036 0,038 0,048 0,087		0,036 0,039 0,049 0,089	0,036 0,039 0,050 0,090	
Fire hazard class		KM0				
Flammability class		NG				
Maximum operating temperature, °C		680		640	620	

Non-flammable foil-coated cylinders

ISOTEC Section AL2

DIMENSIONS AND PACKING

Cylinders packaging options in cardboard boxes or plastic wrap with hand packing are available.

Quantity per package (pcs.)

Inner diameter	Thickness, mm								
	20	30	40	50	60	70	80	90	100
18	30	15	12	6	4	—	—	—	—
21	24	12	9	6	4	—	—	—	—
25	24	12	8	6	4	1	1	1	1
28	20	12	7	6	4	1	1	1	1
32	15	12	7	5	1	1	1	1	1
35	15	12	7	5	1	1	1	1	1
38	15	9	6	5	1	1	1	1	1
42	12	8	6	4	1	1	1	1	1
45	12	8	6	4	1	1	1	1	1
48	12	7	6	4	1	1	1	1	1
54	12	6	5	1	1	1	1	1	1
57	9	6	5	1	1	1	1	1	1
60	9	6	5	1	1	1	1	1	1
64	8	6	4	1	1	1	1	1	1
70	6	6	4	1	1	1	1	1	1
76	6	5	4	1	1	1	1	1	1
83	6	4	1	1	1	1	1	1	1
89	6	4	1	1	1	1	1	1	1
102	4	1	1	1	1	1	1	1	1
108	4	1	1	1	1	1	1	1	1
114	1	1	1	1	1	1	1	1	1
133	1	1	1	1	1	1	1	1	1
140	1	1	1	1	1	1	1	1	1
159	1	1	1	1	1	1	1	1	1
169	1	1	1	1	1	1	1	1	—
194	1	1	1	1	1	—	—	—	—
219	1	1	1	1	1	1	1	—	—
273	1	1	1	1	1	—	—	—	—

CERTIFICATES

- Declaration of Conformity
- Fire safety certificate
- Sanitary and epidemiological inspection report

Manufacture according to **TU 23.99.19-104-56846022-2016 with Amendment 1**

EXAMPLE OF DESIGNATION

ISOTEC Cylinder-AL2-20x18/Ch-1200 — product of ISOTEC Company, product name — cylinder, product design — coated with unreinforced aluminum foil, product inner diameter — 18 mm, manufacturer — Chelyabinsk, product length — 1200 mm.

Wired mat

ISOTEC Wired mat40

DESCRIPTION

Thermal insulation mats made of basalt rock melt based mineral wool broached with steel mesh.

APPLICATIONS

Thermal insulation:
- flat and curved equipment surfaces, -180 °C to +550 °C;
- pipelines;
- air and gas ducts.

ADVANTAGES

- Validated thermal conductivity coefficient according to GOST 7076-99: Building materials and products. Method of determination of steady-state thermal conductivity and thermal resistance.
- Field seal coefficients validated by NIISF RAASN.
- High maximum operating temperatures.

TECHNICAL SPECIFICATIONS

Material type		ISOTEC Wired mat40
Density, kg/m^3		40±10 %
Heat conductivity coefficient, W/(m·K), max.	λ_{10} λ_{25} λ_{50} λ_{100} λ_{125} λ_{150} λ_{200} λ_{250} λ_{300}	0,033 0,036 0,040 0,050 0,055 0,062 0,077 0,096 0,120
Fire hazard class		KM0 / KM1[1]
Maximum operating temperature, °C		NG / G1[1]
Maximum operating temperature, °C		550[2]

1) After the slash, the fire hazard class and flammability group is shown for the AL-coated product (reinforced aluminum foil with aluminum thickness of up to 20 μm).
2) For products with AL-type coating, the maximum foil temperature is 100 °C.

NOTE. The data for λ50, λ100, λ150, λ200, λ250, λ300 дare obtained by inter- and extrapolation.

Wired mat

ISOTEC Wired mat40

DIMENSIONS AND PACKING

The mats are rolled. Each roll is wrapped with polyethylene film over the cylindrical surface, then taped and melted. Completion of Al foil-coated products with a special aluminum adhesive tape is available. Palletization of single packages wrapped with a common packaging material and oriented as per the manufacturer's specifications is available.

Material quantity per package

Thickness, mm	Length, mm	Width, mm	m^2 per package	m^3 per package
40	5 000	1 000	5	0,200
50	4 000	1 000	4	0,200
50	5 000	1 000	5	0,250
60	4 000	1 000	4	0,240
70	2 000	1 000	2	0,140
80	2 000	1 000	2	0,160
90	2 000	1 000	2	0,180
100	2 000	1 000	2	0,200
110	2 000	1 000	2	0,220
120	2 000	1 000	2	0,240

CERTIFICATES

- Certificate of compliance with GOST
- Fire safety certificate
- Sanitary and epidemiological inspection report

Manufacture according to **TU 23.99.19-103-56846022-2016**

EXAMPLE OF DESIGNATION

ISOTEC Wired mat40-SM-50/Ch-1000×4000 — product of ISOTEC Company, product name — wired mat 40, product design — coated with steel mesh, thickness — 50 mm, manufacturer — Chelyabinsk, product width — 1000 mm, product length — 4000 mm.

Wired mat

ISOTEC Wired mat60

DESCRIPTION

Thermal insulation mats made of basalt rock melt based mineral wool broached with steel mesh.

APPLICATIONS

Thermal insulation:
- flat and curved equipment surfaces, -180 °C to +600 °C;
- pipelines;
- air and gas ducts.

ADVANTAGES

- Validated thermal conductivity coefficient according to GOST 7076-99: Building materials and products. Method of determination of steady-state thermal conductivity and thermal resistance.
- Field seal coefficients validated by NIISF RAASN.
- High maximum operating temperatures

TECHNICAL SPECIFICATIONS

Material type		ISOTEC Wired mat60
Density, kg/m^3		60±10 %
Heat conductivity coefficient, W/(m·K), max	λ_{10} λ_{25} λ_{50} λ_{100} λ_{125} λ_{150} λ_{200} λ_{250} λ_{300}	0,033 0,036 0,039 0,049 0,054 0,060 0,074 0,091 0,113
Fire hazard class		KM0 / KM1[1]
Flammability class		NG / G1[1]
Maximum operating temperature, °C		600[2]

1) After the slash, the fire hazard class and flammability group is shown for the AL-coated product (reinforced aluminum foil with aluminum thickness of up to 20 μm).
2)For products with AL-type coating, the maximum foil temperature is 100 °C.

NOTE. The data for λ50, λ100, λ150, λ200, λ250, λ300 are obtained by inter- and extrapolation.

Wired mat

ISOTEC Wired mat60

DIMENSIONS AND PACKING

The mats are rolled. Each roll is wrapped with polyethylene film over the cylindrical surface, then taped and melted. Completion of Al foil-coated products with a special aluminum adhesive tape is available. Palletization of single packages wrapped with a common packaging material and oriented as per the manufacturer's specifications is available.

Material quantity per package

Thickness, mm	Length, mm	Width, mm	m^2 per package	m^3 per package
30	6 000	1 000	6	0,180
40	6 000	1 000	6	0,240
50	4 000	1 000	4	0,200
50	6 000	1 000	6	0,300
60	3 000	1 000	3	0,180
60	4 000	1 000	4	0,240
70	2 000	1 000	2	0,140
80	2 000	1 000	2	0,160
90	2 000	1 000	2	0,180
100	2 000	1 000	2	0,220
110	2 000	1 000	2	0,220
120	2 000	1 000	2	0,240

CERTIFICATES

- Certificate of compliance with GOST
- Fire safety certificate
- Sanitary and epidemiological inspection report

Manufacture according to **TU 23.99.19-103-56846022-2016**

EXAMPLE OF DESIGNATION

ISOTEC Wired mat60-SM-50/Ch-1000×4000 — product of ISOTEC Company, product name — wired mat 60, product design — coated with steel mesh, thickness — 50 mm, manufacturer — Chelyabinsk, product width — 1000 mm, product length — 4000 mm.

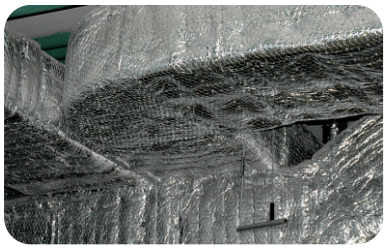
Wired mat

ISOTEC Wired mat80

DESCRIPTION

Thermal insulation mats made of basalt rock melt based mineral wool broached with steel mesh.

Production is available with an AL-coating of aluminum reinforced foil and with an AL2-coating of unreinforced aluminum foil.



APPLICATIONS

Thermal insulation:

- fire-resistant air ducts;
- pipelines of heating, hot and cold water supply systems;
- any-industry process pipelines with the insulated surface temperature from 180 °C to +660 °C.

ADVANTAGES

- Validated thermal conductivity coefficient according to GOST 7076-99: Building materials and products. Method of determination of steady-state thermal conductivity and thermal resistance.
- Field seal coefficients validated by NIISF RAASN.
- High maximum operating temperatures.
- The optimum solution for air duct fireproofing.

Fire resistance rating of steel ducts insulated with ISOTEC Wired mats

Coating thickness, mm	ISOTEC Wired mat80
30	EI 60
40	EI 90
50	EI 120
60	EI 150
70	EI 180
80	EI 240

TECHNICAL SPECIFICATIONS

Material type		ISOTEC Wired mat80
Density, kg/m^3		80±10 %
Heat conductivity coefficient, W/(m·K), max.	λ_{10}	0,033
	λ_{25}	0,035
	λ_{50}	0,038
	λ_{100}	0,045
	λ_{125}	0,048
	λ_{150}	0,052
	λ_{200}	0,062
	λ_{250}	0,073
	λ_{300}	0,086
Fire hazard class		KM0 / KM1[1]
Flammability class		NG / G1[1]
Maximum operating temperature, °C		660[2]

1) After the slash, the fire hazard class and flammability group is shown for the AL-coated product (reinforced aluminum foil with aluminum thickness of up to 20 μm).
2) For products with AL-type coating, the maximum foil temperature is 100 °C.

NOTE. The data for λ50, λ100, λ150, λ200, λ250, λ300 are obtained by inter- and extrapolation.

Wired mat

ISOTEC Wired mat80

DIMENSIONS AND PACKING

The mats are rolled. Each roll is wrapped with polyethylene film over the cylindrical surface, then taped and melted. Completion of Al foil-coated products with a special aluminum adhesive tape is available. Palletization of single packages wrapped with a common packaging material and oriented as per the manufacturer's specifications is available.

Material quantity per package

Thickness, mm	Length, mm	Width, mm	m^2 per package	m^3 per package
		Zavod Minplita, JSC		
30	6 000	1 000	6	0,180
40	6 000	1 000	6	0,240
50	4 000	1 000	4	0,200
60	3 000	1 000	3	0,180
70	2 000	1 000	2	0,140
80	2 000	1 000	2	0,160
90	2 000	1 000	2	0,180
100	2 000	1 000	2	0,200
110	2 000	1 000	2	0,220
120	2 000	1 000	2	0,240
		IZOROK CJSC		
50	2 000	1 000	2	0,100
60	2 000	1 000	2	0,120
70	2 000	1 000	2	0,140
80	2 000	1 000	2	0,160
90	2 000	1 000	2	0,180
100	2 000	1 000	2	0,200

CERTIFICATES

- Certificate of compliance with GOST
- Fire safety certificate
- Sanitary and epidemiological inspection report

Manufacture according to **TU 23.99.19-103-56846022-2016**

EXAMPLE OF DESIGNATION

ISOTEC Wired mat80-SM-60/Ch-1000×3000 — product of ISOTEC Company, product name — wired mat 80, product design — coated with steel mesh, thickness — 60 mm, manufacturer — Chelyabinsk, product width — 1000 mm, product length — 3000 mm.

Wired mat

ISOTEC Wired mat100

DESCRIPTION

Thermal insulation mats made of basalt rock melt based mineral wool broached with steel mesh.

APPLICATIONS

Thermal insulation:
- smoke exhaust systems;
- storage tanks for hot and cold water, oil, petroleum products, chemicals;
- any-industry process pipelines with the insulated surface temperature from 180 °C to +680 °C.

ADVANTAGES

- Validated thermal conductivity coefficient according to GOST 7076-99: Building materials and products. Method of determination of steady-state thermal conductivity and thermal resistance.
- Field seal coefficients validated by NIISF RAASN.
- High maximum operating temperatures.
- The optimum solution for air duct fireproofing.

Fire resistance rating of steel ducts insulated with ISOTEC Wired mats

Coating thickness, mm	ISOTEC Wired mat100
30	EI 90
40	EI 120
50	EI 150
60	EI 180
70	EI 240

TECHNICAL SPECIFICATIONS

Material type		ISOTEC Wired mat100
Density, kg/m^3		100±10 %
Heat conductivity coefficient, W/(m·K), max.	λ_{10} λ_{25} λ_{50} λ_{100} λ_{125} λ_{150} λ_{200} λ_{250} λ_{300}	0,033 0,034 0,037 0,043 0,047 0,050 0,058 0,068 0,079
Fire hazard class		KM0 / KM1[1]
Flammability class		NG / G1[1]
Maximum operating temperature, °C		680[2]

1) After the slash, the fire hazard class and flammability group is shown for the AL-coated product (reinforced aluminum foil with aluminum thickness of up to 20 μm).
2) For products with AL-type coating, the maximum foil temperature is 100 °C.

NOTE. The data for λ50, λ100, λ150, λ200, λ250, λ300 are obtained by inter- and extrapolation.

Wired mat

ISOTEC Wired mat100

DIMENSIONS AND PACKING

The mats are rolled. Each roll is wrapped with polyethylene film over the cylindrical surface, then taped and melted. Completion of Al foil-coated products with a special aluminum adhesive tape is available. Palletization of single packages wrapped with a common packaging material and oriented as per the manufacturer's specifications is available.

Material quantity per package

Thickness, mm	Length, mm	Width, mm	m^2 per package	m^3 per package
		Zavod Minplita, JSC		
30	6 000	1 000	6	0,180
40	6 000	1 000	6	0,240
50	2 000	1 000	2	0,100
50	4 000	1 000	4	0,200
60	3 000	1 000	3	0,180
70	2 000	1 000	2	0,140
80	2 000	1 000	2	0,160
90	2 000	1 000	2	0,180
100	2 000	1 000	2	0,200
110	2 000	1 000	2	0,220
120	2 000	1 000	2	0,240
		IZOROK CJSC		
50	2 000	1 000	2	0,100
60	2 000	1 000	2	0,120
70	2 000	1 000	2	0,140
80	2 000	1 000	2	0,160
90	2 000	1 000	2	0,180
100	2 000	1 000	2	0,200

CERTIFICATES

- Certificate of compliance with GOST
- Fire safety certificate
- Sanitary and epidemiological inspection report

Manufacture according to **TU 23.99.19-103-56846022-2016**

EXAMPLE OF DESIGNATION

ISOTEC Wired mat100-SM-60/Ch-1000×3000 — product of ISOTEC Company, product name — wired mat 100, product design — coated with steel mesh, thickness — 60 mm, manufacturer — Chelyabinsk, product width — 1000 mm, product length — 3000 mm.

Wired mat

ISOTEC Wired mat125

DESCRIPTION

Thermal insulation mats made of basalt rock melt based mineral wool broached with steel mesh.

APPLICATIONS

Thermal insulation:
- technical and power plant equipment;
- storage tanks for hot and cold water, oil, petroleum products, chemicals;
- any-industry process pipelines with the insulated surface temperature from 180 °C to +680 °C.

ADVANTAGES

- Validated thermal conductivity coefficient according to GOST 7076-99: Building materials and products. Method of determination of steady-state thermal conductivity and thermal resistance.
- Field seal coefficients validated by NIISF RAASN.
- High maximum operating temperatures.

TECHNICAL SPECIFICATIONS

Material type		ISOTEC Wired mat125
Density, kg/m^3		125±10 %
Heat conductivity coefficient, W/(m·K), max.	λ_{10} λ_{25} λ_{50} λ_{100} λ_{125} λ_{150} λ_{200} λ_{250} λ_{300}	0,033 0,034 0,037 0,042 0,045 0,048 0,055 0,063 0,072
Fire hazard class		КМ0
Flammability class		NG
Maximum operating temperature, °C		680[1]

1) For products with AL-type coating, the maximum foil temperature is 100 °C.

NOTE. The data for λ50, λ100, λ150, λ200, λ250, λ300 are obtained by inter- and extrapolation.

Wired mat

ISOTEC Wired mat125

DIMENSIONS AND PACKING

The mats are rolled. Each roll is wrapped with polyethylene film over the cylindrical surface, then taped and melted. Completion of Al foil-coated products with a special aluminum adhesive tape is available. Palletization of single packages wrapped with a common packaging material and oriented as per the manufacturer's specifications is available.

Material quantity per package

Thickness, mm	Length, mm	Width, mm	m^2 per package	m^3 per package
		ЗАО «Завод Минплита»		
50	4 000	1 000	4	0,200
60	3 000	1 000	3	0,180
70	2 000	1 000	2	0,140
80	2 000	1 000	2	0,160
90	2 000	1 000	2	0,180
100	2 000	1 000	2	0,200

CERTIFICATES

- Certificate of compliance with GOST.
- Fire safety certificate
- Sanitary and epidemiological inspection report

Manufacture according to **TU 23.99.19-103-56846022-2016**

EXAMPLE OF DESIGNATION

ISOTEC Wired mat125-SM-60/Ch-1000×3000 — product of ISOTEC Company, product name — wired mat 125, product design — coated with steel mesh, thickness — 60 mm, manufacturer — Chelyabinsk, product width — 1000 mm, product length — 3000 mm.

Industrial slab

ISOTEC Industrial Slab S100

DESCRIPTION

Thermal insulation boards made of mineral wool based on basalt rock melts are designed specifically for heat, sound insulation and fire protection of equipment in various industries, and can also be used for roofs of vertical tanks.
Application temperature of ISOTEC products Industrial Slab C100

lies in the range from -180 to +660 °C.

AREAS OF APPLICATION

Thermal insulation and fire protection:
- roofs of vertical tanks;
- technological equipment;
- heat exchangers;
- rectangular cross-section gas ducts;
- horizontal, vertical and inclined surfaces of equipment.

ADVANTAGES

- Confirmed thermal conductivity coefficient according to GOST 7076-99 "Method for determining thermal conductivity and thermal resistance at stationary thermal regime."
- High maximum application temperatures.

TECHNICAL SPECIFICATIONS

Type of material		ISOTEC Industrial slab S100
Density, kg/m3		90±10%
Thermal conductivity coefficient. W/(m•K). no more than	λ10	0.034
	λ25	0.036
	λ50	0.039
	λ100	0.047
	λ125	0.051
	λ150	0.056
	λ200	0.066
	λ250	0.079
	λ300	0.094
Fire hazard class Flammability group		KM0
Maximum operating		NG
temperature, °C		660

! The fire resistance limit of the reinforced concrete hollow-core slab, insulated with ISOTEC Industrial Slab S100, 40 mm thick, corresponds to REI 180.

Industrial slab

ISOTEC Industrial Slab S100

DIMENSIONS AND PACKAGING

The slabs are placed in packs, which are wrapped in film or other material.

Quantity of material in the package

Thickness, mm	Length, mm	Width, mm	Things	M2 in a package	M3 in packaging
30	1000	600	10	6	0,180
40	1000	600	8	4.8	0.192
50	1000	600	6	3.6	0,180
60	1000	600	5	3	0,180
70	1000	600	4	2.4	0.168
80	1000	600	4	2.4	0.192
90	1000	600	3	1.8	0.162
100	1000	600	3	1.8	0,180
110	1000	600	3	1.8	0.198
120	1000	600	3	1.8	0.216
130	1000	600	2	1,2	0.156
140	1000	600	2	1,2	0.168
150	1000	600	2	1,2	0,180
160	1000	600	2	1,2	0.192
170	1000	600	2	1,2	0.204
180	1000	600	1	0.6	0.108
190	1000	600	1	0.6	0.114
200	1000	600	1	0.6	0,120

CERTIFICATES

- Declaration of Conformity
- Fire certificate
- Sanitary and epidemiological conclusion

Release according to TU 23.99.19-105-56846022-2016

EXAMPLE OF SYMBOL

ISOTEC Pp S100-50/Ch-600×1000 is a product of the ISOTEC trademark, product name is industrial plate S100, product thickness is 50 mm, manufacturer is Chelyabinsk, product width is 600 mm, product length is 1000 mm.

Industrial slab

ISOTEC Industrial Slab S150

DESCRIPTION

Thermal insulation boards made of mineral wool based on basalt rock melts are designed specifically for heat, sound insulation and fire protection of equipment in the power industry, as well as in other industries
industry.

AREAS OF APPLICATION

It is used as thermal insulation and fire protection for power and industrial equipment, as well as additional insulation (as a second layer) for industrial furnaces, steam boilers and other high-temperature heat-generating equipment, and smoke stacks.

ADVANTAGES

- Confirmed thermal conductivity coefficient according to GOST 7076-99 "Method for determining thermal conductivity and thermal resistance at stationary thermal regime."

- High maximum application temperatures.

TECHNICAL SPECIFICATIONS

Type of material		ISOTEC Industrial slab S150
Density, kg/m3		140±10%
Thermal conductivity coefficient, W/(m•K), no more than	λ10 λ25 λ50 λ100 λ125 λ150 λ200 λ250 λ300	0.035 0.037 0,040 0.047 0.051 0.055 0.064 0.076 0.089
Fire hazard class		KM0
Flammability group Maximum		NG
operating temperature, °C		680

! The fire resistance limit of the reinforced concrete hollow-core slab, insulated with ISOTEC Industrial Slab S150, 40 mm thick, corresponds to REI 240.

Industrial slab

ISOTEC Industrial Slab S150

DIMENSIONS AND PACKAGING

The slabs are placed in packs, which are wrapped in film or other material.

Quantity of material in the package

Thickness, mm	Length, mm	Width, mm	Things	M2 in a package	M3 in packaging
30	1000	600	6	3.6	0.108
40	1000	600	5	3	0,120
50	1000	600	4	2.4	0,120
60	1000	600	4	2.4	0.144
70	1000	600	3	1.8	0.126
80	1000	600	3	1.8	0.144
90	1000	600	2	1,2	0.108
100	1000	600	2	1,2	0,120
110	1000	600	2	1,2	0.132
120	1000	600	2	1,2	0.144
130	1000	600	2	1,2	0.156
140	1000	600	2	1,2	0.168
150	1000	600	2	1,2	0,180
160	1000	600	2	1,2	0.192
170	1000	600	2	1,2	0.204

CERTIFICATES

- Declaration of Conformity
- Fire certificate
- Sanitary and epidemiological conclusion

Release according to TU 23.99.19-105-56846022-2016

EXAMPLE OF SYMBOL

ISOTEC Pp S150-50/Ch-600×1000 is a product of the ISOTEC trademark, product name is industrial plate S150, product thickness is 50 mm, manufacturer is Chelyabinsk, product width is 600 mm, product length is 1000 mm.

Tank slab

ISOTEC Tank slab SW60

DESCRIPTION

Thermal insulation boards made of mineral wool based on basalt rock melts. Developed specifically for thermal and sound insulation of tanks for various industrial fields. The application temperature of ISOTEC Tank Slab SW60 products is in the range from -180 to +600 °C.

AREAS OF APPLICATION

Thermal insulation of tank walls (with a radius of curvature greater than 1000 mm) and flat surfaces of equipment.

ADVANTAGES

- Confirmed thermal conductivity coefficient according to GOST 7076-99 "Method for determining thermal conductivity and thermal resistance at steady-state thermal mode."
- High maximum application temperatures.

TECHNICAL SPECIFICATIONS

Type of material		ISOTEC Tank slab SW60
Density, kg/m3		60±10%
Thermal conductivity coefficient, W/(m•K), no more than	λ10 λ25 λ50 λ100 λ125 λ150 λ200 λ250 λ300	0.034 0.036 0.039 0.046 0,050 0.054 0.063 0.074 0.087
Fire hazard class		KM0
Flammability group Maximum		NG
operating temperature, °C		600

Tank slab

ISOTEC Tank slab SW60

DIMENSIONS AND PACKAGING

The slabs are placed in packs, which are wrapped in film or other material.

Quantity of material in the package

Thickness, mm	Length, mm	Width, mm	Things	M2 in a package	M3 in packaging
30	1000	600	12	7.26	0.216
40	1000	600	10	6	0.240
50	1000	600	8	4.8	0.240
60	1000	600	8	4.8	0.288
70	1000	600	6	3.6	0.252
80	1000	600	6	3.6	0.288
90	1000	600	4	2.4	0.216
100	1000	600	4	2.4	0.240
110	1000	600	4	2.4	0.264
120	1000	600	4	2.4	0.288
130	1000	600	3	1.8	0.234
140	1000	600	3	1.8	0.252
150	1000	600	3	1.8	0.270
160	1000	600	3	1.8	0.288
170	1000	600	2	1,2	0.204
180	1000	600	2	1,2	0.216
190	1000	600	2	1,2	0.228
200	1000	600	2	1,2	0.240

CERTIFICATES

- Declaration of Conformity
- Fire certificate
- Sanitary and epidemiological conclusion

Release according to TU 23.99.19-105-56846022-2016

EXAMPLE OF SYMBOL

ISOTEC Pr SV60-50/Ch-600×1000– a product of the ISOTEC trademark, product name–plate for SV60 tanks, thickness–50 mm, manufacturer–Chelyabinsk, product width–600 mm, product length–1000 mm.

Tank slab

ISOTEC Tank slab SW80

DESCRIPTION

Thermal insulation boards made of mineral wool based on basalt rock melts are designed specifically for thermal and sound insulation of tanks, as well as flat surfaces of equipment for various industries. The application temperature of ISOTEC Tank Slab SW80 products ranges from -180 to +640 °C.

AREAS OF APPLICATION

Thermal insulation of tank walls (with a radius of curvature greater than 1500 mm) and flat surfaces of equipment, capable of withstanding loads of up to 10 kPa.

ADVANTAGES

- Confirmed thermal conductivity coefficient according to GOST 7076-99 "Method for determining thermal conductivity "efficiency and thermal resistance under steady-state thermal conditions."
- High maximum application temperatures.

TECHNICAL SPECIFICATIONS

Type of material		ISOTEC Tank slab SW80
Density, kg/m3		75±10%
Thermal conductivity coefficient, W/(m•K), no more than	λ10 λ25 λ50 λ100 λ125 λ150 λ200 λ250 λ300	0.035 0.037 0 041 0,050 0.054 0.063 0,080 0.097 0.114
Fire hazard class		KM0
Flammability group Maximum		NG
operating temperature, °C		640

Tank slab

ISOTEC Tank slab SW80

DIMENSIONS AND PACKAGING

The slabs are placed in packs, which are wrapped in film or other material.

Quantity of material in the package

Thickness, mm	Length, mm	Width, mm	Things	M2 in a package	M3 in packaging
30	1000	600	10	6	0,180
40	1000	600	8	4.8	0.192
50	1000	600	6	3.6	0,180
60	1000	600	6	3.6	0.216
70	1000	600	4	2.4	0.168
80	1000	600	4	2.4	0.192
90	1000	600	4	2.4	0.216
100	1000	600	3	1.8	0,180
110	1000	600	3	1.8	0.198
120	1000	600	3	1.8	0.216
130	1000	600	3	1.8	0.234
140	1000	600	2	1,2	0.168
150	1000	600	2	1,2	0,180
160	1000	600	2	1,2	0.192
170	1000	600	2	1,2	0.204
180	1000	600	1	0.6	0.108
190	1000	600	1	0.6	0.114
200	1000	600	1	0.6	0,120

CERTIFICATES

- Declaration of Conformity
- Fire certificate
- Sanitary and epidemiological conclusion

Release according to TU 23.99.19-105-56846022-2016

EXAMPLE OF SYMBOL

ISOTEC Pr SV80-50/Ch-600×1000 is a product of the ISOTEC trademark, product name is a plate for SV80 tanks, thickness is 50 mm, manufacturer is Chelyabinsk, product width is 600 mm, product length is 1000 mm.

Tank slab

ISOTEC Tank slab SR100

DESCRIPTION

Thermal insulation boards made of mineral wool based on basalt rock melts are designed specifically for heat, sound insulation and fire protection of equipment used in power engineering and other industries. The application temperature of ISOTEC products SR100 Tank Slab is in the range from -180 to +660 °C.

AREAS OF APPLICATION

- Thermal insulation and fire protection of power and industrial equipment studies.
- Additional insulation (as a second layer) of industrial furnaces, steam boilers and other high-temperature heat-generating equipment, chimneys.

ADVANTAGES

- Confirmed thermal conductivity coefficient according to GOST 7076-99 "Method for determining thermal conductivity and thermal resistance under steady-state thermal conditions."
- High maximum application temperatures.

TECHNICAL SPECIFICATIONS

Type of material		ISOTEC Tank slab SR100
Density, kg/m3		90±10%
Thermal conductivity coefficient, W/(m•K), no more than	λ10	0.034
	λ25	0.036
	λ50	0.039
	λ100	0.047
	λ125	0.051
	λ150	0.056
	λ200	0.066
	λ250	0.079
	λ300	0.094
Fire hazard class		KM0
Flammability group Maximum		NG
operating temperature, °C		660

OWENS CORNING® FOAMGLAS®

About FOAMGLAS

Foamglas, produces cellular glass insulation materials known for their high compressive strength, non-combustibility, and moisture resistance. Their products are widely used in construction and industrial sectors to provide reliable thermal insulation and corrosion protection.

FOAMGLAS® ONE™ INSULATION

INDUSTRIAL PIPE & EQUIPMENT INSULATION IN ACCORDANCE WITH EN 14305

FOAMGLAS® ONE™ insulation is a lightweight, rigid material composed of millions of completely sealed glass cells. It is manufactured by Owens Corning in a block form and then fabricated into a wide range of shapes and sizes to satisfy industrial and commercial insulation requirements.

Features


Noncombustible


Impermeable to water and vapor

High compressive strength


Nonabsorbent


Corrosion/ chemical resistant


Constant insulating efficiency


Easy to work with


Vermin resistant


Long term dimensiona l stability


Ecological

Applications

- Cryogenic systems
- Low-temperature pipe, equipment, tanks and vessels
- Medium- and high-temperature pipes and equipment
- Hot oil and hot asphalt storage tanks
- Heat transfer fluid systems
- Hydrocarbon processing systems
- Chemical processing systems
- Steam and chilled water piping
- Commercial piping and ductwork
- Direct burial/underground

Formats & Dimensions

For detailed information on available formats, dimensions and details of delivery, please refer to our 'Prefabricated and preassembled product range' brochure - available on www.foamglas.com or contact your regional FOAMGLAS® insulation sales contact for more information.

PRODUCT DATA SHEET

PITTWRAP B100 JACKETING

Description and Area of Application

PITTWRAP® B100 jacketing is a self-sealing aluminum butyl laminate used for protecting above ground FOAMGLAS® insulation systems on above and below ambient service pipelines. Protective jacketing must be used over the PITTWRAP® B100 jacketing for UV protection. Manual pressure seals the jacketing without the use of a torch or heater.

PITTWRAP® B100 jacketing consists of a high-tack butyl adhesive with aluminum film laminated to two polyester films (top and bottom) to assure a high level of resistance and protection (puncture and tear resistance). The polyester layers also protect the aluminum face against corrosion.

Field Application

Always read and understand information contained within product data sheets and safety data sheets before attempting to use this product. If you have questions regarding fitness of use of this product for an application, consult Owens Corning.

Substrate Preparation

All surfaces should be dry and free of dust, loose scale, oil, grease and frost.

Insulation should be secured to the pipe with fiberglass- reinforced strapping tape, 2 pieces per section, overlapped by at least 50%.

Cellular Glass Application Guidelines

PITTWRAP® B100 jacketing may be shop or field-applied. See supplemental application instructions at the end of this document.

Any change in insulation thickness, such as screwed ell covers, pipe step downs, etc., should be field tapered to make a smooth transition. These transitions may be covered with jacketing cut to fit or with spiral wrapped strips of jacketing.

Cleanup and Disposal

Dispose of excess jacketing, release film and packaging in accordance with local, state and federal regulations.

Type of Delivery and Storage

Rolls:

- 3.9 in x 49.2 ft (0.1 m x 15 m) or 16 ft² (1.5 m²)
  Gross weight: 5.9 to 6.9 lbs (2.7 to 3.1 kg)
- 23.6 in x 49.2 ft (0.6 m x 15 m) or 96 ft² (9.0 m²)
  Gross weight: 36.1 to 40.1 lbs (16.4 to 18.2 kg)
- 39.4 in x 49.2 ft (1.0 x 15 m) or 161 ft² (15.0 m²)
  Gross weight: 59.9 to 67.2 lbs (27.1 to 30.5 kg)
- Jacketing should not be stored where it may come in contact with hydrocarbon solvents such as petroleum spirit and diesel oil or other organic solvents.
- Jacketing should be handled and stored in a manner as not to damage the material and its packaging. For best results, rolls should be stored vertically; however, the rolls may be stored horizontally in their cartons provided
  the rolls are not exposed to damage by excessive weight of the stacked materials.
- Jacketing should be protected from inclement weather by storing indoors, where material will not exceed 100°F (38°C) for extended periods. Jobsite storage in well ventilated containers or covered on pallets is suitable for temporary periods.
- Store products in a heated building during cold weather or prior to cold weather application.
- Store away from sparks or flames.
- Consult Safety Data Sheet for additional storage and handling information.

Coverage

Standard application of adhesive to FOAMGLAS® insulation:

The required amount of jacketing for a section of insulated pipe can be calculated* as follows:

- Required Jacketing Area (A)
  Equation 1, Imperial Units (23.6 in wide roll) $A = [1.08 \times [\pi \times (d + 2t) + 2] \div 12] \times l$
  Equation 2, SI, metric Units (1 m wide roll) $A = [1.05 \times [\pi \times (d + 2t) + 50] \div 1000] \times l$

  Where d = actual pipe diameter in inches or mm, t = insulation thickness in inches or mm, and l = pipe length in ft or m.

*Figures DO NOT include losses.

Limitations

- DO NOT use below ground.
- DO NOT use in areas where jacketing will be exposed to solvents that can dissolve butyl rubber.
- DO NOT allow jacketing to remain exposed to sunlight and/or weather for more than 6 months.
- Not intended for indoor use.

Typical Properties

PROPERTY [1]	METHOD	SI	ENGLISH
Color		Silver (Aluminum)	
Thickness, Total Aluminum Foil + Butyl Rubber Adhesive – Release Film		1.2 ± 0.05 mm	47.3 ± 2 mil
Weight (Nominal), Foil + Butyl – Release Film		1.75 kg/m^2	0.36 lb/ft^2
Application Temperature Maximum Minimum		 45°C 5°C	 113°F 41°F
Service Temperature [2] Maximum Minimum		 140°C -50°C	 284°F -58°F
Tensile Strength	ASTM D1000	≥ 55 N/cm	≥ 31 lb/in
Elongation	ASTM D1000	≥ 30%	
Puncture Resistance	ASTM E154	26 ± 10 kgf	58 ± 22 lbf
Permeance	ASTM E96	≤ 0.23 ng/Pa·s·m^2	≤ 0.004 perm
Water Vapor Permeability	ASTM E96 (Wet Cup)	0.00 ng/Pa·s·m	0.00 perm-in

1 Properties are subject to change. Consult Owens Corning.
2 Service temperature limits are derived from laboratory evaluation of the product. Variations in substrates, loading conditions, or other external factors may further limit service temperature. Always consult FOAMGLAS® Insulation System Specification for suitability for use recommendations for a specific application.

Supplemental Instructions for Field-Applied Jacketing

Step 1
Cut a section of jacketing long enough to fit around the insulated pipe and have a 2 in (50 mm) overlap.

Step 2
Peel 2 in (50 mm) of release film from the jacketing to reveal the butyl adhesive.

Step 3
Apply revealed adhesive to insulation in line with pipe axis. Best results are achieved when the start point results in the overlap terminating in a water shedding position.

Step 4
Apply pressure with plastic spreader to ensure that the butyl adhesive fills the surface cells of the insulation and achieves adhesion without trapping air.

Step 5
Remove release film while applying jacketing around the circumference of the insulation.

Step 6
Remove remaining release film and press jacketing around the circumference to achieve adhesion without trapping air.

Step 7
Apply pressure with spreader to ensure that the jacketing overlap is well adhered and without air bubbles. This completes installation of one section of jacketing.

Step 8
Start subsequent section of jacketing with a 2 in (50 mm) overlap and a 2 in (50 mm) offset from the starting point of the adjacent section. The red line represents the starting point of the subsequent section, which avoids the build-up of more than three layers at the overlap.

Step 9
Continue applying jacketing sections as described above, taking care to overlap and offset the starting point of each section from the previous one.

Step 10
Remove release film while applying jacketing around the circumference of the insulation. Apply pressure with plastic spreader to ensure that the butyl adhesive fills the surface cells of the insulation and achieves adhesion without trapping air.

Step 11
Remove remaining release film and press jacketing around the circumference to achieve adhesion without trapping air.

Step 12
Best results are achieved when overlaps are positioned one above, one below, one above configuration.

Supplemental Instructions for Pre-Applied Jacketing

Step 1
If the insulation is supplied with pre-applied jacketing, then a circumferential butt strip will need to be applied to seal over the joint.

Step 2
Apply butt strip in the same way as the jacketing, peeling the release film away while wrapping the strip around the insulation.

Step 3
Finish the butt strip using the spreader to ensure that the butt strip overlap is well adhered to itself and to the jacketing and without air bubbles.

For additional information on FOAMGLAS" Insulation Systems, please contact Owens Corning or visit us at www.foamglas.com . The information contained herein is accurate and reliable to the best of our knowledge. But, because Pittsburgh Corning, LLC has no control over installation workmanship, accessory materials or conditions of application, NO EXPRESSED OR IMPLIED WARRANTY OF ANY KIND, INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS MADE as to the performance of an installation containing Owens Corning products. In no event shall Pittsburgh Corning, LLC be liable for any damages arising because of product failure, whether incidental, special, consequential or punitive, regardless of the theory of liability upon which any such damages are claimed. Pittsburgh Corning, LLC provides written warranties for many of its products, and such warranties take precedence over the statements contained herein.

PRODUCT DATA SHEET

PITTCOTE® 300 COATING

1. Description and Area of Application

PITTCOTE® 300 coating is an asphalt-based vapor barrier coating especially formulated for use with FOAMGLAS® insulation. It can be used as a protective coating over FOAMGLAS® insulation under metal jacket or other UV resistant finish or as vapor barrier coating in direct buried applications.

PITTCOTE® 300 coating is applied by brush, trowel or glove. Spray grade is available by special order.

2. Field Application

Always read and understand information contained within product datasheets and safety datasheets before attempting to use this product. If you have questions regarding fitness of use of this product for a particular application, consult Pittsburgh Corning.

Substrate Preparation
All surfaces should be dry and free of dust, loose scale, oil, grease and frost.

Environmental Considerations
Facilitate application at low temperature by keeping containers in a heated location or loosen lid and warm by indirect heat. DO NOT heat containers with flame or direct heat.

Mixing Instructions
This material must be thoroughly mixed prior to use. DO NOT thin to overcome cold temperatures effects.

Cellular Glass Application Guidelines for Above Ground Systems
Spray or trowel a tack coat of 0.8 to 1.2 L / m^2 (2 to 3 gal / 100 ft^2) of PITTCOTE® 300 coating to FOAMGLAS® insulation. Embed PC® Fabric 79 into the wet coat overlapping all fabric joints by 10 cm (4 in.). Smooth fabric and stretch to remove wrinkles. Apply a second coat after the first coat dries at a rate of 1.6 to 2.0 L / m^2 (4 to 5 gal / 100 ft^2).

Spray application can be made with air or airless equipment such as Graco 45:1 pump with mastic gun no. 451 orifice with reverse-a-clean attachment or equivalent. Lines should be 19 mm (3/4 in.) I.D., and pump should be equipped with a hydraulic ram; delivery pressure at gun should be about 1300 psi.

Although PITTCOTE® 300 coating has excellent weather resistance; it will degrade over time when exposed to UV light. Pittsburgh Corning recommends that the PITTCOTE® 300 coating be coated with aluminum roof coating or covered with metal or other UV resistant jacketing.

Cellular Glass Application Guidelines for Underground Systems
Flash polyester film from lapping or areas of PITTWRAP® HS jacketing to be coated. When using PITTWRAP® SS jacketing, see jacketing data sheet FI-179A. Trowel or use plastic gloves a tack coat of 0.8 to 1.2 L / m^2 (2 to 3 gal / 100 ft^2) and embed PC® Fabric 79, lapping edges 10 cm (4 in.). Apply a second coat of 0.8 to 1.2 L / m^2 (2 to 3 gal / 100 ft^2) and a second layer of fabric. Apply a top coat of 0.8 to 1.2 L / m^2 (2 to 3 gal / 100 ft^2) so that no fabric is visible when dry. DO NOT backfill until coating is dry.

Clean up and Disposal
Dispose of excess coating and containers in accordance with local, state and federal regulations.

3. Type of Delivery and Storage

- 19 L (5 gal) pails
- 208 L (55 gal) drums
- Store original, unopened containers in a cool, dry area.
- Protect unopened containers from water, heat and direct sunlight.
- Consult Safety Data Sheet for additional storage and handling information.

4. Coverage

Standard application of coating to FOAMGLAS® insulation:

- 19 L (5 gal) pail: 5.8 to 7.6 m^2 (63 to 83 ft^2)
- 208 L (55 gal) drum: 63 to 83 m^2 (688 to 917 ft^2)
- 2.5 to 3.3 L / m^2 (6 to 8 gal / 100 ft^2) to achieve a cured coating thickness of 2.4 to 3.3 mm (95 to 130 mils).

All figures exclude losses.

5. Typical Properties

PROPERTY [A]	METHOD	SI	ENGLISH
COLOR		Black	
DENSITY		~ 1.02 kg / L	~ 8.5 lb / gal
SOLIDS CONTENT, VOLUME (WEIGHT)			
SPRAY GRADE		63.5 ± 2.0 % (52.4 ± 1.7 %)	
TROWEL GRADE		68.0 ± 2.0 % (58.3 ± 1.8 %)	
FLASH POINT [B]	PMCC	≥ 38.8 °C	≥ 102 °F
REACTION TO FIRE, CURED		Combustible	
APPLICATION TEMPERATURE			
MATERIAL		29.5 ± 19.5 °C	85 ± 35 °F
SURFACE (MAXIMUM)		60 °C	140 °F
SURFACE (MINIMUM)		5 °C	40 °F

SERVICE TEMPERATURE			
[C] MAXIMUM		93 °C	200 °F
MINIMUM		-40 °C	-40 °F
CURE TIM [D]			
TOUCH		2 hours @ 25 °C (77 °F)	
FIRM		24 hours @ 25 °C (77 °F)	
THROUGH		14 days @ 25 °C (77 °F)	
SOLVENT		Mineral Spirits	
VOLATILE ORGANIC CONTENT (VOC) MAXIMUM LESS WATER AND EXEMPT		359 ± 30 g / L	3.0 ± 0.25 lbs. / gal
WATER VAPOR PERMEABILITY	ASTM E96 (Wet Cup)	0.00 ng / Pa·s·m	0.00 perm-in

[A] Properties subject to change. Consult Pittsburgh Corning.

[B] Uncured.

[C] Service temperature limits are derived from laboratory evaluation of the product. Variations in substrates, loading conditions, or other external factors may further limit service temperature. Always consult Pittsburgh Corning FOAMGLAS® Insulation System Specification for suitability for use recommendations for a specific application.

[D] Will vary with weather conditions and film thickness.

6. Limitations

- DO NOT use in applications where solvent odor could affect food taste or flavor.
- Keep containers closed when not in use.
- Store in areas for designed for combustibles.

The information contained herein is accurate and reliable to the best of our knowledge. But, because Pittsburgh Corning Corporation has no control over installation workmanship, accessory materials or conditions of application, NO EXPRESSED OR IMPLIED WARRANTY OF ANY KIND, INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS MADE as to the performance
of an installation containing Pittsburgh Corning products. In no event shall Pittsburgh Corning be liable for any damages arising because of product failure, whether incidental, special, consequential or punitive, regardless of the theory of liability upon which any such damages are claimed. Pittsburgh Corning Corporation provides written warranties for many of its products, and such warranties take precedence over the statements contained herein.

PRODUCT DATA SHEET

PITTCOTE® 404 COATING

1. Description and Area of Application

PITTCOTE® 404 coating is a highly flexible, acrylic latex coating specifically designed for use with FOAMGLAS® insulation where a superior weather barrier coating is required.

PITTCOTE® 404 coating is available in colors and may be applied by glove, trowel, brush, or spray.

2. Field Application

Always read and understand information contained within product datasheets and safety datasheets before attempting to use this product. If you have questions regarding fitness of use of this product for an application, consult Pittsburgh Corning LLC.

Substrate Preparation

The FOAMGLAS® insulation surface should be dry, free of frost, oil and grease. Insulation should be fitted so that the joints are tight and without broken or rounded corners. Any surface variations between blocks should be eliminated by rubbing the insulation smooth. Excess sealant or adhesive should be removed from the insulation surface. Inside corners should be canted and outside corners rounded. Blasting of all adjacent surfaces should be completed and metal primed before insulation is coated.

Environmental Considerations

DO NOT apply if rain or temperatures below minimum application temperatures are expected before coating dries. High humidity environments will increase cure time and may have an adverse effect on cured coating on below ambient systems.

Mixing Instructions

This material must be thoroughly mixed prior to use. Coating may be thinned 5% with clean water.

Cellular Glass Application Guidelines

PITTCOTE® 404 coating can be applied by glove, trowel, brush or spray.

Apply tack coat of 1.2 to 1.6 L / m^2 (3 to 4 gal / 100 ft^2). Immediately embed reinforcing fabric PC® Fabric 79 (FI-159), lapping fabric a minimum of 7.5 to 10 cm (3 to 4 in.).

After the first coat has dried, apply a second coat of 1.2 to 1.6 L / m^2 (3 to 4 gal / 100 ft^2). Fabric outline will be faintly visible when dry. Inspect and touch up as needed.

Spray application recommendations are a 30:1 ratio or larger pump with a 13 to 19 mm (1/2 to 3/4 in.) diameter high pressure hose. The orifice of the spray tip should be 0.89 to 1.14 mm (0.035 to 0.045 in.) A reversible tip is recommended. Use a squeegee to press coating into surface.

For interior building insulation applications, the reinforcing fabric may be eliminated.

Clean up and Disposal

Clean equipment and spills with water before coating dries.

Dispose of excess coating and containers in accordance with local, state and federal regulations.

PRODUCT DATA SHEET

PITTCOTE® 404 COATING

3. Type of Delivery and Storage

- 19 L (5 gal) pails
- 208 L (55 gal) drums
- Store and ship above 0 °C (32 °F), and prevent from freezing in cold weather.
- Consult Safety Data Sheet for additional storage and handling information.

4. Coverage

Standard application of coating to FOAMGLAS® insulation:

- 19 L (5 gal) pail: 5.6 to 7.6 m^2 (63 to 83 ft^2)
- 208 L (55 gal) drum: 63.0 to 83.2 m^2 (688 to 917 ft^2)
- 2.5 to 3.3 L / m^2 (6 to 8 gal / 100 ft^2) to achieve a cured coating thickness of 1.4 to 1.8 mm (55 to 70 mils).
- All figures exclude losses.

5. Typical Properties

PROPERTY [A]	METHOD	SI	ENGLISH
COLOR		White Custom colors available by special order	
DENSITY		1.35 ± 0.05 kg / L	11.4 ± 0.15 lb / gal
SOLIDS CONTENT, WEIGHT		67 %	
ELONGATION	ASTM D412	≥ 200 %	
FLAME RESISTANCE, CURED		Combustible	
APPLICATION TEMPERATURE			
MATERIAL (MINIMUM)		4 °C	40 °F
SURFACE (MINIMUM)		4 °C	40 °F
SERVICE TEMPERATURE @ COATED SURFACE [B]			
MAXIMUM, INTERMITENT		104 °C	220 °F
MAXIMUM		82 °C	180 °F
MINIMUM		-34 °C	-30 °F
CURE TIME [C]			
TOUCH		3 hours @ 25 °C (77 °F), 50% RH	
THROUGH		24 hours @ 25 °C (77 °F), 50% RH	
SOLVENT		Water	
WATER VAPOR PERMEABILITY	ASTM E96 (Wet Cup)	0.58 ng / Pa·s·m	0.4 perm-in

[A] Properties subject to change. Consult Pittsburgh Corning LLC.

[B] Service temperature limits are derived from laboratory evaluation of the product. Variations in substrates, loading conditions, or other external factors may further limit service temperature. Always consult Pittsburgh Corning LLC FOAMGLAS® Insulation System Specification for suitability for use recommendations for a specific application.

[C] Will vary with weather conditions and film thickness.

6. Limitations

•DO NOT use where water will pond.

The information contained herein is accurate and reliable to the best of our knowledge. But, because Pittsburgh Corning LLC has no control over installation workmanship, accessory materials or conditions of application,NO EXPRESSED OR IMPLIED WARRANTY OF ANY KIND, INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS MADE as to the performance of an installation containing Pittsburgh Corning LLC products. In no event shall Pittsburgh Corning LLC be liable for any damages arising because of product failure, whether incidental, special, consequential or punitive, regardless of the theory of liability upon which any such damages are claimed. Pittsburgh Corning LLC provides written warranties for many of its products, and such warranties take precedence over the statements contained herein.

PRODUCT DATA SHEET

PITTCOTE® 444Ns SEALANT

Description and Area of Application

PITTSEAL® 444N^{S} sealant is a specially formulated non-curing butyl sealant used for sealing joints in FOAMGLAS® insulation systems and to seal protrusions and metal jacket laps. It is compatible with a wide variety of coatings.

Type of Delivery and Storage

- 304 ml (10.3 fl oz) cartridges; 30 cartridges per carton
- 19 L (5 gal) pails
- Store original unopened containers in a cool, dry area.
- Protect unopened containers from water, heat, and direct sunlight.
- Consult Safety Data Sheet for additional storage and handling information.

Coverage

Standard application of adhesive to FOAMGLAS® insulation:

- 304 ml (10.3 fl oz) cartridge: 1,000 cm^2 x 3 mm (148 in^2 x ⅛ inch) film
- 304 ml (10.3 fl oz) cartridge: Will produce a bead ~ 7.5 m (~ 24.6 ft) in length and ~ 6.4 mm (~ ¼ inch) in diameter
- 9 L (5 gal) pail: 6.25 m^2 x 3 mm (63.8 ft^2 x ⅛ inch) film

Field Application

Always read and understand the information contained within product data sheets and safety data sheets before attempting to use this product. If you have questions regarding fitness of use of this product for an application, consult Owens Corning.

Substrate Preparation

All surfaces should be dry and free of dust, loose scale, oil, grease, and frost. Blocks or joints should be rubbed to obtain a good fit before application of the sealant.

Environmental Considerations

Facilitate application at low temperature by keeping containers in a heated location, or loosen lid and warm by indirect heat. DO NOT heat containers with flame or direct heat.

Cellular Glass Application Guidelines

DO NOT thin. Apply with trowel, knife, or caulking gun. Apply sufficient material to both surfaces, and press surfaces together firmly to obtain a complete seal.

Joints less than or equal to 3 mm (⅛ inch) are desirable. DO NOT use this or any other sealant to fill large voids from poor-fitting insulation.

If a coating is to be applied, excess sealant should be removed flush with the surface.

When sealing the laps of metal jacketing, maintain a minimum thickness of 1.5 mm (1/16 inch).

Cleanup and Disposal

Dispose of excessive sealant and containers in accordance with local, state, and federal regulations.

Limitations

- DO NOT use in applications where solvent odor could affect food taste or flavor.
- May pick up dust when exposed.
- Solvent may attack some organic foams.
- Product should not be exposed to UV light.
- DO NOT use in areas subject to continuous immersion.

Typical Properties

PROPERTY [1]	TEST METHOD	SI	ENGLISH
Color		Dark Gray	
Density		1.40 ± 0.05 kg/L	11.68 ± 0.45 lb/gal
Solids Content, Volume		93%	
Flash Point[2]		149°C	300°F
Application Temperature Material Surface, Minimum Surface, Maximum		 25 ± 15°C 4°C 38°C	 77 ± 27°F 40°F 100°F
Service Temperature[2] Maximum, Intermittent Maximum, Continuous Minimum		 122°C 82°C -150°C	 250°F 180°F -238°F
Volatile Organic Compound (VOC) Maximum Less Water and Exempt[3]		80 g/L	0.67 lbs/gal
Water Vapor Permeability[4]	ASTM E96 (Wet Cup)	0.00 ng/Pa·s·m	0.00 perm-in

1 Properties subject to change. Consult Owens Corning.
2 Service temperature limits are derived from laboratory evaluation of the product. Variations in substrates, loading conditions, or other external factors may further limit service temperature. Always consult FOAMGLAS® Insulation System Specification for suitability for use recommendations for a specific application.
3 Sealant is certified to meet the general requirements for VOC emissions of LEED IEQc4.1 2009 and SCAQMD Rule 1168, October 6, 2017, Adhesive and Sealant Applications, as analyzed by the methods specified in Rule 1168.
4 Tested in a joint with FOAMGLAS® cellular insulation. Sealant is certified to meet stainless steel service requirements of MIL-I-24244, ASTM C795, and NRC Regulatory Guide 1.36.

About KINGSPAN

Kingspan, a global provider of high-performance insulation and building envelope solutions. The company offers a wide range of products, including rigid insulation boards, sandwich panels, and systems for various construction and industrial applications.

Technical Data Sheet

Tarec pir® M1-CR 42 Pipe Insulation

Polyisocyanurate (PIR) Insulation for Piping and Equipment

General Technical Properties

Property	Test Method	Unit	Typical Value
Density	EN ISO 845		
	Nominal	kg/m^3	42
	Minimum	kg/m^3	40
Thermal Conductivity	EN 12667 at +10°C		
	Initial	W/m K	0.021
	Aged (25 weeks @ 70°C)	W/m K	0.026
	EN 14308 at +10°C	W/m K	Refer to DoP
Color			Green
Closed Cell Content	EN ISO 4590 (meth. 1)	%	≥ 95
Compressive Strength	EN 826 at +23°C		
	Parallel	kPa	265
	Perpendicular	kPa	235
Tensile Strength	EN 1608 at +23°C		
	Parallel	kPa	430
	Perpendicular	kPa	350
Linear Dimensional Stability	EN 1604		
	+100°C for 24 hours	%	≤ 1
	-40°C for 24 hours	%	≤ 1
	+70°C and 95% RH for 48 hours	%	≤ 3
Temperature Limits	Maximal	°C	+120
	Minimal	°C	-200
Water Absorption	ASTM C591 & ASTM C272 (Proc. A)	Vol. %	≤ 1
Water Vapour Permeability	EN 12086	Ng/Pa.s.m	≤ 5.5
Linear Expansion Coefficient	EN 13471	K^{-1}	40-70 x 10^{-6}

Fire Classifications*

Property	Test Method	Typical Result
Reaction to Fire	EN 13501-1	
	Foam core only	D/D_L-s3,d0
	Foam core + T50 vapour barrier	E/E_L
	Foam core + TR200 vapour barrier	E/E_L
Surface Burning Characteristics	ASTM E84	
	Foam core only	Flame Spread Index: ≤ 25
Horizontal Burning Characteristics	ISO 3582	
	Foam core only	Extent of burn: ≤25 mm Extinguishing Time: N/A (Non Burning)

*other finishes than described may influence reaction to fire

Product Standard Compliance

Standard	Description	Compliance Level
EN 14308	Factory made rigid polyurethane foam (PUR) and polyisocyanurate foam (PIR) products. Specification.	Full compliance. Refer to CE mark for details.
ASTM C591	Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation	Grade 2 - Type II
CINI 2.7.01	Polyisocyanurate (PIR) slabs, sections, segments, for thermal insulation of piping and equipment	Full compliance

Technical Data Sheet

Tarec pir® M1-CR 50 Pipe Insulation

Polyisocyanurate (PIR) Insulation for Piping and Equipment

General Technical Properties

Property	Test Method	Unit	Typical Value
Density	ASTM D1622		
	Nominal	kg/m^3	50
	Minimum	kg/m^3	48
Thermal Conductivity	ASTM C518 at +10°C		
	Initial	W/m K	0.021
	Aged (25 weeks @ 70°C)	W/m K	0.023
Color			Green
Closed Cell Content	ASTM D6226	%	≥ 95
Compressive Strength	ASTM D1621 +23°C		
	Parallel	kPa	330
	Perpendicular	kPa	310
Tensile Strength	ASTM D1623 at +23°C		
	Parallel	kPa	510
	Perpendicular	kPa	480
Linear Dimensional Stability	ASTM D2126		
	+93°C for 24 hours	%	≤ 1
	-30°C for 24 hours	%	≤ 1
	+70°C and 95% RH for 48 hours	%	≤ 3
Temperature Limits	Maximal	°C	+120
	Minimal	°C	-200
Water Absorption	ASTM C591 & ASTM C272 (Proc. A)	Vol. %	≤ 1
Water Vapour Permeability	ASTM E96	Ng/Pa.s.m	≤ 5.5
Linear Expansion Coefficient	ASTM D696	K^{-1}	40-70 x 10^{-6}

Fire Classifications*

Property	Test Method	Typical Result
Reaction to Fire	EN 13501-1	
	Foam core only	D/D_L-s3,d0
	Foam core + T50 vapour barrier	E/E_L
	Foam core + TR200 vapour barrier	E/E_L
Surface Burning Characteristics	ASTM E84	
	Foam core only	Flame Spread Index: ≤ 25
Horizontal Burning Characteristics	ASTM D1692	
	Foam core only	Extent of burn: ≤25 mm Extinguishing Time: N/A (Non Burning)

*other finishes than described may influence reaction to fire

Product Standard Compliance

Standard	Description	Compliance Level
EN 14308	Factory made rigid polyurethane foam (PUR) and polyisocyanurate foam (PIR) products. Specification.	Full compliance. Refer to CE mark for details.
ASTM C591	Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation	Grade 2 – Type III
CINI 2.7.01	Polyisocyanurate (PIR) slabs, sections, segments, for thermal insulation of piping and equipment	Full compliance

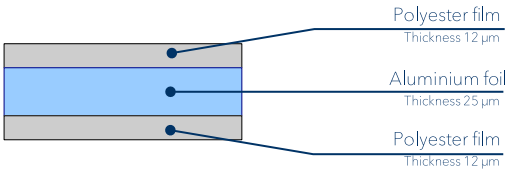
Technical Data Sheet

Triplex Vapour Barrier Foil (T50)

12 µm polyester / 25 µm aluminium foil / 12 µm polyester laminate

Description

Kingspan Industrial Insulation uses a multiplex foil that consists of a three-layer lamination of 12 µm polyester, 25 µm aluminium foil and another 12 µm polyester film.
This foil is mainly applied as a facing over pipe insulation (pipe sections, segments, boards and boxes for fittings), and is primarily used in cold insulation systems, to prevent the ingress of moisture into the insulation system.
This foil combines the excellent vapour barrier properties of aluminium with the outstanding mechanical and thermal characteristics of polyester, providing a strong, flexible and efficient barrier material.



Material Property		Unit	Typical Value
Operating Temperature Limits	Upper Limit Lower Limit	°C °C	+150 -80
Melting point (polyester)		°C	+250
Weight		gr/m^2	106
Specific gravity		kg/dm^3	2.2
Vapour permeability		$g/m^2.h.mmHg$	1×10^{-6}
Humidity absorption		%	<0.3
Tensile strength	(ASTM D 882)	N/mm	≥100
Elongation		%	54 – 58

The above information is based on the manufacturer's research and experience. Kingspan Industrial Insulation assumes no liability for this information since such responsibility is assumed by the manufacturer. Whilst care was taken to ensure accuracy, Kingspan Industrial Insulation offers no guarantee that the data presented is correct or complete.

Morgan
Advanced Materials

About MORGAN ADVANCED MATERIALS

Morgan Advanced Materials, originating from the United Kingdom, specializes in advanced carbon and ceramic materials for demanding applications. Their Thermal Ceramics division offers high-temperature insulation solutions for industrial processes, enhancing energy efficiency and safety.

Data sheet

FireMaster Marine Plus Blanket

Product Description

FireMaster Marine Plus Blanket is a highly insulating blanket especially developed for passive fire protection applications that are space or weight sensitive.

Using Morgan's patented Superwool, low-shot technology manufacturing, FireMaster Marine Plus Blanket features an ultra-low-shot blanket, improving handleability and optimising thermal and physical properties. As a result of this technology, FireMaster Marine Plus Blanket provides typical savings of 20% to 30% in applied weight.

FireMaster Marine Plus Blanket is a low density blanket with high handling strength, allowing easy and convenient installation. No binder is used during manufacture; therefore, no smoke is emitted in a fire.

FireMaster Marine Plus Blanket is comprehensively tested and approved for the fire protection of the marine industry's steel, aluminium, and composite structures. Offering substantial weight savings over traditionally-used fibre insulation systems, FireMaster Marine Plus Blanket is suitable for use where fire insulation performance is required in the offshore, petrochemical and construction industries.

A range of thicknesses, densities and aluminium foil or glass cloth facings are available.

Fire Reaction Properties

- Non-Combustible in accordance with IMO FTP Code Part 1
- Toxicity Index < 0.5 when tested in accordance with UK MOD Defence Standard 02-713

Properties

- Classification Temperature, °C (°F): 1200 (2192)
- Thickness, mm: 6 to 65
- Density, kg/m^3: 48 to 128

Thermal Insulation Performance

Thermal insulation at ambient temperatures

- R Values (m^2 K/W) and corresponding U values (w/m^2•k)
- For densities above 64kg/m^3 the values for 64kg/m^3 may be used

Thickness. mm	64 / 70 kg/m³		48 kg/m³	
	R value	U value	R value	U value
15mm	0.47	2.13	0.47	2.13
25mm	0.78	1.28	0.78	1.28
30mm	0.94	1.06	0.93	1.08
35mm	1.09	0.92	1.09	0.92
40mm	1.25	0.80	1.25	0.80
50mm	1.56	0.64	1.56	0.64
60mm	1.88	0.53	1.87	0.53

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.

Data sheet

FireMaster Marine Plus Blanket

Thermal Conductivity Performance

Basis: Thermal conductivity of FireMaster Marine Plus Blanket measured at 10°C to BS EN 12667 method

- 0.0319 w/m•k, 64 kg/m^3 density
- 0.0321 w/m•k, 48 kg/m^3 density

Thermal conductivity at high temperatures Thermal conductivity, w/m•k, ASTM C201 method					
Density, kg/m^3	200°C	400°C	600°C	800°C	1000°C
64 / 70	0.06	0.11	0.17	0.26	0.38
96	0.05	0.10	0.15	0.21	0.29
128	0.05	0.08	0.12	0.18	0.25

Thermal conductivity at low and sub-zero temperatures FireMaster Marine Plus Blanket 128 kg/m³, ASTM C177-10 method	
Mean temperature, °C	**Thermal Conductivity, w/m•k**
200	0.0561
150	0.0499
100	0.0429
38	0.0367
0	0.0313
-50	0.0272

Sound Insulation Performance Sound Absorption Tests

Test Method: BS EN ISO 354:2003

Product: FireMaster Marine Plus Blanket, 45mm x 64kg/m^3

Non-faced (no surface covering material used) Sound absorption rating: "Class A"	
Frequency (Hz)	Sound absorption coefficient
125	0.15
250	0.75
500	1.00
1000	1.00
2000	1.00
4000	0.75
Overall sound absorption coefficient	1.00

Faced with glass cloth Sound absorption rating: "Class B"	
Frequency (Hz)	Sound absorption coefficient
125	0.40
250	0.95
500	0.95
1000	0.85
2000	0.80
4000	0.65
Overall sound absorption coefficient	0.80

Faced with 30µm reinforced aluminium foil Sound absorption rating: "Class C"	
Frequency (Hz)	Sound absorption coefficient
125	0.45
250	0.90
500	0.75
1000	0.65
2000	0.65
4000	0.45
Overall sound absorption coefficient	0.65

Data sheet

FireMaster Marine Plus faced blankets

Description

FireMaster® Marine Plus blanket is available with a variety of facings designed to give users greater flexibility in areas where surface protection for the blanket may be required.

Manufactured exclusively from Morgan Thermal Ceramics Superwool® insulating fibres, FireMaster® Marine Plus blanket is exonerated from carcinogen classification under Nota Q of the European Union Directive 97/69/EC.

Three basic facing options are available.

Applications

- 'A' class and IMO HSC steel, aluminium and FRP composite bulkhead and deck insulation in high speed craft
- Upgrading of fire performance of composite panels to meet IMO room corner test requirements
- H class and A class steel bulkhead and deck fire protection for ships and offshore platforms
- Hydrocarbon and Jet fire protection of process pipes and vessels
- Infill to fire doors and cladding panels
- Construction joints
- Hydrocarbon fire protection of structural steelwork

FireMaster® Alu 20R blanket

This is FireMaster® Blanket with a factory-applied covering of scrim-reinforced aluminium foil, approximately 20 micron thick, on one side. The blanket has good handling strength and aesthetic appearance when installed.

Features

- Colour : White blanket with silver coloured aluminium foil facing on one side
- Aluminium foil : 20 micron thick scrim reinforced foil and adhesive polymer
- Fire properties : Non-Combustible in accordance with IMO MSC 61(67) Annex 1 when tested to ISO 1182-1990(E) Material with Low Flame Spread in accordance with IMO MSC 61(67) Annex 1 when tested to IMO A653(16)
- Fire approvals : Approved Product under EU MED Directive

FireMaster® Alu 40R blanket

This is FireMaster® blanket with a factory-applied covering of non-reinforced aluminium foil, approximately 30 micron thick, on one side. The blanket is an approved non-combustible product.

Features

- Colour : White blanket with silver coloured aluminium foil facing on one side.
- Aluminium foil : 30 micron thick non-reinforced foil and sodium silicate adhesive
- Fire properties : Non-Combustible in accordance with IMO MSC 61(67) Annex 1 when tested to ISO 1182-1990(E)
- Fire approvals : Approved Product under EU MED Directive
- Foil peeling : 6N with FireMaster® blanket as Force the substrate 4N with FireMaster® Water Repellent blanket as the substrate

FireMaster® GC blanket

This is FireMaster® Marine Plus blanket with a factory-applied covering of glass cloth applied on one side. The blanket is suitable for applications where aluminium foil would not be appropriate and provides a surface that can be painted if required.

Features

- Colour : White blanket with white glass cloth facing on one sidee
- Fire properties : Non-Combustible in accordance with IMO MSC 61(67) Annex 1 when tested to ISO 1182-1990(E)
- Fire approvals : Approved Product under EU MED Directive

For general properties of FireMaster® Marine Plus blanket, please refer to the specific data sheet.

Availability and packaging

Foil and glass cloth specifications may vary with manufacturing location but in all cases, the specific product offered is certified for low flame spread in accordance with IMO FTP code test procedures. For thickness and density range, roll sizes and packaging, please refer to your local Morgan Thermal Ceramics sales office.

Data sheet

FireMaster Marine Plus faced blankets

Availability and packaging

FireMaster® Alu 40 Blanket

With Standard (non-water repellent) blanket as the substrate

Density k/m³	6mm	13mm	20mm	25mm	38mm	50mm
64	No	Yes	Yes	Yes	Yes	Yes
96	No	Yes	Yes	Yes	Yes	Yes
128	Yes	Yes	Yes	Yes	Yes	Yes
Roll length	21.60m	14.64m	9.76m	7.32m	4.88m	3.66m

With water repellent blanket as the substrate

Density k/m³	13mm	20mm	25mm	38mm	50mm
96	No	No	Yes	Yes	Yes
128	No	Yes	Yes	Yes	Yes
Roll length	14.64m	9.76m	7.32m	4.88m	3.66m

FireMaster® Alu 20R Blanket

With Standard (non-water repellent) blanket as the substrate

Density k/m³	6mm	13mm	20mm	25mm	38mm	50mm
64	No	No	No	No	No	Yes
96	No	No	No	No	Yes	Yes
128	No	No	No	Yes	Yes	Yes
Roll length	21.60m	14.64m	9.76m	7.32m	4.88m	3.66m

FireMaster® GC Blanket

With Standard (non-water repellent) blanket as the substrate

Density k/m³	6mm	13mm	20mm	25mm	38mm	50mm
64	No	Yes	Yes	Yes	Yes	Yes
96	No	Yes	Yes	Yes	Yes	Yes
128	Yes	Yes	Yes	Yes	Yes	Yes
Roll length	21.60m	14.64m	9.76m	7.32m	4.88m	3.66m

Data sheet

FireMaster J-Fire foil encapsulated blanket

Description

FireMaster® J-Fire foil encapsulated blanket consists of FireMaster Marine Plus blanket completely encapsulated in a strong, aluminium foil covering.

The encapsulating foil is a triple-ply laminate made with a fibreglass scrim adhered with a fire retardant thermosetting adhesive to an aluminized polyester face and an aluminium foil backing.

The encapsulation reduces the potential for water absorption by the blanket whilst ensuring that handling during installation is enhanced due to the high strength of the foil encapsulation.

Operating temperature : -40°C to +149°C

Key data for encapsulating foil

Property	Method	Value
Permeability	ASTM-E-96-94	0.02 Perms
Weight	ASTM-D-3776-96	61g/m² (±10%)
Thickness	ASTM-D-1777-96	0.152mm (±0.025mm)
Tensile strength	ASTM-D-5035-95	Warp - 5.36 kg/cm Fill - 4.47 kg/cm
Tear strength	ASTM-D-1424-96	Warp - 400g Fill - 400g
Flame spread (aluminium foil surface exposed to flame)	UL 723	Flame spread - 5 Smoke developed - 0

aspen aerogels®

About ASPEN AEROGELS

Aspen Aerogels, based in the USA, specializes in producing aerogel insulation materials with exceptional thermal performance and minimal thickness. Their products are used in energy, industrial, and construction sectors, providing efficient insulation in space-constrained environments.

HIGH-PERFORMANCE AEROGEL INSULATION FOR INDUSTRIALAND COMMERCIAL APPLICATION

Pyrogel® XTE is a flexible, high-performance, aerogel blanket insulation designed for use in industrial and commercial applications. Pyrogel XTE is engineered to deliver superior thermal performance while offering excellent protection against corrosion under insulation (CUI). Hydrophobic and breathable, Pyrogel XTE ensures long-lasting water resistance for both the insulation layer and underlying asset; they remain drier for longer, preserving process conditions, and saving energy in the harshest of environments. These characteristics make Pyrogel XTE the "go-to" insulation for industry-leading CUI defense.

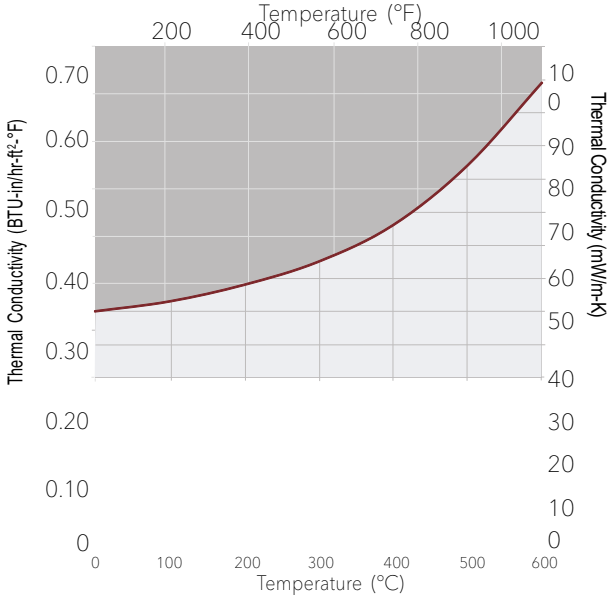
With its extremely low thermal conductivity, Pyrogel XTE is up to 75% thinner than competing materials. Its thin profile makes it ideal for installation in congested areas or to resolve mechanical clashes, increasing both plant safety and efficiency. Pyrogel XTE is mechanically robust, enabling pre-insulation to save time and money. It can be removed and reused after inspection, lowering total cost of ownership.

The versatility of Pyrogel XTE makes it suitable for a wide range of applications, from small-bore pipe to the largest format process vessels and equipment.

THERMAL CONDUCTIVITY†

Tested in accordance with ASTM C177

Mean Temp. °F / °C	k BTU-in/hr-ft²-°F / mW/m-K
32 / 0	0.14 / 20
212 / 100	0.16 / 23
392 / 200	0.19 / 28
572 / 300	0.24 / 35
752 / 400	0.32 / 46
932 / 500	0.44 / 64
1112 / 600	0.62 / 89



†Thermal conductivity measured at a compressive load of 2 psi.

ADVANTAGES

- Best-in-class CUI protection
- Hydrophobic and breathable, resists liquid water and avoids the damaging effects of wet insulation
- Up to five-times better thermal performance versus competing materials
- Faster application rates, especially on large-bore pipes and vessels
- Tough enough to maintain thermal performance even after compression events
- Versatile format can be cut to fit any piece of piping or equipment
- Reduced logistics costs relative to rigid insulation–lower scrap, transport costs, and man hours on project and turnaround work
- Durable format permits pre-insulation and reuse

PHYSICAL PROPERTIES

THICKNESS*	0.2 in (5 mm)	0.4 in (10 mm)
ROLL SIZE*	1,500 sqft Bulk Rolls	850 sqft Bulk Rolls 80 sqft Pony Rolls**
MAX. USE TEMP.	1200°F (650°C)	
COLOR	Maroon	
DENSITY*	12.5 lb/ft³ (0.20 g/cc)	
HYDROPHOBIC	Yes	

*Nominal Values.
**Pony Rolls are cut from ASTM C1728 compliant material.

SPECIFICATION COMPLIANCE AND PERFORMANCE

TEST PROCEDURE	PROPERTY	RESULTS
ASTM C1728, Type III, Grade 1A	Standard Specification for Flexible Aerogel Insulation	Complies
ASTM C165	Compressive Resistance	≥ 3 psi (20.7 kPa) @ 10% deformation
ASTM C356	Linear Shrinkage Under Soaking Heat	< 2% @ 1200°F (650°C)
ASTM C411	Hot Surface Performance	Pass
ASTM C447	Estimation of Maximum Use Temperature	1200°F (650°C)
ASTM C795	Insulation for Use Over Austenitic Stainless Steel	Pass
ASTM C1101/1101M	Flexibility of Blanket Insulation	Flexible
ASTM C1104/1104M	Water Vapor Sorption	≤ 5% (by weight)
ASTM C1338	Fungal Resistance of Insulation Materials	No Growth
ASTM C1617	Corrosiveness to Steel	Pass
ASTM C1763	Water Absorption by Immersion	Pass
ASTM E84	Surface Burning Characteristics	Flame Spread Index ≤ 5 Smoke Developed Index ≤ 10
ISO 15665	Acoustic Insulation for Pipes, Valves and Flanges	Configurations possible to meet Class A2, B2, C2, and Shell D2[1]

[1] Contact Aspen Aerogels for configuration details.

THE AEROGEL ADVANTAGE

Aerogel is a lightweight solid derived from gel in which the liquid component of the gel has been replaced with air. The process of creating aerogel results in a material with extremely low density and the lowest thermal conductivity of any solid. These remarkable properties make aerogel one of the world's most efficient insulating materials. Our patented process integrates this unique aerogel into a fiber-batting to create flexible, resilient, and durable aerogel blankets with superior insulating performance.

WORKING WITH PYROGEL®

Clean, flush, and accurate cutting of Pyrogel can be achieved using conventional cutting tools such as scissors, tin snips, or razor knives. As with all technical insulation materials, appropriate personal protective equipment (PPE) should be worn when handling, cutting and installing Pyrogel. See SDS/AIS for complete health and safety information.

PYROGEL XTE PONY ROLLS™

All the benefits of Pyrogel XTE in a convenient 80 sqft easy to carry roll size.

FLEXIBLE AEROGEL INSULATION FOR INDUSTRIAL APPLICATIONS

Optimal thermal performance in service up to 650°C (1200°F)

Pyrogel® HPS is engineered to provide optimal thermal performance and value at service temperatures up to 650°C (1200°F). With its extremely low thermal conductivity, Pyrogel HPS is up to 75% thinner than competing insulation materials. This makes it ideal for installation in congested areas or near mechanical clashes, increasing both plant safety and efficiency. Reduced insulation thicknesses also supports faster, easier application–saving time and expense.

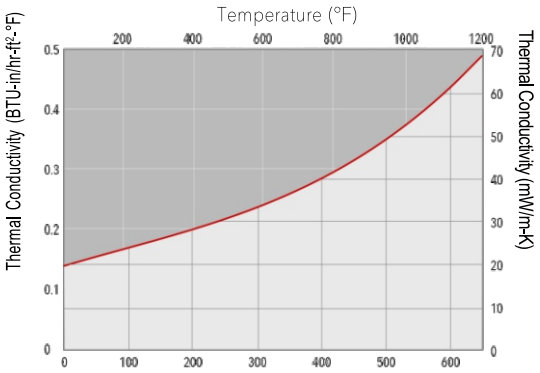
Pyrogel HPS is tough and durable, delivering consistent performance without cracking, sagging, or settling. It can be re-used after maintenance or inspection, minimizing the time and expense required to stage replacement insulation. Pyrogel HPS is ideal for use in the fabrication of removable insulation pads. It maintains its shape and location, even after vibration or exposure to high temperatures. As with all Pyrogel products, Pyrogel HPS is hydrophobic and breathable, resisting liquid water and avoiding the damaging effects of wet insulation. These unique characteristics combine to minimize heat loss and provide the ultimate protection for process units and high-pressure steam pipes.

Pyrogel HPS aerogel insulation is designed to provide long-term performance for the ultimate in safety, process efficiency, and stability, in the power generation, refining, and chemical processing industries.

THERMAL CONDUCTIVITY†

Tested in accordance with ASTM C177

Mean Temp. °F / °C	*k* BTU-in/hr-ft²-°F / mW/m-K
32 / 0	0.14 / 20
212 / 100	0.17 / 24
392 / 200	0.20 / 28
572 / 300	0.23 / 33
752 / 400	0.28 / 40
932 / 500	0.34 / 49
1112 / 600	0.43 / 62
1202 / 650	0.48 / 69



ADVANTAGES

- Optimized thermal conductivity in high-temperature service
- Faster application, especially on large-bore piping and vessels
- Addresses tight, hard-to-insulate spaces with outstanding thermal efficiency
- Flexible blanket material won't crack, sag, or settle in high-temperature service
- Stands up to vibration, footfalls, and tool strikes
- Tough enough for reuse after removal and inspection
- Hydrophobic and breathable, Pyrogel resists liquid water and avoids the damaging effects of wet insulation
- Versatile format can be fitted to any piece of piping or equipment, greatly simplifying material management
- Higher packing density reduces shipping and storage costs by up to 90%

PYROGEL® PRODUCT FAMILY – PRODUCT USE AND SPECIFICATIONS

PRODUCT	PYROGEL XTE		PYROGEL HPS	PYROGEL XTF
MAX. USE TEMP.	650°C (1200°F)		650°C (1200°F)	650°C (1200°F)
OPTIMAL USE	**Thermal Insulation Acoustics**		**Thermal Insulation Lower Thermal Conductivity in High Temperature Service**	**Thermal Insulation Passive Fire Protection Acoustics**
APPLICATIONS	CUI Service District Energy Distillation		High Pressure Steam Gas and Steam Turbines Delayed Coking	Pool Fire and Jet Fire Protection Relief Systems Sizing (API 521)
COLOR	Maroon		Grey	Grey
DENSITY*	12.5 lb/ft³ (0.20 g/cc)		12.5 lb/ft³ (0.20 g/cc)	12.5 lb/ft³ (0.20 g/cc)
THICKNESS*	5 mm (0.2 in)	10 mm (0.4 in)	10 mm (0.4 in)	10 mm (0.4 in)
ROLL SIZE*	1,500 sqft Bulk Rolls	850 sqft Bulk Rolls 80 sqft Pony Rolls**	850 sqft Bulk Rolls 80 sqft Pony Rolls**	850 sqft Bulk Rolls

*Nominal Values.
**Pony Rolls are cut from ASTM C1728 compliant material.

PYROGEL® HPS SPECIFICATION COMPLIANCE AND PERFORMANCE

TEST PROCEDURE	PROPERTY	RESULTS
ASTM C1728, Type III, Grade 1A	Standard Specification for Flexible Aerogel Insulation	Complies
ASTM C165	Compressive Strength	≥ 3 psi (20.7 kPa) @ 10% deformation
ASTM C356	Linear Shrinkage Under Soaking Heat	<2% @ 650°C (1200°F)
ASTM C411	Hot Surface Performance	Pass
ASTM C447	Estimation of Maximum Use Temperature	650°C (1200°F)
ASTM C795	Insulation for Use Over Austenitic Stainless Steel	Pass
ASTM C1101/1101M	Flexibility of Blanket Insulation	Flexible
ASTM C1104/1104M	Water Vapor Sorption	≤ 5% (by weight)
ASTM C1338	Fungal Resistance of Insulation Materials	No Growth
ASTM C1617	Corrosiveness to Steel	Pass
ASTM C1763	Water Absorption by Immersion	Pass
ASTM E84	Surface burning Characteristics	Flame Spread Index ≤ 5 Smoke Developed Index ≤ 10

THE AEROGEL ADVANTAGE

Aerogel is a lightweight solid derived from gel in which the liquid component of the gel has been replaced with air. The process of creating aerogel results in a material with extremely low density and the lowest thermal conductivity of any solid. These remarkable properties make aerogel one of the world's most efficient insulating materials. Our patented process integrates this unique aerogel into a fiber-batting to create flexible, resilient, and durable aerogel blankets with superior insulating performance.

WORKING WITH PYROGEL

Clean, flush, and accurate cutting of Pyrogel can be achieved using conventional cutting tools such as scissors, tin snips, or razor knives. As with all technical insulation materials, appropriate personal protective equipment (PPE) should be worn when handling, cutting and installing Pyrogel. See SDS/AIS for complete health and safety information.

COMBINED PASSIVE FIRE PROTECTION AND THERMAL INSULATION FOR HIGH-TEMPERATURE APPLICATIONS

Pyrogel® XTF aerogel blanket insulation is designed to provide exceptional passive fire protection and superior thermal performance in a thin, lightweight format.

Tested to the most stringent fire-protection standards, Pyrogel XTF delivers hydrocarbon pool-fire protection for up to 3 hours, and jet fire protection up to 2 hours. It can also be used to meet the requirements of API 521 for the sizing of pressure relief systems.

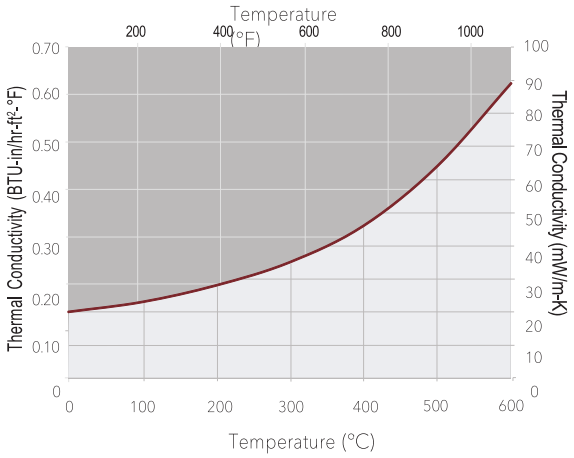
Pyrogel XTF incorporates all the insulative qualities of Pyrogel XTE to combine class-leading thermal performance with versatile passive fire protection. Hydrophobic and breathable, Pyrogel XTF keeps underlying assets drier for longer, providing superior corrosion defense and maintaining process conditions in the harshest of environments.

Offering more asset coverage per man hour, especially on large-bore piping, vessels, and skirts, Pyrogel XTF supports a faster return to service. It can be applied in all weather conditions and requires no cure time, providing immediate protection of assets.

THERMAL CONDUCTIVITY†

Tested in accordance with ASTM C177

Mean Temp. °F / °C	k BTU-in/hr-ft²-°F / mW/m-K
32 / 0	0.14 / 20
212 / 100	0.16 / 23
392 / 200	0.19 / 28
572 / 300	0.24 / 35
752 / 400	0.32 / 46
932 / 500	0.44 / 64
1112 / 600	0.62 / 89



†Thermal conductivity measured at a compressive load of 2 psi.

ADVANTAGES

- Lower total installed cost compared to traditional passive fire protections
- Faster and easier application gives immediate passive fire protection—no curing or drying time needed
- Can be installed in all weather conditions
- Easily removed and reused after inspection
- Hydrophobic and breathable; resists liquid water and the damaging effects of CUI/CUF
- Lightweight, durable design allows for pre-insulation
- Suitable for applications from ambient to 650°C/1200°F

PHYSICAL PROPERTIES

THICKNESS*	0.4 in (10 mm)
ROLL SIZE*	850 sqft (79 sqm) Bulk Rolls
WIDTH TOLERANCE	56 - 60 in (1422 - 1524 mm)
MAX. USE TEMP.	650°C (1200°F)
COLOR	Grey
DENSITY*	12.5 lb/ft³ (0.20 g/cc)
HYDROPHOBIC	Yes

*Nominal Values

PERFORMANCE PROPERTIES OF PYROGEL XTF INSULATION BLANKET

TEST PROCEDURE	PROPERTY	RESULTS
ASTM C165[1]	Compressive Resistance	≥ 3 psi (20.7 kPa) @ 10% deformation
ASTM C411	Hot Surface Performance	Pass[2]
ASTM C447	Estimation of Maximum Use Temperature	650°C (1200°F)
ASTM C795	Insulation for Use Over Austenitic Stainless Steel	Pass
ASTM C1101/1101M	Flexibility of Blanket Insulation	Flexible
ASTM C1104/1104M	Water Vapor Sorption	≤ 5% (by weight)
ASTM C1338	Fungal Resistance of Insulation Materials	Pass
ASTM C1617	Corrosiveness to Steel	Pass[2]
ASTM C1763	Water Absorption by Immersion	Pass[2]
ASTM E84	Surface Burning Characteristics	Flame Spread Index ≤ 5 Smoke Developed Index ≤ 10

[1] Compression resistance measured using a preload of 2 psi.

[2] Passes criteria established in ASTM C1728

SYSTEM PERFORMANCE OF PYROGEL XTF

Pyrogel XTF's performance in acoustic service and fire protection applications has been evaluated according to the following test methods.

Contact Aspen Aerogels technical service for configuration details.

- UL-1709 - Rapid Rise Fire Test: Up to 180 min of protection
- ISO-22899 - Jet Fire Protection: Up to 120 min of protection
- ISO-20088-3 Cold Splash (Part 3:Jet Release): Up to 60 min of protection
- ISO 15665 - Acoustic Insulation for Pipes, Valves, and Flanges:
  Configurations meeting Class A2, B2, and C2 are possible

THE AEROGEL ADVANTAGE

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WORKING WITH PYROGEL®

Clean, flush, and accurate cutting of Pyrogel can be achieved using conventional cutting tools such as scissors, tin snips, or razor knives. As with all technical insulation materials, appropriate personal protective equipment (PPE) should be worn when handling, cutting and installing Pyrogel. See SDS/AIS for complete health and safety information. Pyrogel XTF is designed for use with a properly installed jacketing system. Refer to the Pyrogel XTF Installation Guide for details.

TECHNICAL SERVICES

Pyrogel XTF represents the state of the art in passive fire protection, minimizing total installed costs while facilitating long-term operating cost savings. To ensure a successful project, our Technical Services team offers comprehensive assistance, from initial design and specification, through to training, and site start up.

EXCEPTIONAL PROTECTION AGAINST THERMAL RUNAWAY WITH MINIMUM THICKNESS

As electric vehicle and battery pack manufacturers strive to increase driving range the space available in a battery pack becomes more and more limited. At the same time, mitigating the potential for thermal runaway propagation in lithium ion battery systems has become a key safety goal of regulatory bodies, vehicle manufacturers, and all other participants in the EV market.

PyroThin™ ATB technology is an exceptionally low thermal conductivity aerogel thermal barrier material, optimized for extreme thermal resistance during high temperature events. This allows PyroThin ATB to be an effective, passive, means to mitigate thermal runaway propagation at thicknesses as low as 2mm. The silica aerogel is engineered into a highly stable glass fiber reinforcement to produce a durable and flexible thermal barrier.

The exceptionally low thermal conductivity, and thin form factors, make PyroThin ATB thermal barrier ideal for placement between cells to help deliver precious minutes of protection against thermal runaway propagation.

PyroThin ATB thermal barrier may also be used to line the interior of a battery module, or used under the pack cover as a thermal and fire barrier to help protect vehicle occupants from the hazards of thermal runaway.

PyroThin ATB is available in two grades, PyroThin ATB1000, optimized to provide maximum thermal resistance, and PyroThin ATB2000, engineered to deliver enhanced compression performance.

APPLICATION EXAMPLES

Pouch Cells

Prismatic Cells

ADVANTAGES

- Passive solution
- Exceptionally low conductivity and thin solution
- Thermally insulates cells to mitigate thermal runaway propagation
- Lightweight and thin format that adds minimal weight to the battery pack
- Accomodates charge-discharge cell thickness changes
- Resists physical degradation at high temperatures
- Does not sustain flame (UL-94 V-0)

PHYSICAL PROPERTIES

THICKNESS*	2mm, 3mm
COLOR	Grey
HYDROPHOBIC	Yes

*Nominal Values

TYPICAL PROPERTIES

TEST METHOD	PROPERTY	PYROTHIN ATB1000	PYROTHIN ATB2000
ASTM C303	Density	0.20 g/cc	0.16 g/cc
ASTM C177	Thermal Conductivity	24 mW/m-K @ 0°C 26 mW/m-K @ 100°C 28 mW/m-K @ 200°C 30 mW/m-K @ 300°C 35 mW/m-K @ 400°C 43 mW/m-K @ 500°C 54 mW/m-K @ 600°C	25 mW/m-K @ 0°C 26 mW/m-K @ 100°C 28 mW/m-K @ 200°C 32 mW/m-K @ 300°C 36 mW/m-K @ 400°C 50 mW/m-K @ 500°C 61 mW/m-K @ 600°C
ASTM C165 MODIFIED	Compressive Resistance	8 kPa @ 10% Strain 90 kPa @ 25% Strain 200 kPa @ 40% Strain 310 kPa @ 50% Strain	14 kPa @ 10% Strain 81 kPa @ 25% Strain 159 kPa @ 40% Strain 257 kPa @ 50% Strain
UL 94	Test for Flammability of Plastics	V-0	V-0

Note: Values presented are typical and do not represent a specification.

PARTNER WITH US

For more than two decades Aspen Aerogels has been solving the most challenging and space constrained thermal and fire barrier problems for leading aerospace, oil and gas, and building material suppliers. Recognizing that lithium ion battery designs vary, Aspen Aerogels can engineer a thermal barrier based on your requirements, including:

- Alternate thicknesses
- Mechanical Properties
- Fabrication and encapsulation

Email us at *thermalbarrier@aerogel.com* for assistance with your application

THE AEROGEL ADVANTAGE

Aerogel is a lightweight solid derived from gel in which the liquid component of the gel has been replaced with air. The process of creating aerogel results in a material with extremely low density and the lowest thermal conductivity of any solid. These remarkable properties make aerogel one of the world's most efficient insulating materials. Our patented process integrates this unique aerogel into a fiber-batting to create flexible, resilient, and durable aerogel blankets with superior insulating performance.

FLEXIBLE AEROGEL INSULATION FOR SUB-AMBIENT AND CRYOGENIC APPLICATIONS

Cryogel® Z flexible aerogel blanket insulation is engineered to deliver maximum thermal protection with minimal weight and thickness. Cryogel Z is composed of a flexible aerogel blanket laminated to a vapor retarder. This powerful combination makes Cryogel Z unmatched in sub-ambient, cold cycling, and cryogenic applications.

Cryogel Z's extremely low thermal conductivity minimizes heat gain and liquid boil-off. Cryogel Z remains flexible, even at cryogenic temperatures, eliminating the need for complex and costly contraction joints, thereby resulting in simple and faster installation. It is designed for long term performance while also withstanding incidental mechanical abuse, leading to continued protection through the life of the asset. Cryogel Z is ideal for faster and safer installations for both maintenance work and new builds.

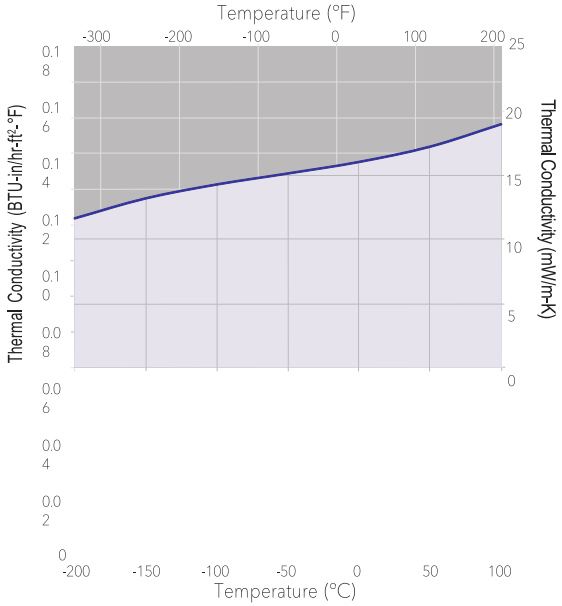
In addition to being the first choice in cold conservation, Cryogel Z based systems offer acoustic attenuation and protections against cryogenic spill, pool fire, and jet fire. The combination of these safeguards make Cryogel Z ideal for onshore, offshore and marine applications[1].

1 - IMO Compliant Grade is available

THERMAL CONDUCTIVITY †

Tested in accordance with ASTM C177

Mean Temp. °F / °C	k BTU-in/hr-ft²-°F / mW/m-K
-200 / -129	0.096 / 14
-100 / -73.3	0.10 / 15
0 / -17.8	0.11 / 16
75 / 23.9	0.12 / 17
100 / 37.8	0.12 / 17
200 / 93.3	0.13 / 19



†Thermal conductivity measured at a compressive load of 2 psi.

ADVANTAGES

- Extremely low thermal conductivity (k-value) enables thinner designs for improved space efficiency
- Integrated vapor retarder provides redundant protection in an easy-to-install package
- Eliminates the need for contraction joints reducing cost and complexity
- Durable and flexible even at cryogenic temperatures
- Robust performance during construction, transport and operations makes it suitable for pre-insulation and modular builds
- Increased labor productivity and faster installation rates
- Proven in global LNG liquefaction and regasification facilities
- Thermal, acoustic, jet-fire, pool fire, and cryogenic spill protection in a single system

armacell®
ArmaFlex®

About ARMACELL

Armacell, headquartered in Germany, is a leading manufacturer of flexible insulation materials and engineered foams for technical insulation and other industrial applications. The company provides solutions for thermal and acoustic insulation in construction, industrial, and transportation sectors.

TECHNICAL DATA - AF/ARMAFLEX

Brief description	Highly flexible, closed-cell insulation material with high water vapour diffusion resistance, low thermal conductivity and built-in Microban antimicrobial protection.
Material type	Flexible elastomeric foam based on synthetic rubber (NBR). Factory-made flexible elastomeric foam (FEF), according to EN 14304.
Additional material information	Self-adhesive coating: pressure-sensitive adhesive coating on modified acrylate basis with mesh structure, covered with polyethylene foil. Traces of silicone may be present on the paper/foil protecting self-adhesive closures.
Product colour range	Black
Applications	Insulation/protection for pipes, air ducts, vessels (incl. elbows, fittings, flanges etc.) of air-conditioning/refrigeration and process equipment to prevent condensation and save energy. Structure-borne noise reduction in service-water and waste-water installations.
Installation	Certified and compatible adhesive for a long-term performing system is ArmaFlex 520. Please refer to the relevant Armacell application manual for advice. For further information please contact our Customer Service Centre.
Declaration of performance	Declaration of Performance in accordance with Article 7(3) of Regulation (EU) No 305/2011 is available at www.armacell.com/DoP.

Property	Value / Assessment		Standard / Test method
Temperature range			
Service temperature	Min. °C[1]	Max. °C[2]	EN 14706, EN 14707, EN 14304
	-50	110	
Thermal conductivity			
Declared thermal conductivity	Θm	0°C	EN ISO 13787, EN 12667, EN ISO 8497
	λd ≤ [W/(m·K)]	0,033	
	Range	Sheets and tapes (03 mm - 32 mm)	
	Formula	$\lambda d = [33 + 0{,}1 \cdot \vartheta m + 0{,}0008 \cdot \vartheta m^2]/1000$	
Declared thermal conductivity	Θm	0°C	EN ISO 13787, EN 12667, EN ISO 8497
	λd ≤ [W/(m·K)]	0,036	
	Range	Sheets (>32mm - 50 mm)	
	Formula	$\lambda d = [36 + 0.1 \times \vartheta m + 0.0008 \cdot \vartheta m^2]/1000$	
Fire Performance and Approvals			
Reaction to fire	Sheets: B-s3, d0 Tapes: B-s3, d0		EN 13501-1, EN ISO 11925-2, EN 13823
Surface flammability	low-flammable - 2010 FTP-Code (MED 96/98/EC, Module D)		IMO 2010 FTP Code, Part 5[3]
FM approved	4924 - Pipe and Duct Insulation		UBC26-3
Passive fire protection			
Fire resistance of elements of construction	EI 30 - EI 90		EN 13501-2, EN 1366-3
UL standards			
UL 94 5VA[4]	Pass (sheets ≥ 4.2 mm)		UL 94, IEC 60695-11-10, UL 746B
UL 94 5VB[4]	Pass (sheets 3 mm < 4.2 mm)		UL 94, IEC 60695-11-10, UL 1191, UL 746B
Fire performance			
Practical fire behaviour	Self-extinguishing, does not drip, does not spread flames		
Resistance to water vapour			
Water vapour diffusion resistance factor	Sheets (3 mm - 32 mm): μ ≥ 10,000 Sheets (>32 mm - 50 mm): μ ≥ 7,000		EN 12086, EN 13469

Property	Value / Assessment	Standard / Test method
Physical attributes		
Dimensions and tolerances	in accordance with EN 14304, table 1	EN 822, EN 823, EN 13467
Acoustic performance		
Reduction of structure-borne sound transmission	≤ 28 dB (A)	EN ISO 3822-1
Weather and UV resistance		
UV resistance[5]	Protection against UV radiation is necessary (see Technical Bulletin no. 142).	
Health and environment		
Antimicrobial behaviour	Built-in Microban active antimicrobial protection: No fungal growth observed	EN ISO 846, VDI 6022
Environmental Product Declaration (EPD)	Type III Environmental Product Declaration (EPD): Declaration number "EPD-ARM-20200219-IBB1-EN", Institut Bauen und Umwelt e.V. (IBU)	ISO 14025, EN 15804+A2
Other technical features		
Shelf life	Self-adhesive tapes, self-adhesive sheets, self-adhesive tubes, strips: 1 year	
Storage	Can be stored in dry, clean rooms at normal relative humidity (50% - 70%) and ambient temperature (0 °C –35 °C).	

[1] For use in temperatures beyond the maximum and minimum service temperature range indicated in the technical data table, please contact our Customer Service Centre.
[2] +85 °C, for products with a self-adhesive layer.
[3] According to IMO 2010 FTP Code annex 2, clause 2.2 a fire technical test for smoke density and toxicity is not necessary.
[4] Only for products without self-adhesive-layer.
[5] If ArmaFlex is used outdoors or in applications under UV radiation, it should be protected with ArmaFinish Paint, or a covering such as ArmaClad Arma-Chek within 3 days of installation.

armacell
ArmaFlex®

INSTALL IT. TRUST IT.

AF/ArmaFlex Evo

Discover the new generation in elastomeric insulation. AF/ArmaFlex Evo. The safest AF/ArmaFlex ever.

// Fire Safety – B/B(L)-s2,d0
// Antimicrobial Protection – Microban
// System reliability – One-Stop Solution
// Enviromental Product Declaration (EPD)
// Dust and fiber free
// Available in self-seal tube for quicker install

TECHNICAL DATA - AF/ARMAFLEX EVO

Brief description	Flexible elastomeric foam with improved fire-retardant properties, low smoke generation, closed-cell insulation material structure and built-in Microban antimicrobial protection. For use in HVAC, refrigeration and process equipment application.
Material type	Elastomeric foam based on synthetic rubber. Factory-made flexible elastomeric foam (FEF), according to EN 14304.
Additional material information	Self-adhesive coating: pressure-sensitive adhesive coating on modified acrylate basis with mesh structure, covered with polyethylene foil. Traces of silicon can be found on the protection paper/foil used to protect self-adhesive closures.
Product colour range	Black
Special features	This product is infused with Microban antimicrobial protection to provide additional assurance against mould and mildew growth in the insulation.
Applications	Insulation/protection for pipes, air ducts, vessels (including elbows, fittings, flanges, etc.) of air-conditioning/refrigeration and process equipment to prevent condensation and save energy.
Installation	Please refer to the ArmaFlex application manual for advice.
Declaration of performance	Declaration of Performance in accordance with Article 7(3) of Regulation (EU) No 305/2011 is available at www.armacell.com/DoP.

Property	Value / Assessment			Standard / Test method
Temperature range				
Service temperature	Min. °C[1]	Max. °C[2]		EN 14706, EN 14707, EN 14304
	-50	110		
	Remarks	+85 °C if sheet or tape is glued to the object with its whole surface +85 °C for tapes		
Thermal conductivity				
Declared thermal conductivity	Θm	0 °C	40°C	EN ISO 13787, EN ISO 8497
	λd ≤ [W/(m·K)]	0,033	0,038	
	Range	Tubes (6 - 25 mm)		
	Formula	$\lambda d = [33 + 0{,}1 \cdot \vartheta m + 0{,}0008 \cdot \vartheta m^2]/1000$		
Declared thermal conductivity	Θm	0 °C	40°C	EN ISO 13787, EN 12667, EN ISO 8497
	λd ≤ [W/(m·K)]	0,036	0,041	
	Range	Tubes (>25 mm) as well as sheets and tapes (3 - 32mm)		
	Formula	$\lambda d = [36 + 0{,}1 \cdot \vartheta m + 0{,}0008 \cdot \vartheta m^2]/1000$		
Declared thermal conductivity	Θm	0°C	40°C	EN ISO 13787, EN 12667
	λd ≤ [W/(m·K)]	0,037	0,042	
	Range	Sheets (> 32 mm - 50 mm)		
	Formula	$\lambda d = [37 + 0{,}1 \cdot \vartheta m + 0{,}0008 \cdot \vartheta m^2]/1000$		
Fire Performance and Approvals				
Reaction to fire	Tubes: B(L)-s2, d0 Sheets, Tapes: B-s2,d0 Tubes with ArmaFix AF: B(L)-s2,d0 Class 0			EN 13823, EN 13501-1, EN ISO 11925-2, BS 476 Part 6
Surface flammability[3]	low-flammable - 2010 FTP-Code (MED 96/98/EC, Module D)			IMO 2010 FTP Code, Part 5
FM approved	4924 - Pipe and duct insulation			UBC26-3
Passive fire protection				
Fire resistance of elements of construction	EI 30 - EI 90			EN 13501-2, EN 1366-3

Property	Value / Assessment	Standard / Test method
UL standards		
UL 94 5VA[4]	Pass (tubes and sheets ≥ 3.0 mm)	UL 94, IEC 60695-11-10, UL 746B, UL 746 A
Fire performance		
Practical fire behaviour	Self-extinguishing, does not drip, does not spread flames, low smoke development	
Resistance to water vapour		
Water vapour diffusion resistance factor	Tubes (6 - 25 mm): μ ≥ 10.000 Tubes (>25mm); Sheets (3 - 50mm) and Tape: μ ≥ 7.000	EN 12086, EN 13469
Physical attributes		
Dimensions and tolerances	in accordance with EN 14304, table 1	EN 822, EN 823, EN 13467
Weather and UV resistance		
UV resistance[5]	Protection against UV-radiation is necessary (see Technical Bulletin no. 142).	
Health and environment		
Antimicrobial behaviour	In-built Microban active antimicrobial protection: No fungal growth observed	EN ISO 846, VDI 6022
Environmental Product Declaration (EPD)	Type III Environmental Product Declaration (EPD): Declaration number "EPD-ARM-20220038-IBB1-EN", Institut Bauen und Umwelt e.V. (IBU)	ISO 14025, EN 15804+A2
Other technical features		
Adhesion and sealing	ArmaFlex 525 is the certified adhesive for this product. However, ArmaFlex 520 adhesive can be used for tubes.	
Shelf life	Self-adhesive tapes, self-adhesive sheets, self-adhesive tubes: 1 year	
Storage	Can be stored in dry, clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0 °C – 35 °C).	

[1] For use in temperatures beyond the maximum and minimum service temperature range indicated in the technical data table, please contact our Customer Service Centre.
[2] +85 °C, for products with a self-adhesive layer.
[3] According to IMO 2010 FTP Code annex 2, clause 2.2 a fire technical test for smoke density and toxicity is not necessary.
[4] Only for products without self-adhesive-layer.
[5] If ArmaFlex is used outdoors or in applications under UV radiation, it should be protected with a covering such as ArmaClad Arma-Chek within 3 days of installation.

INSTALL IT. TRUST IT.

HT/ArmaFlex

Flexible elastomeric insulation material specially purposed for high temperature applications

// Professional solution for high temperature applications up to +150 °C
// UL approved
// System approach with fit-for-purpose ArmaFlex HT625 Adhesive

TECHNICAL DATA - HT/ARMAFLEX

Brief description	HT/ArmaFlex is a highly flexible, closed-cell insulation material with resistance to UV radiation.
Material type	Factory-made flexible elastomeric foam based on ethylene propylene diene methylene (EPDM), according to EN
14304. Product colour range	Black
Special features	UV resistance testing regarding of these materials showed excellent results. When used on outdoor applications, the materials showed very good durability even under UV exposure. However, due to the unpredictable nature of outdoor conditions in the whole variety of thinkable installations, there might be occasional weathering influences on the consistence of the material, which cannot be tested in advance. Therefore, installations in extreme environments (regions of extreme weather conditions like high mountains etc.) cannot be recommended. In case of doubt, please contact our Customer Service.
Applications	Thermal insulation of pipes, vessels and ducts in solar collectors (including outdoors), motor vehicles, hot gas lines, steam lines and dual temperature lines.
Installation	Please refer to the ArmaFlex application manual and more information is available in Armacell's Technical Bulletin No. 71. Use ArmaFlex HT625 adhesive for a reliable and seamless installation.
Declaration of performance	Declaration of Performance in accordance with Article 7(3) of Regulation (EU) No 305/2011 is available at www.armacell.com/DoP.

Property	Value / Assessment			Standard / Test method
Temperature range				
Service temperature[1,2]	Range	Min. °C	Max. °C[3]	EN 14706, EN 14707, EN 14304
	Full range	-50	150	
Thermal conductivity				
Declared thermal conductivity	Θm	40°C		EN ISO 13787, EN 12667, EN ISO 8497
	λd ≤ [W/(m·K)]	0,042		
	Range	Tubes		
	Formula	λ = [36.92 + 0.125 · θm + 0.0008 · (θm-30)²] / 1000		
Declared thermal conductivity	Θm	40°C		EN ISO 8497, EN ISO 13787, EN 12667
	λd ≤ [W/(m·K)]	0,045		
	Range	Sheets / Tapes		
	Formula	λ = [39.92 + 0.125 · θm + 0.0008 · (θm-30)²] / 1000		
Fire Performance and Approvals				
Reaction to fire	D(L)-s3,d0 (tubes) D-s3,d0 (sheets, tape)			EN 13501-1, EN ISO 11925-2, EN 13823
UL standards				
UL 94 V-0[4]	Pass			IEC 60695-11-10
Fire performance				
Practical fire behaviour	Self-extinguishing, does not drip, does not spread flames.			
Others	Class 1			BS 476 Part 7
Resistance to water vapour				
Water vapour diffusion resistance factor	≥ 4.000 (tubes) ≥ 3.000 (sheets, tapes)			EN 12086, EN 13469
Physical attributes				
Dimensions and tolerances	In accordance with EN 14304, table 1.			EN 822, EN 823, EN 13467
Weather and UV resistance				
UV resistance[5]	Very good			EN ISO 4892-2

Property	Value / Assessment	Standard / Test method
Health and environment		
Volatile organic compounds (VOC) content	Fulfills all VOC requirements (French, Italian, Belgian, German AgBB, Blauer Engel and Eurofins Indoor Air Comfort GOLD).	ISO 16000 Parts 3, 6 & 9
Environmental Product Declaration (EPD)	Type III Environmental Product Declaration (EPD): Declaration number "EPD-ARM-20200222-IBA1-EN", Institut Bauen und Umwelt e.V. (IBU)	
Green building assessment	Meets the sustainable construction requirements for LEED v4.1, BREEAM international, WELL v2 and DGNB.	
Additional features	SCCP, MCCP-free	
Other technical features		
AGI designation code	Tubes: 36.12.05.09.02 Sheets: 36.07.05.09.02	
Shelf life[6]	Tape, self-adhesive: 1 year	
Storage	Can be stored in dry, clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0°C to 35°C).	

[1] For temperatures above +125 °C or below -50 °C, please contact our Customer Service Centre to request for the corresponding technical information.

[2] At high service temperatures, a certain hardening process may start on the inner surface of the material. Investigations have shown that these changes have no impact on the good physical and fire protection properties of the material, provided the material is installed in a correct way with all its joints properly sealed. For specific applications please consult our technical service.

[3] +85 °C, for products with a self-adhesive layer.

[4] Only for products without self-adhesive-layer.

[5] Extended exposure to certain conditions could result in aesthetic changes to insulation material. This includes examples such as minor discolouration, surface cracks or hardening of inner surface material due to extended exposure to high service line temperatures. These physical changes do not affect the technical performance of the insulation material, such as thermal conductivity and behaviour in case of a fire. For further information, please contact our Technical Service department.

[6] Shelf life (maximum storage time) is limited to ensure that only currently manufactured products are installed on projects. This limitation is restricted solely to storage of the product and does not affect the lifetime of product after it has been installed.

armacell
ArmaFlex®

PAROC
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INSULATION FOR THE OIL AND GAS INDUSTRY

Arma-Chek® R

Flexible non-metallic covering for offshore and industrial installations

// Flexible elastomeric covering formulated with CSM (CSPE) with combined acoustic barrier performance
// Excellent mechanical and weathering protection
// Specially developed for use in offshore and industrial environments
// Mitigates the risk of corrosion under insulation (CUI)
// Resistant to UV, salt water and chemicals
// In-built water vapour barrier μ>50.000
// Works in harmony with ArmaFlex®, expanding and contracting as required
// IMO certified

www.armacell.com/energy

TECHNICAL DATA - ARMA-CHEK R

Brief description	Flexible covering system for elastomeric and other insulation material types. Especially developed for use in offshore and industrial environments.
Material type	Flexible EPDM rubber formulated with Chlorosulphonated Monomer (CSM) also known as CSPE.
Colour	Grey
Product range	Sheets in rolls, 1 and 2 mm thickness / width 700 and 1,400mm. Arma-Chek Mastic is available for sealing of joints and seams.
Applications	Mechanical and weathering protection of insulated pipework, fittings, vessels and equipment in offshore, heavy industry, chemical and petrochemical environments.
Special features	Exceptional resistance to UV attack, salt water and mechanical impact. Reduces the risk of Corrosion Under Insulation (CUI). Excellent acoustic performance with natural dampening properties to reduce re-radiation effects.
Installation*1	The ArmaFlex® and Arma-Chek® installation manual should be consulted before installation. Please contact Technical Services.
Regulation / approval compliance	MED Module B (EC type examination certificate) by DNV-GL / IMO 2010 FTP (Fire Test Procedure) Code part 2 and part 5.

Property	Value/Assessment			Standard/Test method
Temperature range				
Service temperature	Max. service temperature	+100 °C	+212 °F	Determined based on thermal ageing behavior
	Min. service temperature	-50 °C	-58 °F	
Water vapour diffusion (transmission) resistance*2				
Water vapour diffusion resistance factor	μ ≥ 50,000			Tested according to EN 12086
Water vapour permeability	≤ 3.91 × 10^{-12} g/(m·s·Pa) ≤ 0.0027 Perm inch			(Equivalent method ASTM E96)
Fire performance & approvals				
International standards	IMO Part 2 (smoke generation and toxicity) GL*3 IMO Part 5 (surface flammability)		Approved by DNV-	Tested according to IMO 2010 FTP Code
	Class 0 Class 1			Tested according to BS 476 Part 6 and Part 7
	< 25 flame spread index			Tested according to ASTM E84
	M1			Classified according to NF P92-507
Reaction to fire (Euroclass)	B-s3, d0			Classified according to EN 13501-1 Tested according to EN 13823 (SBI) and EN ISO 11925-2
Density				
Density	1,650 to 1,750 kg/m^3	103.00 to 109.25 lb/ft^3		Tested according to ISO 845, ASTM D1622
Acoustic performance				
Acoustic insertion loss	When used as part of a system Arma-Chek R complies to ISO 15665 Classes A to C and Shell DEP 31.46.00.31-Gen Class D.			Tested according to ISO 3741 (Equivalent method ASTM E1222) Classified according to ISO 15665
Mechanical properties				
Resistance to mechanical impact	Good			
Tear strength (MD/CD)	≥ 7.0 N/mm	≥ 40 lbf/in		Tested according to ISO 34-1*4
Tensile strength (MD)	≥ 4.5 MPa	≥ 653 psi		Tested according to ISO 37*5
Elongation (MD/CD)	≥ 200%			Tested according to ISO 37*5
Hydrostatic pressure resistance of joints	No leak at 6.89 bar (70.4 m)*6	100 psi		Tested according to ASTM D5385
Puncture Resistance*7	23.48 lbf / 104.44 N*6			Tested according to ASTM D751
Bursting strength*7	131 lbf / 582.72N*6			Tested according to ASTM D751, Section 18.2

Corrosion mitigation		
Leachable (water-soluble) chlorides	≤ 100 ppm (mg/kg or µg/g)*6	Tested*8 according to EN 13468 and ASTM C871
Leachable (water-soluble) ammonia ions	≤ 100 ppm (mg/kg or µg/g)*6	Tested*8 according to EN 13468 and ASTM C871
Other technical features		
Weather resistance	Excellent	Assessed according to Allunga Exposure Laboratory
Ozone Resistance	Excellent*9	Tested according to DIN 53509-1
UV resistance	Excellent*10	Tested according to EN ISO 4892-2
Fungi Resistance	No growth*6	Tested according to ASTM C1338
Application conditions*11	Application temperature:*12 +5 °C to +35 °C +41 °F to +95 °F Max. relative humidity: 80%	
Sealing and adhesion	ArmaFlex Adhesive 520 or Adhesive HT625 shall be used for reliable adhesion. Minimum overlap should be ensured. Arma-Chek Mastic shall be used for sealing of joints and seams in accordance with our application manual.	
Storage	Material shall be stored indoors, in clean and dry conditions, away from direct sunlight and in no direct contact with ground.	
Shelf (storage) life*13	Max. 3 years	

1. When installation of Arma-Chek R covering is conducted under ambient temperatures that differ from the final site conditions, or where ambient temperatures are expected to fluctuate, slight wrinkling of the installed Arma-Chek R covering may be expected. Caused by the natural contraction and expansion of the the underlying ArmaFlex insulation material, this wrinkling is solely aesthetic and has no effect the technical performance or integrity of the installed insulation system. Please contact Technical Services for additional guidance.
2. Based on actual net thickness.
3. The product meets the criteria of surface flammability (Part 5) for bulkheads, ceilings and linings as required by IMO 2010 FTP Code for insulation of pipe fittings for cold service systems. Further to this mandatory requirement the product meets the criteria of surface flammability (Part 5) and smoke generation and toxicity (Part 2) for floor coverings and primary deck coverings.
4. Minimum value in Machine Direction (MD) and in Cross Direction (CD). Method B, procedure (b), angle test piece with a nick.
5. Type 2 sample.
6. Based on single test results. Can be used for information / reference only.
7. Result for 2mm material only.
8. Specimen preparation in accordance with EN 13486: neither cut, ground nor blended. Test temperature +100°C, leaching time 0.5 hours as specified in the standard for product maximum service temperature.
9. Tested at 48h/25 ± 5 ppm / 20 ± 2 % elongation / no cracks.
10. 1000h no cracking, no visible discoloration, 3000 / 5000 h cracking under microscope, slight discoloration.
11. For environmental conditions outside the given range please contact Technical Services.
12. Application temperature (temperature of installation) refers to the ambient temperature during application and the surface temperature of the substrate to which the product is installed.
13. Shelf life (maximum storage time) is limited in order to make sure that only currently manufactured products are applied on projects. This limitation is restricted solely to storage of the product and does not affect the lifetime of product after it has been installed.

Sheets

Item	Nominal Thickness [mm]	Nominal Roll Length [m]	Nominal Roll Width [m]	m^2/carton
RCS-R20/1-07-GY	1	20	0.7	14
RCS-R10/1-14-GY	1	10	1.4	14
RCS-R10/2-07-GY	2	10	0.7	7
RCS-R10/1-07-GY	1	10	0.7	7
RCS-R05/1-14-GY	1	5	1.4	7
RCS-R05/2-07-GY	2	5	0.7	3.5
RCS-R05/1-07-GY	1	5	0.7	3.5

Accessories

Item	Article description	Units/carton	
ADH520/2,5E	2.5 Litre TIN	20	Litre
ADH520/1,0E	1 Litre TIN	12	Litre
ADH-HT625/1,0	1 Litre TIN	12	Litre
ACH-MASTICS	290 ml Cartridges	12	Cartridge

About HB FULLER (FOSTER)

HB Fuller, headquartered in the USA, is a global company specializing in adhesive solutions for various industries. Their products are used in construction, packaging, transportation, and other sectors, ensuring reliable material bonding and improved manufacturing processes.

Data sheet

81-84 NH

PROPERTIES

COLOR:
Part A- Cream
Part B- Brown

APPLICATION CONSISTENCY:
Trowel, Putty Knife

AVERAGE WEIGHT/U.S. GALLON (ASTM D 1475):
Part A 12.1 Lbs. (1.45 Kg/l)
Part B - 10.3 Lbs. (1.23 Kg/l)
Mixed (A&B) 11.9 Lbs. (1.43 Kg/l)

AVERAGE NON-VOLATILE (ASTM D 2369):
97% By Volume (Mixed)
98% By Weight (Mixed)

COVERAGE RANGE:
(Varies with type of insulation and substrates)
0.080 in. (2.0 mm) to 0.016 in. (0.41 mm)
20 sq. ft. to 100 sq. ft. per gallon (0.49 to 2.45 m^2/liter)

MIXING RATIO:
8 Parts A: 1 Part B (By Volume)
9 Parts A: 1 Part B (By Weight)

PACKAGING:
May be purchased in a single kit with 3 gallons Part A and 0.4 gallon Part B in one pail. This kit is intended to be fully mixed or portioned off per above mix ratio.

OR Part A and Part B are packaged separately: 4 gallons Part A in a pail and 0.5 gallons Part B sold in jugs with six jugs per case. 1 0.5 gallon jug Part B is mixed with 1 4 gallon pail of Part A or portion off per the above mix ratio.

See application guide for more information.

POT LIFE (FSTM 91A):
1-2 hours @ 77° F (25°C)

CURING TIME:
Set: 8 hours @ 77° F(25° C)
Cure Through: 24 hours @ 77° F (25° C)
Maximum Strength: 7 Days @ 77° F (25° C)

WET FLAMMABILITY (Part A, B or Blended)
Flash Point: over 200° F (93° C)

Trademark of H.B. Fuller Construction Products Inc.

Manufactured at an ISO 9001 Quality System Certified Facility

Visit us on the web at fosterproducts.com

FOSTER NON-HALOGENATED ADHESIVE/SEALANT

FOSTER 81-84NH Adhesive/Sealant is a two-component, high strength thermosetting urethane adhesive containing no flammable solvents or halide-containing materials. It is designed to bond various types of low-temperature insulation to themselves, as well as to metal and masonry substrates including stainless steel. After curing, it forms a strong, yet flexible bond capable of withstanding thermal shock and mechanical impact.

81-84NH Adhesive/Sealant can be used as both an attachment adhesive and joint sealant in low temperature installations using cellular glass, polystyrene, phenolic or PUR and PIR foam insulations. It contains no asphalt and can be top-coated with solvent based products without bleed-through.

81-84NH Adhesive/Sealant meets requirements for LEED 2009 IEQ 4.1 Low-Emitting Materials, Adhesives and Sealants.
VOC 81-84NH Part A: 20 g/l, less water and exempt solvent.
VOC 81-84 Part B: 0 g/l, less water and exempt solvents.

81-84NH Adhesive/Sealant contains no asbestos, lead, mercury, or mercury compounds.

SERVICE TEMPERATURE LIMITS:
PIR / Polyurethane Foam Insulations
As a joint sealant/adhesive
-310°F to 200°F (-190°C to 93°C)
PIR/Urethane Foam to Metal
-265°F to 200°F (-165°C to 93°C)
Cellular Glass Insulation
As a joint sealant/adhesive
-100°F to 200°F (-73°C to 93°C)
Cellular Glass to Stainless Steel
-155°F to 200°F (-105°C to 93°C)

LIMITATIONS
Store and apply between 40°F (4°C) and 100°F (38°C).

Allow 48 hours curing time at 73° F (23° C) minimum before placing in service.

Pot life will be longer at lower temperatures, shorter at higher temperatures.

Part B is sensitive to moisture and humidity. Keep container tightly sealed when not in use.

Do not heat Part A, Part B, or the mixed material.

Data sheet

C.I. Mastic 60-25/60-26

PROPERTIES

COLOR:
Black

APPLICATION CONSISTENCY:
60-25: Trowel
60-26: Heavy duty airless spray

AVERAGE WEIGHT / U.S. GALLON (ASTM D1475):
9.4 to 10.0 lbs. (1.13 to 1.20 kg/l)

AVERAGE NON-VOLATILE (ASTM D2369):
66% by volume (76% by weight)

COVERAGE RANGE:
Subject to the type of surface being coated. Wet coverages shown below are for smooth, non-porous surfaces. Porous or rough surfaces will require higher gallonage to attain required dry thickness.

12 gallons per 100 sq. ft. minimum (4.9 l/m^2) 0.192 in. wet film thickness (4.9 mm).

DRYING TIME 73°F (23°C) 50% RH:
Set to Touch: 1/2 to 6 Hours Through:
7 Days

WATER VAPOR PERMEANCE (TYPICAL AVERAGE):
ASTM E96, PROCEDURE A: < 0.015 perms (0.01 metric perms) at 1/8" (3.2 mm) dry film thickness.

ASTM F1249: 0.02 perms (0.01 metric perms) at 1/8" (3.2 mm) dry film thickness.

C.I. MASTIC® meets the permeance requirements of ASTM C755-19 for below ambient vapor retarder coatings.

SERVICE TEMPERATURE LIMITS:
Temperature at coated surface.
-40°F to 180°F (-40°C to 82°C)

WET FLAMMABILITY:
Flash Point: 104°F (40°C)

SURFACE FLAME SPREAD (ASTM E162):
Flame Spread: 145
Applied to 1/4 inch (6.4 mm) inorganic reinforced cement board. The flame spread may vary at different product thicknesses and/or when applied over other surfaces.

FOSTER® C.I. MASTIC®

FOSTER® C.I. MASTIC® is a tough, durable, high solids, vapor retarder, asphalt cutback mastic. Because of its low vapor permeance, it is an ideal surface coating for low temperature insulation on outdoor applications.

C.I. MASTIC® may be used on heated lines, vessels and equipment in intermittent or dual temperature service to prevent the entrance of water vapor into the insulation during off periods or on cold cycles.

C.I. MASTIC® may be used as a solvent-based adhesive for asphaltic felt vapor retarder jackets on pipe and duct insulation.

C.I. MASTIC® meets the requirements for water proofing mastics in the TRI-SERVICE SPECIFICATION for UNDERGROUND HEAT DISTRIBUTION CONDUIT SYSTEMS.

LIMITATIONS
Store and apply between 40°F (4°C) and 100°F (38°C).

Always test foil and paper facings for acceptable adhesion before using.

C.I. MASTIC® may weather to a dark gray color.

Outdoor horizontal surfaces must always drain completely. A pitch of at least 1/2" per foot (4 cm/m) is required.

Always test plastic materials for compatibility when using a solvent-based product. Do not use on polystyrene foam.

APPLICATION GUIDE FOR FOSTER® C.I. MASTIC® 60-25/60-26

MATERIAL PREPARATION
DO NOT THIN. Stir well, but do not use sticks or boards which would splinter or otherwise contaminate the product. Apply only to clean, dry, oil-free surfaces. Keep container closed when not in use. Foster® 60-25 & 60-26 cannot be successfully applied by brush. Foster® 60-25 cannot be applied by spray.

APPLICATION
Prime dusty insulation or porous cements with 60-25 or 60-26 cut 50/50 with mineral spirits. Proper and complete flashing is required. Follow flashing specifications. If a decorative coating is to be used over the C.I. MASTIC®, allow a minimum of 30 days drying time before application.

OUTDOOR AND HEAVY DUTY SERVICE
Apply a tack coat of Foster® C.I. MASTIC® at a thickness of 1/16 inch (1.6 mm). This is equivalent to 4 gallons per 100 square feet (1.61 l/m^2). Embed Foster® MAST-A-FAB® White Membrane into wet tack coat. Smooth membrane to avoid wrinkles and overlap all seams at least 2 inches (5 cm). Apply a finish coat of C.I. MASTIC® at a minimum thickness of 1/8 inch (3.2 mm). This is equivalent to 8 gallons per 100 square feet (3.3 l/m^2). This finish coat shall be applied no later than 1 hour after the tack coat and shall completely cover the membrane. This application shall provide a minimum dry film thickness of 123 mils (3.1 mm).

HEAVY DUTY APPLICATIONS – UP TO 50% GREATER TENSILE STRENGTH
Apply as above, substituting CHIL-GLAS® #5 as the reinforcing membrane. Note that the membrane weave pattern will show through the dried mastic.

TROWEL
Use clean tools and equipment. Work in long, even strokes to ensure uniform thickness. Wet tools in mineral spirits (flammable) occasionally to prevent build-up of dried mastic.

SPRAY
C.I. MASTIC® 60-26 may be airless spray applied using heavy duty pneumatic pumps. Store 60-26 in a heated area. The material temperature should be at least 70°F (21°C) before spraying. For spray equipment information, please consult Airless Spray Recommendations or contact your spray equipment supplier. Average viscosity range: 100,000 – 150,000 cps.

CLEAN UP
Clean tools and equipment with mineral spirits (flammable) or chlorinated solvent (non-flammable).

INSPECTION
Where available, it is suggested to use a National Insulation Association (NIA) certified (or other similarly certified) mechanical insulation inspector throughout the project to inspect and verify the materials and total insulation system have been installed correctly in accordance with the specifications.

Data sheet

95-44

PROPERTIES

COLOR:
Aluminum

APPLICATION CONSISTENCY:
Trowel, caulking gun or power extrusion equipment

AVERAGE WEIGHT/U.S. GALLON (ASTM D1475):
9.3 lbs. (1.12 kg/l) – Pail
9.5 lbs. (1.14 kg/l) – Cartridge

AVERAGE NON-VOLATILE (ASTM D2369):
52 to 58% by volume (65% by weight) – Pail
59 to 62% by volume (70% by weight) – Cartridge

COVERAGE RANGE:
Trowel: 12 to 25 sq. ft./gal. (0.29 to 0.61 m^2/l) 1/8 to 1/16 in. (3.2 to 1.6 mm) wet film thickness

Cartridge gun: 125 linear ft. per 10.5 fluid oz. tube, 1/8 in. bead. (38 m per 0.31 l tube, 3.2 mm bead) 30 linear ft. per 10.5 fluid oz. tube, 1/4 in. bead
(9 m per 0.31 l tube, 6.4 mm bead)

DRYING TIME:
To Touch: 1/2 Hour Through:
72 Hours

SERVICE TEMPERATURE LIMITS:
Temperature at coated surface.

Joint Sealant – Urethane Foam
-150°F to 200°F (-101°C to 93°C)

Joint Sealant – Cellular Glass
-100°F to 250°F (-73°C to 121°C)

Flashing Compound and Jacketing Laps (temperature at flashed surface)
-67°F to 250°F (-55°C to 121°C)

WET FLAMMABILITY (ASTM D3278):
Flash Point: 105°F (41°C)

SURFACE BURNING CHARACTERISTICS (ASTM E84):
Flame Spread: 15
Smoke Developed: 0
Tested at coverage rate of 25 sq. ft./gal. (0.61 m^2/l) in 2 in. (5 cm) strip. Applied to 1/4 inch (6.4 mm) inorganic reinforced cement board. The flame spread may vary at different product thicknesses and/or when applied over other surfaces.

FOSTER® ELASTOLAR® SEALANT

FOSTER® ELASTOLAR® Sealant is a fire-resistive, flexible, butyl elastomer-based, vapor barrier sealant. It is designed for sealing joints in insulation (except polystyrene foam), metal and masonry wherever maintenance of a water-tight and air-tight seal is required. It can be used as a joint sealant in low velocity duct air-conditioning systems. It is ideal for sealing the laps of metal jacketing to prevent the entrance of moisture.

ELASTOLAR® Sealant is a fast-drying, vapor barrier sealant that can be top coated with most solvent-based, flexible, light-colored coatings without danger of bleed through. It is weather resistant and may be used outdoors without top coating.

ELASTOLAR® Sealant is the preferred product for flashing projections and terminations where a complete moisture and vapor seal is required.

WATER VAPOR PERMEANCE (TYPICAL AVERAGE):
ASTM F1249: 0.02 perm (0.013 metric perm) at 0.080 in. (2.0 mm) dry film thickness. Tested at 100°F (38°C) and 90% RH

The water vapor transmission through 1 in. of impermeable insulation in 12 x 18 in. blocks with 1/8 in. joints of ELASTOLAR® sealant is too small to measure.

ELASTOLAR® Sealant may meet requirements for LEED 2009 IEQ 4.1 Low-Emitting Materials, Adhesives and Sealants for some applications where the use falls under the 'Other' category. Refer to LEED guides for more information. VOC: 384 g/l, less water (336 g/l, less water cartridge grade)

LIMITATIONS
Store and apply between 40°F and 100°F (4°C and 38°C).

Always test plastic materials for compatibility when using a solvent-based product.

When used in exposed locations without top-coating, this product may darken or discolor due to surface dirt pick-up. This will not affect its performance.

Make certain this product is completely dry and the area is free from solvent odor if food is involved.

Select Foster® 30-45N for joint sealing polystyrene foam insulations.

Visit us on the web at fosterproducts.com

APPLICATION GUIDE
FOR
FOSTER® ELASTOLAR® SEALANT
95-44

MATERIAL PREPARATION
DO NOT THIN. Apply only to clean, dry, oil-free surfaces. Keep container closed when not in use.

APPLICATION
JOINT SEALANT:
Apply by trowel, putty knife, caulking gun or power extrusion. When sealing insulation joints, apply ELASTOLAR® sealant to the edges of abutting sections at 1/16 in. to 1/8 in. (1.6 mm to 3.2 mm) wet film thickness and press mating surfaces together firmly to squeeze out air bubbles and to obtain complete contact. Strike off excess sealant on surface with a trowel.

Note: Pressurized piping made from copper and aluminum alloys may be susceptible to under insulation corrosion when moisture is present and in direct contact with many materials. When used as a joint sealant, direct contact between pressurized pipes made from these metals and the sealant should be prevented.

FLASHING SEALANT:
Sealant shall be applied over the adjoining surfaces a minimum of 2" (50 mm) and flashed a minimum of 2" (50 mm) in each direction onto adjacent insulation (or mastic) surface. Apply a tack coat at 1/16" (1.6 mm) wet film. Embed reinforcing membrane (Mast-A- Fab® or 10 x 10 glass mesh) into compound. Apply a finish coat at 1/16" (1.6 mm) wet film. Total film thickness to be 1/8" (3.2 mm) wet, giving a 70 mil (1.8 mm) dry film. Allow sealant to dry a minimum of 8 hours before applying finish mastic over its surface. When flashing, do not trowel out to feather edge, but maintain a minimum of 1/8" (3.2 mm) wet film thickness throughout entire area of use. For best application, the material temperature should be 60°F (16°C) or higher.

METAL JACKETING:
Apply a 0.25" (6 mm) bead of sealant underneath the lap. Jacketing shall be firmly embedded and pulled up tight and banded in place. All overflow of sealant shall be removed with solvents.

CLEAN UP
Use solvent such as chlorinated solvent (non-flammable) or mineral spirits (flammable) for cleaning tools and equipment.

DATA REPORTED FROM ASTM E84 FIRE TEST (TUNNEL TEST)

ADHESIVES
H.B. Fuller Company

Surface Burning Characteristics (ASTM E84)
1/4 inch (6.4 mm) Inorganic Reinforced Cement Board

Surface Flame Spread:	15
Smoke Developed:	0
Number of Coats:	1

Tested as applied in a 2 in. wide strip at a coverage of 25 sq. ft./gal.

MAST-A-FAB® WHITE REINFORCING MEMBRANE

PROPERTIES

COLOR:
White

COMPOSITION:
Polyester with PVA Finish

WEAVE:
Leno

VISUAL MESH (OPENINGS PER SQUARE INCH):
9x8

ELONGATION (IN WATERBASE MASTIC):
70%-90%

SERVICE TEMPERATURE:
250° maximum (121° C)

AVERAGE WEIGHT (TYPICAL)
1.3 oz/sq. yard
(47 g/m2)

THREAD CONSTRUCTION
18 ends
8 picks

STANDARD ROLL SIZE
30" x 600 feet
1500 sq. ft.
(76 cm x 183 m)
(139 sq. m)

WEIGHT PER ROLL (TYPICAL)
14 pounds (6.5 kg)

ROLL DIAMETER (TYPICAL)
10 1/4 inches (26 cm)

MAST-A-FAB® has a synthetic fiber composition that provides for significantly greater elongation, recovery, and freedom from stress breakage. Glass cloth has virtually no elongation and breaks sharply under stress.

MAST-A-FAB® has a leno weave that gives stability to the fabric, eliminating the thread movement and distortion inherent to plain weave cloths. It will not detectably affect the flame spread and smoke developed ratings of the selected mastic or coating.

MAST-A-FAB® is easy to bond to and wets out readily compared to glass cloth. This minimizes the possibility of the disbonding of tack and finish coats, a common problem with glass membrane reinforcement.

Because it weighs only 1.3 ounces per square yard, about half the weight of glass cloth, Mast-a-Fab® is easy to work with. A full roll can easily be "one handed" for a faster, trouble free installation.

MAST-A-FAB® contains no asbestos, lead, mercury, or mercury compounds.

COVERAGE VERSUS WET FILM THICKNESS

	Wet thickness (inches)	Coverage per gallon (square feet)	Coverage per 100 sq.ft. (gallons)
(3/8″)	0.375	4.3	23.3
	0.32	5.0	20.0
(1/4″)	0.25	6.4	15.6
	0.24	6.7	15.0
	0.192	8.3	12.0
	0.16	10.0	10.0
	0.146	11.1	9.0
(1/8″)	0.125	12.8	7.8
	0.11	15.0	6.7
	0.096	16.6	6.0
	0.08	20.0	5.0
	0.06	25.0	4.0
(1/16″)	0.0625	25.6	3.9
	0.05	30.0	3.3
	0.04	40.0	2.5
	0.03	50.0	2.0
(1/32″)	0.031	51.2	2.0
	0.02	75.0	1.3
	0.016	100.0	1.0

This table addresses only wet film thickness. Dry film thickness can be calculated by multiplying the wet film thickness by the selected product's percentage of non-volatile by volume.

Data sheet

BX-301 Sealant Tape

H.B. Fuller

1. PRODUCT NAME

BX-301
Sealant Tape

2. MANUFACTURER

H.B. Fuller
4401 Page Avenue, Michigan Center, MI 49254 U.S.A.
Phone 800.248.4010 | Fax 517.764.6697 | hbfuller.com

3. DESCRIPTION

BX-301 Sealant Tape consists of an polyethylene film that has been laminated to a 50 mil pressure sensitive tape. BX-301 Sealant Tape is extremely flexible and can be formed to fit irregular shapes and surfaces. BX-301 Sealant Tape is designed to provide watertight seals on properly primed concrete surfaces and concrete structure joints.

Basic Use

BX-301 Sealant Tape is used to wrap below grade joints to create a watertight seal such as:

- Sanitary Manhole Joints
- Grade Ring Joints
- Stormwater Manhole Joints
- Irrigation and Drainage Systems
- Box Culverts
- Eliptical/Arch Pipe
- Architectural Foundations
- Underground Utility Vaults
- Stormwater Treatment Structures
- Stormwater Inlet Structures
- On-Site Treatment Tanks
- Wet Wells
- Concrete Bridge Spans

Features & Benefits

- Broad temperature range performance for long term durability
- High-tack and permanently flexible provides excellent adhesion and formability
- Fast installation saves time and labor

Storage & Shelf Life

Store material in original unopened packaging at temperatures between 4°C to 43°C (40°F to 110°F). Shelf life is 12 months when stored as recommended.

Application Recommendations

All bonding surfaces should be clean, dry, and free of dirt, dust, debris, oils, and other contaminants. BX-301 Sealant Tape is designed to be used with CP-100 Concrete Primer. Primer is recommended. Always allow primer to dry to touch before applying tape (typically 10-15 minutes, will depend on ambient conditions).
Once the primer is dry immediately install the sealant tape. Do not stretch the sealant tape during application. Overlap the tape ends at lease twice the tape width. Roll the tape to ensure good contact with the substrate.

Limitations

BX-301 Sealant Tape should not be used in conditions where it may come into direct contact with petroleum distillates such as gasoline, oil, kerosene, diesel oil or other chemical solvents. Clean and dry surfaces are necessary for proper installation of this product.

4. PACKAGING

BX-301 Sealant Tape is available in 6", 9", and 12" widths.
Contact your H.B. Fuller representative for other sizes.

5. AVAILABILITY

Please contact your local Sales Representative to discuss your specific needs.

6. TECHNICAL SERVICES

Prior to working with this or any product, consult product label and Safety Data Sheet (SDS) for necessary health and safety precautions.

7. TECHNICAL DATA

Property	Typical Value	Test Method
Base Polymer	Butyl	
Color	Black	Visual
Brittleness Temperature	-46°C (-50°F)	ASTM D 2137
Service Temperature	45°C to 65°C (-50°F to 150°F)	

NOTE: The foregoing information is published as general information only. The listed properties and performance characteristics are approximate values and are not to be interpreted as manufacturing specifications.

Data sheet

MONOLAR II Mastic 60-38/60-39

PROPERTIES

COLOR:
60-38: White
60-39: Gray

APPLICATION CONSISTENCY:
Trowel or rubber glove

AVERAGE WEIGHT / U.S. GALLON (ASTM D1475):
8.8 to 9.3 lbs. (1.05 to 1.11 kg/l)

AVERAGE NON-VOLATILE (ASTM D2369):
30% by volume (43% by weight)

COVERAGE RANGE:
Subject to the nature of surface being coated. Wet coverages shown below are for smooth, non-porous surfaces. Porous or rough surfaces will require higher gallonage to attain required dry thickness.

6 gal./100 sq. ft. (2.4 l/m^2) 0.096 in. wet film thickness (2.4 mm). Equivalent dry film thickness of 0.030 in. (0.8 mm).

9 gal./100 sq. ft. (3.6 l/m^2) for cryogenic applications. Equivalent dry film thickness of 0.045 in. (1.1 mm).

DRYING TIME 73°F (23°C) 50% RH:
Set to Touch: 3 Hours
Dry Through: 48 Hours

SERVICE TEMPERATURE LIMITS:
Temperature at coated surface.
-40°F to 250°F (-40°C to 121°C)

WATER VAPOR PERMEANCE (TYPICAL AVERAGE):
Tested with reinforcing mesh.

ASTM E96, PROCEDURE A: 0.02 perms (0.015 metric perms) at 54 mils dry (1.3 mm).

MONOLAR® II MASTIC meets the permeance requirements of ASTM C755-19 for below ambient vapor retarder coatings.

WET FLAMMABILITY (ASTM D3278):
Flash Point: 104°F (40°C)

SURFACE BURNING CHARACTERISTICS (ASTM E84):
Flame Spread: 20
Smoke Developed: 10 □ 40
Tested at coverage rate of 25 sq. ft./gal. (0.61 m^2/l). Applied to 1/4 inch (6.4 mm) inorganic reinforced cement board. The flame spread may vary at different product thicknesses and/or when applied over other surfaces.

FOSTER® MONOLAR® II MASTIC

FOSTER® MONOLAR® II MASTIC based on chlorosulfonated polyethylene rubber (formerly known as Hypalon®*) is a tough, flexible, fire-resistive, elastomeric finish for protection of thermal insulation. It is also used as a vapor retarder finish for fittings. It is excellent for outdoor use where good color retention, chemical resistance and durability are required.

MONOLAR® II MASTIC provides outstanding weather barrier and vapor retarder protection for most board stock thermal insulations except polystyrene. It normally bonds well to aluminum foil facings, but a test application is recommended to confirm adhesion.

MONOLAR® II MASTIC is produced under the classification and follow up service of Underwriter's Laboratories, Inc.

LIMITATIONS
Store and apply between 40°F (4°C) and 100°F (38°C).

For best results, select ELASTOLAR® 95-44 or FLEXTRA® 95-50 for insulation joint sealing under MONOLAR® II MASTIC.

Always test plastic materials for compatibility when using a solvent-based product.

Outdoor horizontal surfaces must always drain completely. A pitch of at least 1/2 inch per foot (4 cm/m) is required.

Make certain this product is completely dry and the area free from solvent odor if food is involved.

Select MONOLAR® COATING 60-95 (white) or 60-96 (gray) for airless spray or brush application.

*Chlorosulfonated polyethylene rubber is also known as Hypalon, a trademark of Dupont Performance Elastomers, and is no longer produced by Dupont.

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APPLICATION GUIDE
FOR
FOSTER® MONOLAR® II MASTIC
60-38/60-39

MATERIAL PREPARATION
Stir well. DO NOT THIN. Apply only to clean, dry surfaces. Keep container closed when not in use to prevent solvent evaporation.

APPLICATION
To prevent water vapor and moisture infiltration, proper and complete flashing is required. Follow flashing specifications.

NORMAL SERVICE:
Apply a tack coat of MONOLAR® II Mastic at a thickness of 1/32 inch (0.8 mm). This is equivalent to 2 gal./100 sq. ft. (0.8 l/m^2). Embed Foster® MAST-A-FAB® or CHIL-GLAS® #10 White Membrane into wet tack coat. Smooth membrane to avoid wrinkles and overlap all seams at least 2 inches (5 cm). Apply a finish coat of MONOLAR® II Mastic at a minimum thickness of 1/16 inch (1.6 mm). This is equivalent to 4 gal./100 sq. ft. (1.6 l/m^2). This finish coat shall be applied no later than 2 hours after the tack coat and shall completely cover membrane. This application shall provide a minimum dry film thickness of 30 mils (0.7 mm).

SEVERE AND CRYOGENIC SERVICE:
After the first two coats have dried, apply an additional coat of MONOLAR® II Mastic at a thickness of 3/64 inch (1.2 mm). This is equivalent to 3 gal./100 sq. ft. (1.2 l/m^2). This additional application shall provide a minimum dry film thickness of 44 mils (1.1 mm).

On rough or porous insulation surfaces additional product will be required to achieve the full surface dry film thickness. The application rate may need to be increased by up to 20% or more to achieve minimum film thicknesses.

TROWEL:
Use clean tools. Work in long, even strokes to ensure uniform thickness. Wet tools with detergent foam (not soap) occasionally to prevent a buildup of dried mastic.

RUBBER GLOVE:
Best appearance may be achieved by smoothing wet MONOLAR® II Mastic with detergent foam (not soap) on clean glove or brush, being careful not to pick up any MONOLAR® II Mastic onto the glove or brush.

CLEAN UP
Use xylol (flammable) or chlorinated solvent (non-flammable) for cleaning equipment. Dried MONOLAR® II Mastic is extremely difficult to remove.

INSPECTION
Where available, it is suggested to use a National Insulation Association (NIA) certified (or other similarly certified) mechanical insulation inspector throughout the project to inspect and verify the materials and total insulation system have been installed correctly in accordance with the specifications.

CLASSIFIED UL

GENERAL PURPOSE COATING
SURFACE BURNING CHARACTERISTICS

Applied to ¼□ Inorganic Reinforced Cement Board

Flame Spread:	20
Smoke Developed:	10 □40
Rate per Coat (sq. ft./gal.):	25
Number of Coats:	1
Flash Point of Liquid Coating (Closed Cup):	101°F

282U

Data sheet

81-33

PROPERTIES

COLOR:
Off-white

APPLICATION CONSISTENCY:
Trowel

WEIGHT PER U.S.GALLON: (ASTM D 1475):
13.2 lbs. (1.58 kg/l)

APPLICATION NON-VOLATILE (ASTM D 1644):
66% by volume (80% by weight)

COVERAGE RANGE:
(Subject to type of surfaces and nature of material being attached)
25 to 40 sq.ft./gal.
0.063 in. to 0.040 in. wet thickness.
(0.6 to 1.0 m^2/l at 1.6 to 1.0 mm wet)

BONDING TIME RANGE (FSTM 66):
2 to 10 minutes

SERVICE TEMPERATURE LIMITS:
(Temperature at coated surface)
Minus 75°F to 300°F (-59°C to 149°C)

WET FLAMMABILITY (ASTM D 3278):
Flash Point 110°F (43°C)

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FOSTER FIRE RESISTIVE ADHESIVE

FOSTER Fire Resistive Adhesive is a superior adhesive for cementing thermal insulation to all structural surfaces. It is quick-setting, with good specific adhesion to iron, steel, aluminum, and most thermal insulations. Can be used without mechanical fastening for marine hull insulation.

Fire Resistive Adhesive is the preferred adhesive for use with rigid polyurethane insulations. It can be used as a fabricating adhesive in making fittings with polyurethane insulation, and as an adhesive to attach insulation to equipment surfaces. Bonds of polyurethane to itself made with 81-33 are stronger than the base insulation.

Fire Resistive Adhesive withstands continuous surface temperatures up to 300°F (149°C), but it has been subjected to higher temperatures for short intervals with good results. Its excellent resistance to water and high humidity makes it a good sealing compound for joints and seams of insulation on cold water piping and equipment.

Fire Resistive Adhesive meets the requirements of Military Specification MIL-A-3316C, Class 3, Grade A.

Fire Resistive Adhesive contains no asbestos, lead, mercury, or mercury compounds.

LIMITATIONS:

Store and apply between 40°F (4°C) and 100°F (38°C).

Always test plastic materials for compatibility when using a solvent base product.

Make certain this product is completely dry, and the area is free from solvent odor if food is involved.

Galvanized metal must be primed with Foster 40-26.

If used between impermeable surfaces, drying time will be extended.

APPLICATION GUIDE
FOR
FIRE RESISTIVE ADHESIVE
81-33

MATERIAL PREPARATION
Remove paper disc and any skin on surface of adhesive in container. Stir well. DO NOT THIN. Apply only to clean, dry surfaces. Keep container closed when not in use to prevent solvent evaporation.

APPLICATION
Galvanized metal must first be treated with Foster Primer 40-26 and allowed to dry.

ATTACHMENT ADHESIVE - Apply with notched trowel at 40 sq. ft./gal. (1.0 m^2/l).

JOINT SEALANT/ADHESIVE - Apply with smooth trowel at 25 sq. ft./gal. (0.6 m^2/l).

Install insulation applying pressure to assure complete and uniform contact to the surface, twisting the insulation section slightly to break any skin that may have formed on the adhesive surface.

SQUARE NOTCHED TROWEL
Use a steel trowel with square teeth 1/8 inch wide, 1/8 inch deep and 1/8 inch apart. Trowel with firm pressure leaving ridges of adhesive. Press insulation firmly into place to obtain complete contact. On rough or porous surfaces a thicker application of adhesive will be required in order to assure contact between the insulation and the substrate.

CLEAN UP
Use a solvent such as chlorinated solvent (non-flammable) or xylene (flammable).

Data sheet

90-66

PROPERTIES

COLOR:
Black

APPLICATION CONSISTENCY:
Brush, spray or roller

AVERAGE WEIGHT/U.S. GALLON (ASTM D1475):
Mixed □ 9.6 lbs. (1.15 kg/l)

AVERAGE NON-VOLATILE (ASTM D2369):
Mixed □ 65.0% by volume (73.5% by weight)

COVERAGE RANGE:
Subject to the type of surface being coated.

3.0 to 3.5 gal./100 sq. ft. (1.22 to 1.43 l/m^2) on a smooth non-porous surface. Porous or rough surfaces will require higher gallonage to attain required dry thickness

Dry Thickness: 0.031 to 0.036 in. (0.79mm to 0.91mm)

Equivalent Wet Coverage: 0.048 in. to 0.056 in. (1.22 mm to 1.42 mm)

MIXING RATIO:
1:1 by volume

POT LIFE:
Varies with temperature.
6 □ 9 hours at 77°F (25°C)

DRYING TIME 73°F (23°C) 50% RH:
Temperatures below 70°F (21°C), thicker films and applications between substrates will prolong dry time and require longer cure times.
Through: 48 Hours
Full Cure: 2 Weeks

SERVICE TEMPERATURE LIMITS:
Temperature at coated surface.
-320°F to 180°F (-196°C to 82°C)
Up to 250°F (121°C) intermittent

WATER VAPOR PERMEANCE (TYPICAL AVERAGE):
ASTM F1249: 0.01 perms (0.0066 metric perms) at 0.020 □ 0.025 in. (0.51 □ 0.64 mm) dry film thickness tested at 100°F (38°C) and 90% RH

WET FLAMMABILITY (ASTM D93):
Flash point: 75°F (24°C)

COMBUSTIBILITY (DRY):
Combustible

FOSTER® CRYOGENIC VAPOR STOP SEALANT

FOSTER® Cryogenic Sealant is a two-part, black, elastomeric sealant designed for use in cryogenic applications as a vapor stop sealant. It is suitable for application to polyurethane foam, polyisocyanurate (PIR) foam, cellular glass, fibrous glass, aerogel and other rigid and flexible insulations in conjunction with aluminum, stainless steel, metals, wood and masonry construction materials.

Cryogenic Sealant has excellent resistance to moisture, water vapor and other gases. It is designed for very low temperature applications to seal seams where a water vapor tight insulation system is required. It is an excellent vapor stop material for use on cryogenic pipe lines and cryogenic equipment.

Cryogenic Sealant contains no lead, asbestos, mercury, or mercury compounds.

LIMITATIONS
Store and apply between 40°F (4°C) and 100°F (38°C).

Always test plastic materials for compatibility when using a solvent-based product.

Make certain this product is completely dry and the area free from solvent odor if food is involved.

Not suggested for application between two impermeable surfaces. As a vapor stop sealant, ensure the coating is able to fully dry after application. Do not trap solvent from 90-66 between the pipe and impermeable insulation or layers of impermeable insulation.

Not suggested as a joint sealant in impermeable insulation where the solvent will be trapped in the joint.

Not intended as an exposed finished coating for extended periods of time.

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APPLICATION GUIDE
FOR
FOSTER CRYOGENIC SEALANT
90-66

MATERIAL PREPARATION
MIXING INSTRUCTIONS:
Add 90-66 Part B into Part A and mix thoroughly for about 5 minutes, using an air driven mechanical stirrer. Do not whip air into the product.

APPLICATION
Apply only to clean, dry surfaces.

When used as a vapor barrier and/or vapor stop, 90-66 may be applied up to 2 gal./100 sq. ft. (0.81 l/m^2) on vertical surfaces (21 mils/0.53 mm dry thickness). Apply in two coats with Mast-a-Fab® reinforcing mesh embedded between coats. Reinforcing mesh must be used for cryogenic applications.

Apply the 90-66 two to three inches on the pipe and extending up over each layer of insulation and onto the outer insulation surface. Avoid trapping solvent from wet 90-66 between two impermeable surfaces such as the pipe and insulation.

For best results the first coat may be applied followed by immediately embedding the Mast-A-Fab reinforcement. Allow the first coat to tack up for 2 hours or longer and re-smooth the mesh before applying the additional coat(s) to complete the seal. Be sure the mesh is smoothed into the tack coat before it completely sets and before the finish coats are applied.

When applying over rough or porous surfaces increase the coating volume to fully seal the surface leaving a minimum 31-35 mils (0.8 to 0.9mm) dry film thickness on the surface. Inspect for pinholes and over coat as necessary to complete a pinhole free finish. This may take 50% more material to achieve a full coating film with mesh embedded. Note: The pattern of the mesh may still be visible, but it must be completely covered.

When selecting mesh reinforcement Foster Mast-A-Fab is strongly recommended based on its mesh size, membrane thickness and flexibility. In all cases the mesh must be an open weave mesh allowing it to be embedded into the wet 90-66 sealant and be sufficiently thin such that the dried 90-66 film covers the entire mesh. Too thick a mesh may prevent formation of a full film with the mesh embedded completely.

Always allow the 90-66 to fully dry before covering with abutting insulation or jacketing.

CLEAN UP
Use solvents such as chlorinated solvent (non-flammable) or mineral spirits (flammable) for cleaning tools and equipment. Completely clean all equipment before pot life expires and the adhesive sets up. 90-66 when dry is extremely difficult to remove.

Data sheet

95-50

PROPERTIES

COLOR:
Tan

APPLICATION CONSISTENCY:
Trowel, Power Extrusion

AVERAGE WEIGHT/U.S. GALLON (ASTM D 1475):
11.6 lbs. (1.39 kg/l)

AVERAGE NON-VOLATILE (In use)
82% by volume (89% by weight)

73% by weight (ASTM D 2369, 110°C)

COVERAGE RANGE (FSTM 71):
Trowel:
12 to 25 sq. ft./gal. (0.29 to 0.61 m^2/l)
1/8 in. to 1/16 in. wet film thickness (3.2 mm to 1.6 mm)

DRYING TIME:
Skins over in 2 to 3 hours, essentially non-drying.

SERVICE TEMPERATURE LIMITS (FSTM 202):
(Temperature at coated surface)
PIR / Urethane Foam
Minus 261°F to 200°F (-163°C to 93°C)
Cellular Glass
Minus 150°F to 200°F (-100°C to 93°C)

WATER VAPOR TRANSMISSION RATE (ASTM E 96):
The water vapor transmission through 1 in. of impermeable insulation in 12 x 18 in. blocks with 1/8 in. joints of 95-50 is too small to measure.

WET FLAMMABILITY (ASTM D 93):
Flash point 145°F (63°C)

COMBUSTIBILITY, DRY:
Combustible. Flame spread and fuel contribution negligible when used as sealant in 1/8 in. wide joints of incombustible insulation.

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FOSTER® FLEXTRA® SEALANT

FOSTER® FLEXTRA® Sealant is a one component, butyl rubber based product used as a vapor barrier sealant in the joints of cellular glass, polyisocyanurate (PIR), urethane and phenolic foam board stock insulations. It remains soft and flexible, preventing damage to the insulation due to thermal cycling through a wide range of temperatures.

FLEXTRA® Sealant is primarily used with low temperature insulation to prevent the migration of water and water vapor into the insulation system via butt joints.

FLEXTRA® Sealant is also recommended as a bedding compound for the installation of cellular glass insulation. In this application, it protects both the insulation from abrasion and metal surfaces from corrosion.

FLEXTRA® Sealant is supplied in a special “buttery” consistency, which facilitates application to insulation surfaces without stringing or excessive drag. It may be applied at temperatures as low as 50°F (10°C) without difficulty.

FLEXTRA® Sealant meets requirements for LEED IEQ 4.1 Low-Emitting Materials, Adhesives and Sealants.
VOC: <420 g/l, less water and exempt solvents.

FLEXTRA® Sealant contains no asbestos, lead, mercury, or mercury compounds.

LIMITATIONS

Store and apply between 40°F (4°C) and 100°F (38°C).

Always test solvent plastic materials for compatibility when using a solvent base product.

Not suggested for use under solvent base mastics and coatings, if minor surface discoloration and/or dirt pick-up would be objectionable. Discoloration can be minimized by allowing 24 to 48 hours cure time before top coating.

Do not use this product where surface temperature will exceed 200°F (93°C).

Not suggested for use as a flashing compound.

APPLICATION GUIDE
FOR
FOSTER® FLEXTRA® SEALANT 95-50

MATERIAL PREPARATION
DO NOT THIN. Apply only to clean, dry, oil-free surfaces. Keep container closed when not in use.

APPLICATION
Apply by trowel, putty knife or power extrusion. When sealing insulation joints, apply FLEXTRA® to the edges of abutting sections at 1/16 in. to 1/8 in. (1.6 to 3.2 mm) wet film thickness and press mating surfaces together firmly to squeeze out air bubbles and to obtain complete contact. Strike off excess sealant on surface with trowel.

POWER EXTRUSION
Flextra® Sealant may be applied using a wide variety of power (pressure) extrusion equipment suitable for use with solvent base sealants. It has a soft and buttery consistency with a typical viscosity range of 225,000-325,000 cps (HBT, 5 rpm).

Note: Pressurized piping made from copper and aluminum alloys may be susceptible to under insulation corrosion when in direct contact with many materials. When used as a joint sealant direct contact between pressurized pipes made from these metals and the sealant should be prevented.

CLEAN UP
Use solvent such as chlorinated solvent (non-flammable) or mineral spirits (flammable) for cleaning tools and equipment.

Data sheet

42-24

PROPERTIES

COLOR:
White

COMPOSITION:
Polyester with PVA Finish

WEAVE:
Leno

VISUAL MESH (OPENINGS PER SQUARE INCH):
9x8

ELONGATION (IN WATERBASE MASTIC):
70%-90%

SERVICE TEMPERATURE:
250° maximum (121° C)

AVERAGE WEIGHT (TYPICAL)
1.3 oz/sq. yard
(47 g/m2)

THREAD CONSTRUCTION
18 ends
8 picks

STANDARD ROLL SIZE
30" x 600 feet
1500 sq. ft.
(76 cm x 183 m)
(139 sq. m)

WEIGHT PER ROLL (TYPICAL)
14 pounds (6.5 kg)

ROLL DIAMETER (TYPICAL)
10 1/4 inches (26 cm)

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MAST-A-FAB® WHITE REINFORCING MEMBRANE

MAST-A-FAB® has a synthetic fiber composition that provides for significantly greater elongation, recovery, and freedom from stress breakage. Glass cloth has virtually no elongation and breaks sharply under stress.

MAST-A-FAB® has a leno weave that gives stability to the fabric, eliminating the thread movement and distortion inherent to plain weave cloths. It will not detectably affect the flame spread and smoke developed ratings of the selected mastic or coating.

MAST-A-FAB® is easy to bond to and wets out readily compared to glass cloth. This minimizes the possibility of the disbonding of tack and finish coats, a common problem with glass membrane reinforcement.

Because it weighs only 1.3 ounces per square yard, about half the weight of glass cloth, Mast-a-Fab® is easy to work with. A full roll can easily be "one handed" for a faster, trouble free installation.

MAST-A-FAB® contains no asbestos, lead, mercury, or mercury compounds.

About IPS (INDUSTRIAL PROCUREMENT SOLUTIONS)

IPS, based in the UK, specializes in high-performance thermal insulation solutions tailored for industrial, commercial, and energy sectors. Their product range includes advanced insulation materials designed to enhance energy efficiency, safety, and durability across various applications. With a commitment to innovation and customer-centric solutions, IPS delivers reliable and effective thermal management products.

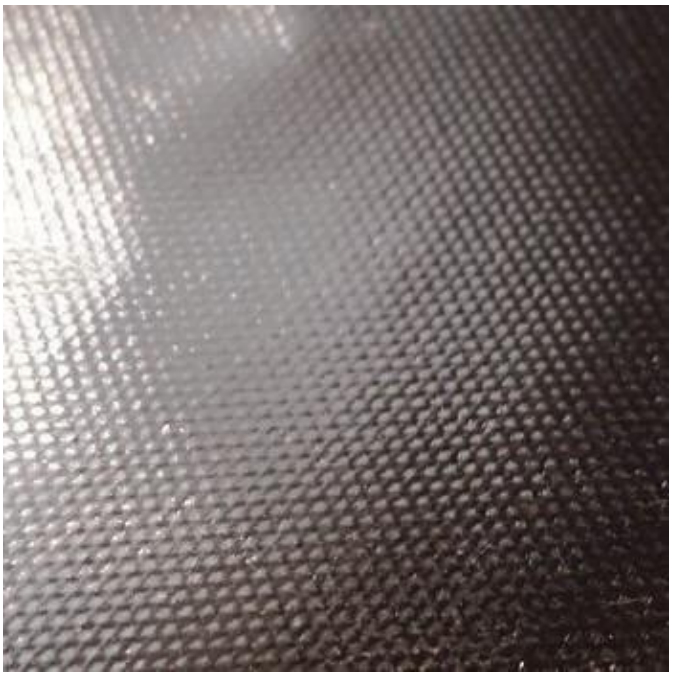
Aluminised Glass Cloth (300grms)

Details

Base construction:	17.2 ends per cm 12.0 picks per cm
Yarn count:	68 tex warp 68 tex weft
Weave type:	Plain
Weight:	300 grms/m2
Fabric thickness:	0.20 mm

Coating/Treatment Details
Aluminium foil, 11 micron thick, laminated to one side of the cloth. For continuous use at temperatures up to 150°C. Base cloth will withstand 550°C

Other information
Standard width: 1000 mm Standard roll lengths: 50 mtrs

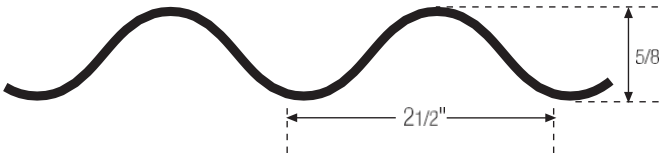


INDUSTRIAL PROCUREMENT SOLUTIONS LIMITED

Thermal Insulation Products

Corrugated Sheets

2.5 inch Deep
Corrugated
Description



Deep Corrugated Sheets are available in Aluminium, Stainless Steel and Ultrolon*. They provide protection for insulated
equipment, towers, vessels and tanks with outside diameters of 12' or more.

Aluminium Deep Corrugated Sheets are supplied in five thicknesses: .016, .020, .024, .032 and .040. Stainless Steel Deep Corrugated Sheets can be supplied in .010 and heavier thicknesses. Deep Corrugated Sheets are available in 11/4" and 21/2" corrugations. The 11/4" corrugations have a depth 1/4" and the 21/2" corrugations have a depth o 5/8". Aluminium Deep Corrugated Sheets are supplied in 1100, 3003, 3105 or 5005 alloy, and Stainless is supplied in T-304 or T-316 alloy. Deep Corrugated Sheets are available in a smooth finish, a stucco embossed pattern, and 3/16" cross crimped, up to 12' in length. Greater lengths may be specially ordered. 3/16" cross crimp corrugations provide extra strength. Tests prove the vertical strength and rigidity of an .016 Aluminium sheet with cross crimping is as great as a deep corrugated
.024 Aluminium sheet.

Recommended Uses

Chemical Plants & Refineries: Distillation columns, tank farms, fractionation units, cokers and ethylene production units.
Paper Mills: Chemical storage tanks, breechings and ducts.
Steel Mills: Pickle acid tanks, oxygen production units, fuel oil and tar storage tanks.
Miscellaneous: Food processing plants, LPG storage units, LNG storage units, sewage and waste water treatment plants.

Polykraft Moisture Barrier

Polykraft consists of one layer of one mil polyethylene film with a protective layer of 40 pound virgin kraft paper. The moisture barrier is attached to the jacketing by continuous lamination to the full width of the metal. The moisture barrier is used to prevent moisture and corrosives, in the insulation, from coming into direct contact with the metal jacketing surface and causing galvanic or chemical corrosion.

Specification No. 1500

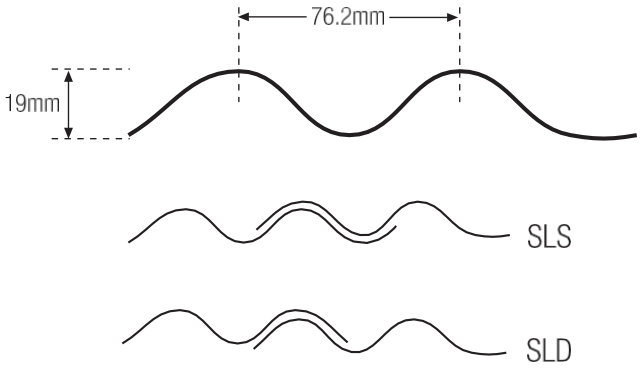
All insulation on equipment, towers, vessels and tanks with outside diameters of 12' or more shall be weather-proofed with Childers' Deep Corrugated Sheets.
The Deep Corrugated Sheets shall be manufactured from:

(1)_____(2)_____(3)_____**
The sheets shall have corrugations of (4)_____
_____** standard dimensions. All sheets shall have an integrally bonded moisture barrier over the entire surface in contact with the insulation.

(1) Available thicknesses: Aluminium .016,. 020, .024, .032, .040; Stainless Steel .010 minimum**
(2) Available alloys: Aluminium 1100, 3003, 3105 or 5005; Stainless Steel T-304, T-316**

(3) Available metals: Aluminium, Stainless Steel or Ultrolon**
(4) Standard dimensions: a. 11/4"x1/4"x33" nominal b. 21/2"x5/8"x33" nominal**

Ultrolon is a registered tradename

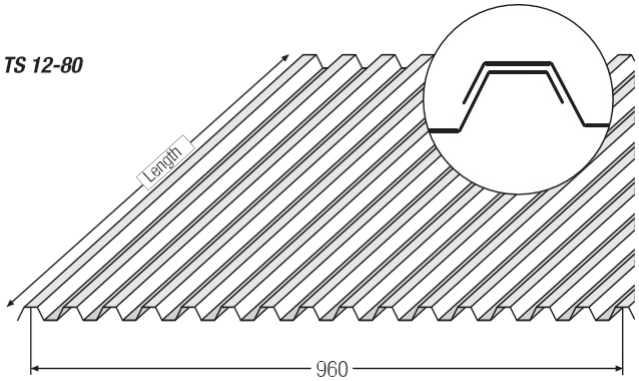


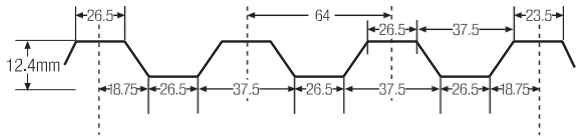
Sizes and Weights		
Cover Width mm	**Cover Width mm**	**Cover Width mm**
914 762	± 1004 SLD for roofing ± 812 SLS for wall cladding	0.5 0.7
Surface finish	**Alloy**	**Weight kg/m2**
914 Mill finish 762 Mill finish	Aluminium Aluminium	1.66 2.26

Other lengths and thicknesses available.

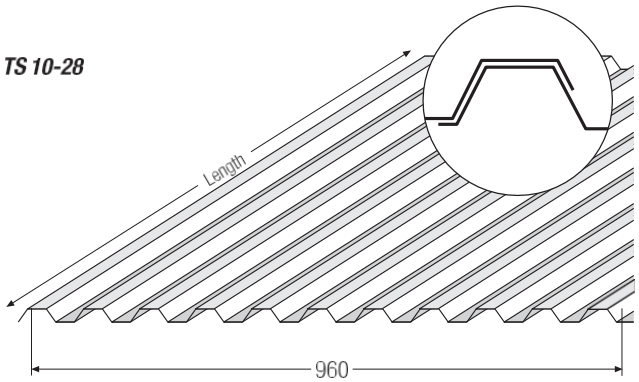
Profiled Sheets

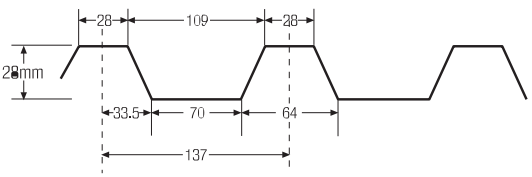
TS 12-80





TS 10-28





Fire Resistive Backed Aluminium

Introduction
Few insulation systems are capable of resisting fire, weathering and mechanical damage without some form of external protection. This is because most are made from low density, low strength materials for maximum thermal efficiency. Without protection the insulation deteriorates and disintegrates, operating efficiency is lost and money wasted.

General
Sealumet Fire Resistive Backed Aluminium Jacketing is a light, rust free, easy to apply material for long term protection of low density, low strength insulation systems over pipelines, storage vessels and tanks against damage by fire, weathering and mechanical impact or abrasion. This jacketing may be cut and fitted on site quickly and efficiently, eliminating the need for skilled techniques to tailor-make the intricate metal shapes previously necessary for fitting the contours of pipeline systems and storage vessels and can also be supplied without the Fire Resistive Backing.

Here is a summary of the considered advantages of using Sealumet Fire Resistive Backed Aluminium Jacketing:

1 Lightweight and easy to apply on site using a simple tool kit and semi-skilled labour.
2 Assured long term, corrosion free, durability in most environments without overcoating with special paints.
3 Highly competitive material and installation costs.
4 Fire resistive, pre-bonded moisture barrier backing to BS 476, Class 1.
5 The moisture barrier backing, pre-bonded to the inner surface of the jacketing, helps to maintain maximum thermal efficiency of the insulation.
6 Low emissivity value of aluminium reduces heat loss and resists ultra violet light attack.
7 Transverse reeding offers additional strength and flexibility during and after erection.
8 Available in coils in a range of thicknesses for direct application to insulated pipelines or sheets for vessels and tanks.
9 Banding and aluminium seals are easily fixed. Once erected a jacketing system requires no regular maintenance.
10 The reeded aluminium maintains an unusually attractive decorative finish.

Specification
Sealumet Fire Resistive Backed Aluminium Jacketing is manufactured from 99% purity aluminium to B.S. 1470 NS3 H4 and can be supplied with moisture barrier backing that is fire resistive to B.S.476, Class 1. Half hard temper is used to obtain optimum strength and reliability.

Comparative Strength
Sealumet aluminium jacketing 0.20mm thick, compares in rigidity and strength with 0.40mm plain aluminium sheet in resisting vertical stress and similarly 0.40mm thick compares with 0.60 plain aluminium sheet.

Transverse Reeded Coils
During manufacture both faces are given uniform 5mm pitch parallel ridges over the entire surface, known as transverse reeding. By this, means the durability and mechanical strength of the material is increased, making it possible for lighter gauges to be used without loss of strength, an important factor when the insulation cost is related to stress loadings on insulated equipment. Supplied in coils for direct application to pipelines Sealumet aluminium jacketing is also transverse reeded for easy curvature, that is, the ridges run at right angles to the ends of the coils.

Coils
Coils in seven standard thicknesses are available from stock: 0.20mm, 0.40mm, 0.50mm, 0.60mm, 0.8mm, 0.9mm, and 1.0mm. Also available on request, 0.7mm, 1.2mm and 1.5mm.

Thickness	Coil Width	Coil Length	Nominal Coil Weight without moisture barrier
0.20mm	3ft	100ft	16.2kg
0.40mm	3ft	100ft	32.4kg
0.50mm	3ft	100ft	40.5kg
0.60mm	3ft	100ft	48.6kg
0.80mm	3ft	100ft	64.8kg
0.90mm	3ft	100ft	73.0kg
1.00mm	3ft	100ft	81.0kg
1.20mm	3ft	100ft	98.3kg
1.50mm	3ft	100ft	122.9kg

Recommendation for use
0.20mm thickness (Standard Wire Gauge 33) is suggested for the protection of insulation from physical abuse on pipe lines, provided a high density insulation material is being used underneath and walking is not allowed on the insulated lines.

0.60mm thickness (Standard Wire Gauge 23) is suggested for towers, vessels and tanks, and it is recommended for pipelines and walkways when the diameter does not exceed 0.45m and where there is a risk of mechanical damage. This gauge may also be used over larger diameter pipes where risk of damage is slight.

Fire Resistive Backed Aluminium

Continued

0.80mm thickness (Standard Wire Gauge 21). This is advised for large (0.45m diameter) pipe insulation which is liable to be damaged mechanically, i.e. pipe tracks, and is suggested for special tank or vessel applications where design may call for extra thickness. The design engineer should vary the gauge to suit the specific requirements. These conditions could include 0.90mm (20swg), 1.0mm (19swg), 1.2mm (18swg), 1.5mm (16swg).

Physical, chemical & mechanical properties

Aluminium	
3003 (3S-NS3-AlMn)	
Density (grm/cc) at +20°C	2.73
Melting range	+640-655°C
Specific heat at 0°C uth/grm °C	0.22
Thermal expansion coefficient per °C between +20°C and +100°C	23 x 106
Thermal conductivity at 0°C th/cm/cm2.s. °C	0.38
Electrical resistivity at +20°C ohm. mm2/m	0.04
Reflectivity	80%
Emissivity	10%

Moisture Barrier
Aluminium Jacketing is supplied with a moisture barrier, which consists of 40-pound kraft paper coated with one-mil thick, low density polyethylene film, heat and pressure bonded to the interior surface. This moisture barrier prevents galvanic corrosion caused by contact of dissimilar metals in the presence of moisture, and chemical corrosion caused by installing sheets over damp insulation materials.

For increased galvanic and corrosion protection, three-mil polyethylene or Poly-Surlyn* moisture barriers are available.

Typical mechanical properties

		Tensile Strength	Yield Strength	Elongation in 2" (50mm)
H14 1/2 Hard	Ksi	22	21	8%
	Kg/mm2	15.5	14.8	8%
	Tons/sq"	10	9.5	8%
H16 3/4 Hard	Ksi	26	25	5%
	Kg/mm2	18.3	17.6	5%
	Tons/sq"	11.5	11	5%
H18 Hard	Ksi	29	27	4%
	Kg/mm2	20.4	19	4%
	Tons/sq"	13	12	4%

Above data based on the Aluminium Association Handbook 1988/1989. Polyethylene Kraft Paper moisture barrier 100% waterproof and chemically inert. Laminated to the aluminium without the use of glue or adhesives.

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Thermal Insulation Products

Aluzinc

BASE MATERIAL	Mild steel sheet to BS EN 10215 : 1995.
COATING	Hot dipped alloy coating (galvanising process).
COATING ANALYSIS	55% Aluminum. 43.4% Zinc. 1.6% Silicon (by weight)
COATING WEIGHT	150 or 185 gms of alloy per m2 equally distributed between both sides of sheet.
COATING THICKNESS	150gm coating = 20 microns (equivalent to 275 gms coating of zinc galvanised) 185gm coating = 25 microns (equivalent to 350 gms coating of zinc galvanised)
FINISH	Bright aluminum type, with predictably consistent small spangles. Stays bright throughout life.
FIRE RATING	Non-combustible BS476: Part 4; Class O.
CORROSION RESISTANCE	At least four times the corrosion resistance of zinc galvanised in most applications. Aluzinc is particularly good compared to galvanised in salt laden and/or polluted atmospheres.
HEAT RESISTANCE	Excellent heat resistance- will not change appearance until beyond 315 deg C. Can be used to much higher temperatures if "graying" is irrelevant.
EMISSIVITY	Emissivity figure 0.16 – when new.
UNSUITABLE COMBINATIONS	Basic atmospheres. Contact with more noble metals or their salts.
SALT WATER CORROSION	An Aluzinc sheet has withstood eighteen years of constant salt spray at Dungeness Power Station without red rust corrosion at any corner, edge or face.
LIFE EXPECTANCY TO FIRST MAINTANCE	More than 20 years in most environments and up to 50 years in the least corrosive atmospheres.
FABRICATION	Aluzinc is supplied in a variety of grades but even the most humble is fully lockforming grade. High strength grades as well as deep drawing grades are available.
"PAINTABILITY"	Aluzinc is very easy to paint. A particularly smooth surface is available. The pre-treatment is easier and more effective than zinc galvanised.
DIMENSIONS	Coils 50 kilos – 10 tonnes. Sheets 1 metre – 11 metres. Blanks – All sizes. Slit coil available.
THICKNESS	0.4mm thick to 2.0mm thick.
WIDTH	Standards – 1250mm and 1000mm. slit widths also available.
SHALLOW PROFILES	Coils, sheets and blanks can be supplied with a number of shallow profiles rolled into the sheet. These profiles serve aesthetic, stiffening and cost saving purposes. TRADITIONAL 'STUCCO' FINISH AVAILABLE.
PACKAGING	Sheet and coil substantially packed on refundable pallets.

Banding Tool IPS001

Banding Tool for use on stainless steel banding with widths of 3/16" up to 3/4", can be used on small diameter pipes where access is restricted.

- Tensioning capability of 2400 lbs with built in cutter
- Drop forged with spin tension handle
- Spring loaded gripper lever improves ease of use

Operating Instructions

1 Place the required banding around the object to be clamped and slide on the clip with the wings away from the operator, bend the band under the clip and slide again through the clip pulling as tight as possible by hand

2 Place the band through both the slot in the tool mouth and gripper jaw. Place thumb on gripper lever to ensure no sliding of tool on strap

3 Turn tool handle to apply tension, thumb may be removed once gripper jaw locks under tension. Tension band as required

4 Banding tool is rolled over clip, tension should be relieved by reversing tool handle approximately three quarters of a turn to avoid possible damage to strap

5 Pull cutter handle to cut band, place thumb on band while removing tool in order to avoid possible tension loss

6 Hammer the clip wings down to complete the clamp process

Banding Tool IPS002

Ratchet Tensioner Banding Tool for use on various banding with widths of 3/8" up to 3/4"

- Highly versatile pusher/windlass type tensioner with a cutter and a hammer knob for seal closing
- Used to apply stainless steel, galvanised, aluminium banding
- Designed for easy loading and removing of material
- Use with medium strength applications

Operating Instructions

See instructions overleaf.

INDUSTRIAL PROCUREMENT SOLUTIONS LIMITED

Thermal Insulation Products

Bitumen Tape 4-39 (Aluminium foil one side)

- HIGH TACK ADHESIVE
- 0.04 ALUMINIUM FOIL BACKING
- VARIOUS ROLL WIDTHS
- STANDARD ADHESIVE THICKNESS

This product has an extra thick adhesive layer (1.4mm) and is suitable for application on very irregular substrates.

The roll length is 10 metres, and is available in widths:

25mm	48 rolls per carton
38mm	32 rolls per carton
50mm	24 rolls per carton
75mm	16 rolls per carton
100mm	12 rolls per carton
150mm	8 rolls per carton
200mm	4 rolls per carton
225mm	4 rolls per carton
300mm	4 rolls per carton

Technical Data:

Adhesive	Modified Bitumen
Thickness (Total)	1.4mm
Thickness (Aluminium)	0.04mm
Temperature Range	-20ºC / +90ºC
Application Temperature	+4ºC
Breakpoint	-20ºC
Shelflife	Maximum 2 years
Storage Temperature	+5ºC / +35ºC

E-Glass Needled Matt & High Silica Needled Matt

Hi-Therm Needled Mat is made from 100% "E" glass mechanically needled mat with 6 or 9 micron fine filament yarn or texturized and twisted yarns without organic binders.

Hi-Therm Needled Mat is lightweight with flexibility easy to cut to made insulation covers and removable blankets.

Hi-Therm Needled Mat is low cost replacement of asbestos cloth or ceramic fibre blanket will not compact or shake down in application where vibration may be encoun- tered.

Hi-Therm Needled Mathas excellent thermal efficiency. Low chloride content will not initiate stress corrosion. Glass fibre does not absorb water and incombustible material.

Hi-Therm Needled Mat applications: insulation pads, cov- ers, removable blankets, turbines, flanges, ship building, aerospace insulation lining and nuclear insulation applica- tions.

We can also provide High Silica Needled Mat with Max. service Temp. up to 1000 Deg C
Hi-Therm High Silica Needles Mat made from silica fibreglass chopped strand through carding and needling process. Fibreglass randomly distributed in 3-D structure. It has properties of small needling hole and high porosity. It widely used as filtration and high temperature insulation material in coom, steel, nonferrous metal and chemical industry. It also used as acoustic, insulation, damping and fire resistant material in motorcycle and automobile industry.

PROPERTIES OF E-GLASS NEEDLED MAT

Density	100-220kg/m3
Fibre diameter	6 or 9 micron
Service temperature	650 Deg C (1202 Deg F)
Softening temperature	850 Deg C (1562 Deg F) Thermal
conductivity	0.0300KCAL/mhr Deg C (0.0349 W/mK)
Coefficient of Expansion	4.8 x 10 6 cm/cm/ Deg C
Tensile Strength	350kg/mm2 (498kpsi)

Fibreglass is an inorganic fibre completely incombustible

The Main Elements of E-type Fibre Glass (Weight)

SiO2	52-56%
Al2O3	12-16%
CaO	16-25%
MgO	0-6%
B2O3	8-13%
Na2O, K2O	0-0.8%
TiO2	0-0.4%
Fe2O3	0.05-0.4%

Noise Isolation Effect of Needled Mat

Frequency (Hz)	Noise Isolation Coefficient
125	0.32
250	0.76
500	0.94
1000	0.96
2000	0.95
4000	0.98

stant material in motorcycle and automobile industry.

Heat Insulation Effect of E-glass Needled Mat (density 200kg/m3)

Temperature (Deg C) Kcal/mhr	Deg C	Thermal Conducting Coefficient W/Mk
25	0.030	0.035
100	0.037	0.043
200	0.048	0.056
300	0.058	0.067
400	0.076	0.088
500	0.094	0.109
600	0.112	0.130

Specification of Silica Fibreglass Needled Mat Style

J-SNM1"	Thickness Mm
21-24	Width Cm
91.5-92	Weight g/m2
3660+360	Breaking strengthThermal Shrinkage %
<13.0	SiO2 Content
>96	

Wrap	Weft
>80	>40

Remark: Base mat test conditions of thermal shrinkage 980 deg C 30 minutes.

High Temperature Glass Cloth (1070grms)

Details

Base construction	5.0 ends per cm 3.0 picks per cm
Yarn count	ET9 1250 tex warp ET9 1250 tex weft
Weave type	Plain
Weight	1070 grms / m2
Fabric thickness	1.3 mm

Coating/Treatment Details
The cloth has been treated with a calcium silicate dispersion. For continuous use at temperatures up to 700oC.

Other information

Standard width	1000 mm
Standard roll lengths	50 mtrs
Colours	Beige or green

Monoweave Filament Tape

Description
A general purpose re-inforced mono directional tape featuring fibreglass strands laminated to a clear BOPP film and coated with a synthetic rubber resin adhesive (Hotmelt).

Technical Data

Backing thickness	0.028mm
Adhesive	Synthetic rubber
Thickness	0.118mm
Temperature resistance	0°C to
60°C Tensile strength	250N/cm
Steel adhesion	10N/cm
Colours	Clear (Natural)
Shelf Life	12 months

Neoprene Rubber Coated Glass Cloth (820grms)

Details

Base construction:	18.5 ends per cm 11.0 picks per cm
Yarn count:	136 tex warp 136 tex weft
Weave type:	4 end satin
Weight:	820 grms/m2
Fabric thickness:	0.40 mm

Coating/Treatment Details
Neoprene rubber coated - 200 grms per sq mtr on each side.

Colour: Black

Technical data
For continuous use at temperatures up to 150°C. Base cloth will withstand 550°C.

Other information
Standard width: 1000 mm, 1200mm, 1300mm Standard roll lengths: 50 mtrs

Welded Mesh, Pefporated Sheet & Expanded

We supply an extensive range of Welded Mesh, Perforated Sheet, and Expanded Metal in a wide range of sizes.

Available in Stainless Steel, Plain Steel and Aluminium.

All materials can be powder coated to customer's requirements.

Wire sizes:

0.80mm	21g
1.00mm	19g
1.60mm	16g
2.00mm	14g
2.30mm	13g
2.50mm	12g
3.15mm	10g
4.00mm	8g
5.00mm	6g
5.40mm	5g

Silica Cloth 96% Silica Content (1150grms)

Details

Base construction:	19 ends per cm 11picks per cm
Yarn count:	400 tex warp 400 tex weft
Weave type:	12 end satin
Weight:	1150 grms/m2
Fabric thickness:	1.30 mm

The cloth has an abrasion resistant treatment. Tensile strengths: > 6500N/5cm
> 3500N/5cm

Temperature resisitance: 1000°C
<10% shrinkage, tested at 900°C/4 hours

Other information
Standard width: 900 mm Standard roll lengths: 50 mtrs

Silica Cloth 96% Silica Content (620grms)

Details

Base construction:	18.8 ends per cm 13.3 picks per cm
Yarn count:	200 tex warp 200 tex weft
Weave type:	8 end satin
Weight:	620 grms/m2
Fabric thickness:	0.80 mm

The cloth has an abrasion resistant treatment. Tensile strengths: > 4000N/5cm
> 2000N/5cm

Temperature resisitance: 1000°C
<10% shrinkage, tested at 900°C/4 hours

Other information

Standard width: 900 mm Standard roll lengths: 50 mtrs

Silicone Rubber Coated Glass Cloth (480grms)

Details

Base construction:	18.5 ends per cm 11.0 picks per cm
Yarn count:	136 tex warp 136 tex weft
Weave type:	4 end satin
Weight:	480 grms/m2
Fabric thickness:	0.40mm

Silver Silicone Rubber Coated – 80 grms per sq mtr on one side. Meets BS476: Part 7: 1987 class 1 surface spread of flame.

Colours on request.

Temperature resisitance: For continuous use at temperatures up to 220°C. Short periods up to 250°C.

The base glass cloth will withstand 550°C

Other information

Standard width: 1200mm,
1300mm Standard roll lengths: 50 mtrs

Silicone Rubber Coated Glass Cloth (960grms)

Details

Base construction:	16.0 ends per cm 15.0 picks per cm
Yarn count:	204 tex warp 204 tex weft
Weave type:	Satin
Weight:	960 grms/m2

Silver Silicone Rubber Coated
150 grms per sq mtr on both

sides. Standard Colour: Red

The rubber withstands 240°C. The base glass cloth will withstand 550°C

Other information
Standard width: 1200mm,
1300mm Standard roll lengths: 50 mtrs

Banding

Insulation Banding is supplied in 3003/1050 Aluminium, 304/316 Stainless Steel, Galvanised Steel and Aluzinc in various widths and thicknesses, eg 9.5mm, 12.7mm, 25.4mm, 40.Omm and 50.8mm. Banding is supplied in catchweight coils varying between 15-25 kgs, or in coils 2kgs and 5kgs. (Subject to a decoiling charge).

Approximate mtr/kg are as follows:

SIZE	STAINLESS STEEL	ALUMINIUM
3/8" - 9.5mm x 0.5mm	25 mtr/kg	74 mtr/kg
1/2" - 12.7mm x 0.5mm	19 mtr/kg	57 mtr/kg
5/8" - 16.0mm x 0.5mm	16 mtr/kg	44 mtr/kg
3/4" - 19.0mm x 0.5mm	13 mtr/kg	37 mtr/kg
1" - 25.4mm x 0.9mm	6 mtr/kg	16 mtr/kg
1 5/8" - 40.0mm x 0.9mm	4.5 mtr/kg	10 mtr/kg
2" - 50.8mm x 0.9mm	2.7 mtr/kg	8 mtr/kg

Stainless Steel Jacketing

Description/Specification
Stainless Steel Roll Jacketing is manufactured from T304 and T316 prime grade Austentic stainless steel with regular 2B mill finish for flatness and reduced glare. The yield strength is 30,000/45,000PSI, the tensile 75,000/100,000PSI. For easy field fabrication, Stainless Steel Jacketing is supplied in the annealed or soft condition. T304 is normally used except in the most corrosive areas where T316 is justified. Both T304 and T316 Stainless Steel are described in ASTM A-240.

Stainless Steel Jacketing has a melting point of approximately 2500°F. Stainless Steel offers the best fire protection of all metals used for metal jacketing.

Thickness
.010", .016", .020", .024", 032", .040", .050"

Width & Description
Rolls and flat sheets 24" through 48", 1-1/4 and 2-1/2" deep corrugated sheets 33"; 4"x 1 " Box Rib - 28", 38- 1/2".

Finishes
Stainless Steel Jacketing is available in several finishes which include smooth, stucco embossed and in the lighter gauges, 3/16" corrugated. The stucco embossed finish on Stainless Steel Jacketing reduces glare from sunlight, adds strength, and has more potential for masking application fingerprints, scratches, dents and other minor surface blemishes.

Applications
The primary use of Stainless Steel sheet and jacketing is for hostile environments such as the pulp, paper, textile, refinery and Petro-Chemical applications.

Moisture Barrier
Stainless Steel Jacketing is supplied with a moisture barrier, which consists of 40-pound kraft paper coated with one-mil thick, low density polyethylene film,
heat and pressure bonded to the interior surface. This moisture barrier prevents galvanic corrosion caused by contact of dissimilar metals in the presence of moisture, and chemical corrosion caused by installing sheets over damp insulation materials.

For increased galvanic and corrosion protection, three- mil polyethylene or Poly-Surlyn* moisture barriers are available.

** Surlyn - DuPont trademark.*

Mighty Spring 19 (Compression Spring)

Application
19mm (3./4") x 0.5mm banding is fed through the back over the slots on one end of the flat bottom of the mighty spring. The banding is secured with a 19mm (3/4") wing seal and is extended around the object, or to the next spring, and the routine is repeated until the entire circumference has been encircled.

To accommodate expected expansion of the object, the number of mighty spring compression springs to be installed is based on a maximum compression of 11/2" per mighty spring. Install one mighty spring compression spring for every 7.5mtr of banding. When tensioning the strapping, compress each unit a total of 1/2" (1/4" for each half of the srping unit). Extreme care should be taken to assure that the spring compression and banding stresses are evenly distributed around the object.

Rivets

Standard measurement features of a blind rivet

D = Diameter of Rivet Body (Eyelet)
L = Length of Rivet Body (Eyelet)
K = Diameter of Flange
C = Flange Thickness

The common method of sizing is Diameter (D) x Length (L) eg 4.8 x 14

Rivets are supplied in Stainless Steel, Aluminium and BZP/Mild Steel.

Available styles are open type Blind, Multigrip, Sealed, Grooved and Peel.

The materials to be riveted only have to be reached from one side, which explains the term "Blind" riveting. The rivet is made of two parts namely, the body and the mandrel. The body is deformed when the rivet is set and it is this part, which clamps the materials together.

All our blind rivets conform to DIN7337.

Standard Blind Rivet Sizes:
Body Dia: 2.4mm to 6.4mm
Length: 4.0mm to 70.00mm
Grip Range: 0.5mm to 65mm

Flat Ulti-Spring 100 (Breather Spring)

Description
Ulti-Springs are to be used to accomodate the expansion and contraction of large diameter pipes, tanks, vessels, heat exchangers and equipment. The spring is to be used in conjunction with 19mm (3/4") banding. The spring is manufactured from T302 grade stainless steel with a tensile strength of 225,000 -275,000 PSI.

In all cases a 100mm spring shall be used for a maximum of every 15 metres of banding, each spring shall not be tensioned more than 65mm.

Feed band through Ulti-Spring and secure with wing seal.

Extend banding around equipment (or every 15 metres, whichever is less) and secure banding to the opposite of the Ulti-Spring with a wing seal.

Ulti-Spring measures 100mm in length.

Ulti-Spring is also available in 50mm and 120mm lengths to suit the necessary expansion required.

Wire & Wire Netting

Austenitic Stainless Steel tying wire is produced form grade 304 or 316 and is available in a range of diameters to suit individual applications. Usual wire thickness is 1.2mm, however 1.6mm may be required for tying very heavy reinforcement.

Stainless Steel tying wire is often used to eliminate rust staining associated with Carbon Steel Wire encroaching into the concrete cover.

Standard coil weight is 25kg.

CONVERSION TABLE

WIRE DIA	METERS/KG	KG/1000MTR	APPROX GUAGE
0.9mm	199	5.02	20
1.2mm	112	8.93	18
1.6mm	63	15.88	16

Also available in Galvanised coils half kg coils and 25 kg coils.

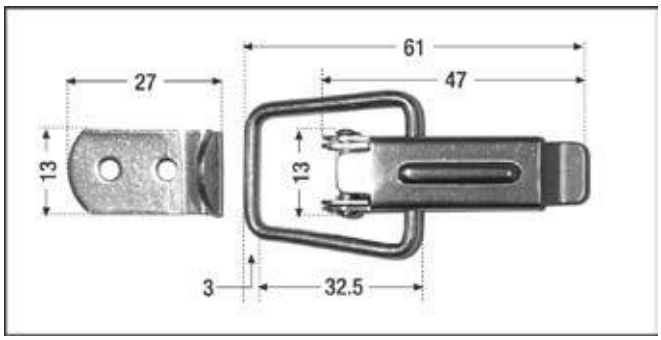
Wire netting is supplied in Stainless Steel and Hot dipped Galvanised in rolls of 10mtr, 25mtr and 50mtr. Various gauges and mesh sizes available.

HOT DIPPED GALVANISED WIRE NETTING – TO BS443			
SIZE	10 MTR ROLL	25 MTR ROLL	50 MTR ROLL
600mm x 13mm x 22G	•	•	•
600mm x 25mm x 20G	•	•	•
600mm x 50mm x 19G	•	•	•
900mm x 13mm x 22G	•	•	•
900mm x 19mm x 20G		•	
900mm x 19mm x 22G		•	
900mm x 25mm x 20G	•	•	•
900mm x 25mm x 22G		•	
900mm x 50mm x 19G	•	•	•
1200mm x 19mm x 22G		•	
1200mm x 19mm x 20G		•	
1200mm x 25mm x 20G	•	•	•
1200mm x 50mm x 19G	•	•	•
1800mm x 25mm x 20G		•	
1800mm x 50mm x 19G		•	
STAINLESS STEEL WIRE NETTING			
900mm x 25mm x 20G			•
900mm x 25mm x 22G			•

Toggle & Hook Type F1

Small toggle fastener ideal for securement of removable bands.

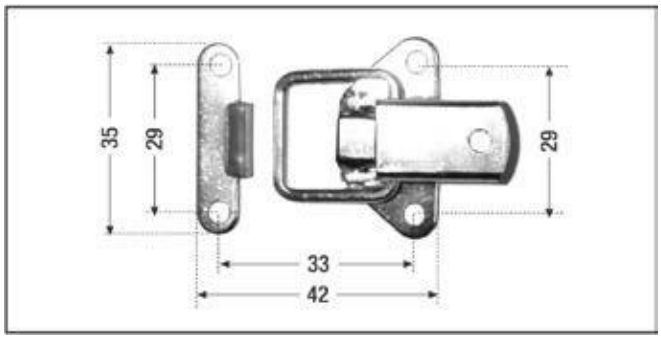
Available in 304 stainless steel and zinc plated mild steel.



dimensions in mms

Toggle & Hook Type F2

Small toggle fastener designed to be used on flange and valve boxes.



Available in 304/316 stainless steel, zinc plated mild steel and aluminium.

dimensions in mms

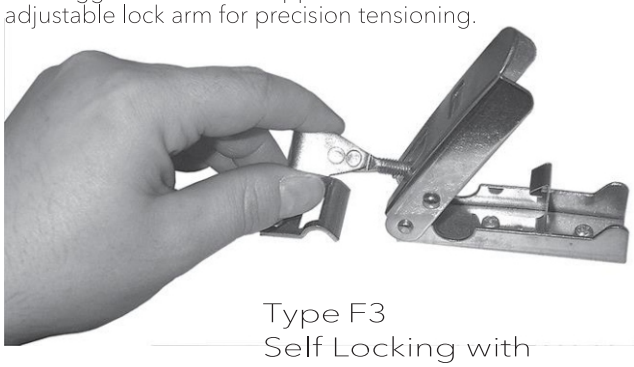
Toggle & Hook Type F3

Similar to the F1 for the securement of wider bands as well as other applications.

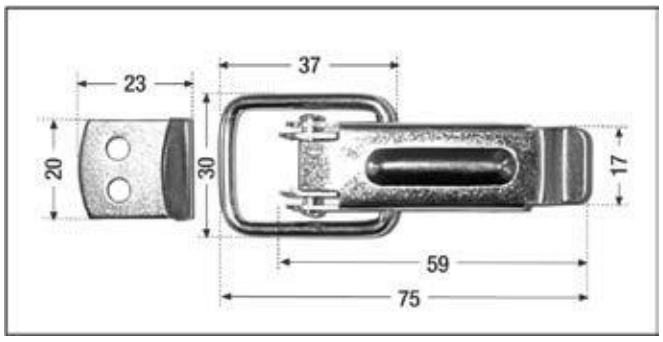
Available in 304 stainless steel, zinc plated mild steel and aluminium.

Also available as a self locking toggle in stainless steel and zinc.

This toggle can also be supplied with an adjustable lock arm for precision tensioning.



Type F3
Self Locking with adjustable lock arm.

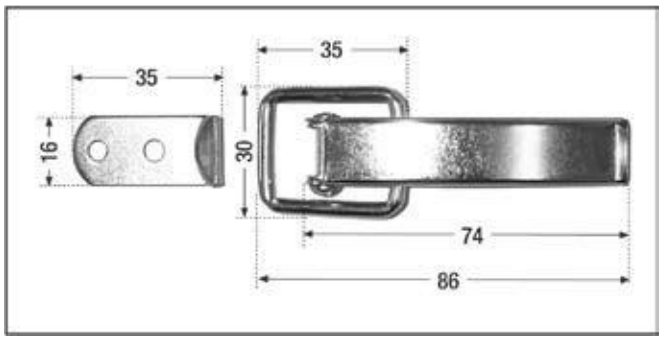


dimensions in mms

Toggle & Hook Type F5

A toggle for larger valve and flange boxes as well as the securement of bands and large diameter pipes.

Available in 304 stainless steel, zinc plated mild steel and aluminium.



dimensions in mms

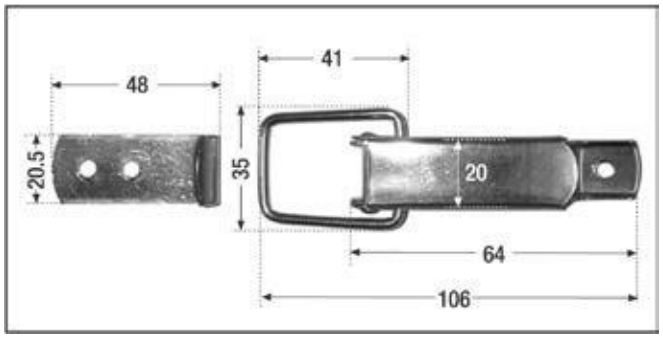
Toggle & Hook Type F6

Similar to the F3 toggle but with a longer buckle for greater pull-up.

Available in 304 stainless steel and zinc plated mild steel.

Also available as a self locking toggle.

Type F6
Self Locking

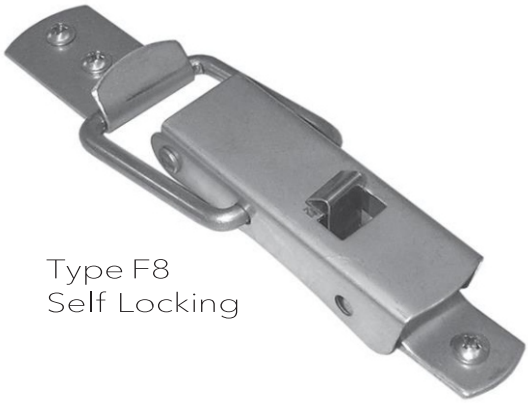


dimensions in mms

Toggle & Hook Type F8

A heavy duty toggle suitable for all types of securement.

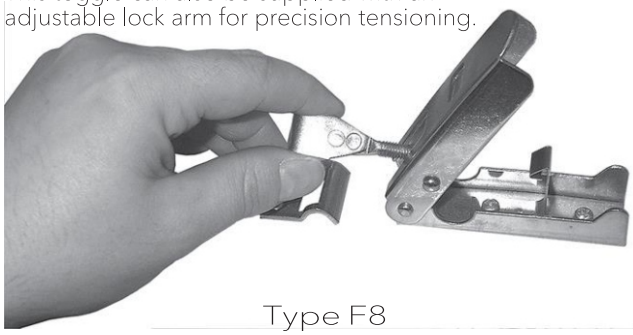
Available in 304 stainless steel, zinc plated mild steel and aluminium.



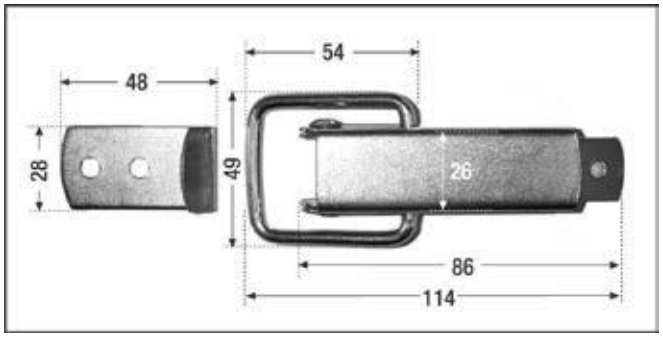
Type F8
Self Locking

Also available as a self locking toggle in stainless steel and zinc.

This toggle can also be supplied with an adjustable lock arm for precision tensioning.



Type F8
Self Locking with
adjustable lock arm.



dimensions in mms

Toggle & Hook Type F15

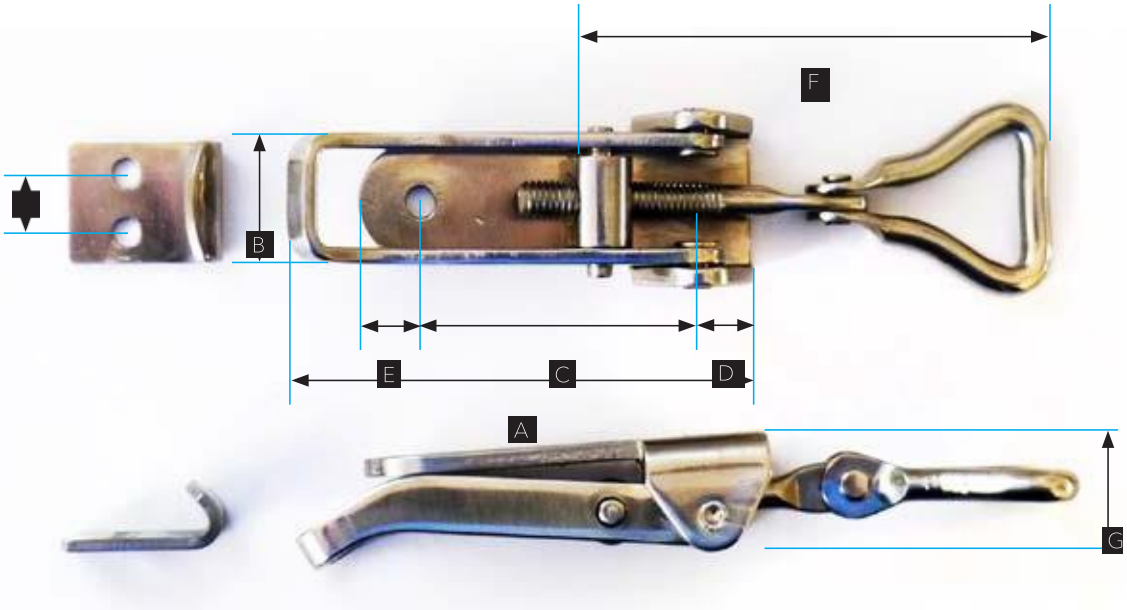
A heavy duty adjustable toggle and hook suitable for a wide range of uses.

Operated by hand and are quick and easy to use.

Draw length adjustable through turns of threaded draw rod giving 23mm length of adjustment.

SPECIFICATION:

- A 70MM
- B 20MM
- C 43MM
- D 8MM
- E 8MM
- F 60-83MM
- G 18MM
- H 10MM



Wing Seals

Insulation banding (wing) seals to suit the fastening of banding for pipe or cladding.

Available material:
> Stainless steel 304/316
> Aluminium 1050/3003
> Aluzinc
> Galvanised steel

Available sizes:
> 1/2" (12.7mm)
> 5/8" (16mm)
> 3/4" (19mm)
> 1" (25.4mm)
> 1 5/8" (40mm)
> 2" (50.8mm)

Available thicknesses:
> 0.5mm
> 0.8mm
> 1.0mm
> 1.2mm

Closed seals and buckle seals are available on request.

Stainless Steel 316 Grade

Type 316 is an austenitic chromium nickel stainless steel containing molybdenum. This addition increases general corrosion resistance, improves resistance to pitting from chloride ion solutions, and provides increased strength at elevated temperatures. Properties are similar to those of type 304 except that this alloy is somewhat stronger at elevated temperatures. Corrosion resistance is improved, particularly against sulphuric, hydrochloric, acetic, formic and tartaric acids, acid sulphates and alkaline chlorides.

Typical uses include exhaust manifolds, furnace parts, heat exchangers, jet engine, pharmaceutical equipment, valve and pump trim, chemical equipment, digesters, tanks, evaporators, pulp, paper and textile processing equipment, parts exposed to marine atmospheres and tubing.

Composition

Carbon	0.08 % max
Manganese	2.00 % max
Phosphorus	0.045 %
max Sulfur	0.030 %
max	
Silicon	0.75 % max
Chronium	16.00 % - 18.00
%	
Nickel	10.00 % - 14.00 %
Molybdenum	2.00 % -
3.00 % Nitrogen	0.10 %
max	
Iron	Balance

Mechanical Properties

	UTS Ksi (MPa)	0.2% YS ksi (MPa)	Elongation % in 2" (50.8 mm)	Hardness Rockwell
Type 316	84 (579)	42 (290)	50	B79

Specifications
Type 316 AMS 5524, ASTM A240, ASTM A666

Physical Properties
Density : 0.29 lbs/in3 / 7.99 g/cm3

Corrosion Resistance
These steels exhibit excellent pitting resistance to a wide range of atmospheric, chemical, textile, petroleum and food industry exposures.

Formability
Type 316 can be readily formed and drawn.

Screw & EPDM/Neoprene Washer

A self-tapping screw is a screw that can tap its own hole as it is driven into the material.

For hard substrates such as metal or hard plastics, the self-tapping ability is often created by cutting a gap in the continuity of the thread on the screw, generating a flute and cutting edge similar to those on a tap. Thus, whereas a regular machine screw cannot tap its own hole in a metal substrate, a self-tapping one can (within reasonable limits of substrate hardness and depth).

EPDM/Neoprene washers are excellent in resisting ozone, many chemicals, and oxidation as well as having a good temperature prevail and are therefore used in numerous weathering sealing applications.

Furthermore, Neoprene washers perform well when used in applications where oils are present as well in various construction applications where sealing with a high tensile strength and low compression set material is of paramount importance.

SELF TAPPING SCREWS - DIN 7971 PANHEAD SLOTTED & DIN 7981 PANHEAD POZI							
DIAMETER INCH	LENGTH MM	NO 4 2.9	NO 6 3.5	NO 8 4.2	NO 10 4.8	NO 12 5.5	NO 14 6.3
1/4"	6.5	✔	✔				
3/8"	9.5	✔	✔	✔	✔		
1/2"	13	✔	✔	✔	✔	✔	
5/8"	16	✔	✔	✔	✔	✔	
3/4"	19	✔	✔	✔	✔	✔	✔
7/8"	22		✔	✔	✔	✔	
1"	25	✔	✔	✔	✔	✔	✔
1 1/4"	32		✔	✔	✔	✔	✔
1 1/2"	38		✔	✔	✔	✔	✔
1 3/4"	45			✔	✔	✔	
2"	50			✔	✔	✔	✔

Vapour Clad Foil Barrier Jacketing

Construction
5 ply, UV coat
Aluminum/Polyester/Aluminum/Polyester/
Aluminum laminate with pressure sensitive adhesive and release paper liner.

Feature
Vapor Clad is a peel off and self adhesive design requiring no additional mastics or adhesives to create a seal. It is an advanced and economical alternative insulation for replacement of mastics, glass fiber cloth, butyl sheeting, and other types of insulation materials. Its excellent weathering properties make it for both indoor & outdoor applications.

Vapor Clad installs easily and fast, which eliminates the needs for expensive off-site fabrication. An adhesive taped product requires no screws, velvets or sealants, reducing the possibility of human error and repair.

It is lightweight, flexible and easy to cut without special tools, allowing for low labor cost. Multi-layer laminated construction provides resistance to absolute moisture ingress and other harsh environmental conditions. Vapor Clad can be used over most types of thermal insulation including cellular glass, polyurethane, polyisocyanurate, polystyrene and rigid fibrous.

Available width: *0.5m, 23", 35.5", 1m, and 46" for smooth and embossed finish*

Color: *Silver and white*

Property	*Typical Values (English)*	*Typical Values (Metric)*
Material Thickness	*6.2 mil – Smooth*	*157 µm*
Without liner	*10 mil - Emboss*	*254 µm*
Self Seal Peel Adhesion	*120 oz/in*	*34.10 N/25mm*
Peel Adhesion to Steel	*100 oz/in*	*28.40 N/25mm*
Adhesive Shear Strength	*>100 hours @2.2 psi*	*>100 hours @15.2 kPa*
Tensile Strength	*70 lbs/in*	*318 N/25mm*
Tear Strength	*9.7 lbsf*	*4.4 kgf*
Bursting Strength	*100 lbs/in*	*454 N/25mm*
Puncture Resistance	*47.50 lbs*	*216 N*
Elongation	*116%*	*116%*
Water Vapor Transmission	*0.00 perm*	*0.00 ng/m2 ASA PA*
Application Temperature Range	*-40°F to + 300°F*	*-40°C to +150°C*
Flame/Smoke Fire Rating	*<25/50, Class 1/Class A*	*<25/50, Class 1/Class A*
Mold and Mildew Resistance	*No growth of organisms*	*No growth of organisms*

Vapour Stop Foil & Vapour Stop Tape

VAPOUR STOP FOIL

Description
Vapour Stop Foil is a three layer lamination of Polyester film/Aluminium foil/Polyester film in very thin gauges, specially designed as vapour barrier in thermal insulations. Vapour Stop Foil combines the excellent vapour barrier properties of aluminium to the outstanding mechanical, chemical and thermal characteristics of polyester film, thus giving an ideal, flexible and efficient barrier material suitable for outdoor use.

Vapour Stop Foils typical construction:

Polyester film 12 microns

thick Aluminium foil 25

microns thick Polyester film

12 microns thick

Physical Properties	
Specific Gravity	2.2 kg/dm3
Weight	110 g/m2
Tensile Strength MD	8.30kg/15x100
m Tensile Strength TD kg/15x100m	10
Elongation MD	54%
Elongation TD	58%
Friction film/film	0.45 Kinetic
Elmendorf MD	400g/mm
Elmendorf TD	700g/mm

Chemical Properties	
Humidity absorption	<0.3%
Steam permeability	0.000001 g/h m2
mmHg Fungus resistance	No attack

Thermal Properties	
Melting point (polyester)	250/265 degrees C
Temperature resistance	-80/+150 degrees C

VAPOUR STOP TAPE

Description
Vapour Stop Tape water vapour barrier tape is a three layer lamination of polyester film, aluminium foil/ polyester/acrylic adhesive.

Uses
To seal the joints of Vapour Stop and other aluminium foil facings on insulation board, segments, pipe sections, etc. or as a wrap around, protective barrier on insulated piping and bends.

Vapour Stop is used primarily in cold/cryogenic insulation systems, to prevent the ingress of moisture into the insulation.

Vapour Stop combines the excellent vapour barrier properties of aluminium with the outstanding mechanical and thermal characteristics of polyester film, giving
and ideal, strong, flexible and efficient barrier material, suitable for outdoor use.

Technical Data	
Colour	Aluminium
Thickness foil	0.03mm
Thickness pet	0.023mm
Total thickness	0.10mm
Adhesion	Acrylic
Adhesion power	1750 gr/25mm
Tensile strength	12.5 kg/25mm
Elongation	54-58%
Moisture vapour permeability	0.02 gr/m2
-24h Temperature resistance	-
80°C/+150°C Roll dimensions length	50mtr
Roll dimensions widths	50mm, 75mm (alternative dimension available on request)
Packing	24 rolls x 50mm per carton 16 rolls x 75mm per carton

supros

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