

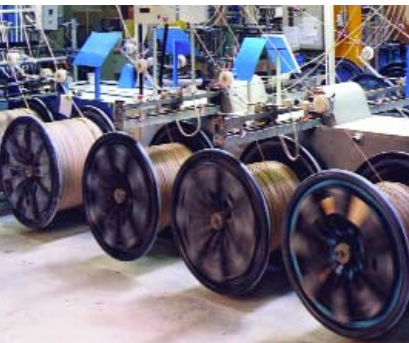


biw

*When it comes
to glassfibre*

CABLE PROTECTION SYSTEMS

QUALITY IN GLASS-FIBRE



Expertise. Innovation. Flexibility. These are the three properties which have made BIW a leading company for all aspects of the production of top quality protective sleeves, tapes and seals made of glass-fibre, together with alternative cable protection systems. Success in the market is a result of a consistent quality policy with continuous improvement as an integral component of the management strategy. This includes both on-going managerial optimisation and regular organisational and technical verification and improvement of all steps in the process chain.

Thanks to its many years of know-how with elastomers together with the necessary flexibility, BIW is in a position to react promptly to new market requirements at all times. The rapid changes and differing demands made by customers present BIW's experts with new challenges every day, which they gladly take up. This guarantees that the company is always up-to-date and that customers are provided with state-of-the-art technology.

Regardless whether standard articles or special products are concerned, BIW provides customers with products and solutions which are tailor-made to their every requirement.

Modern machinery and up-to-date material and production know-how, together with highly motivated and excellently trained staff, are the vital ingredients in BIW's production process. The whole process chain from the raw material through to the finished end product is actually performed "in-house" in order to assure a constantly high standard of quality throughout all stages of the production process. These factors combine to produce a crucial advantage over competitors.

BIW's special production expertise has made the company a reliable problem-solving partner for customers who are satisfied in every respect.



GLASS-FIBRE: A VERY SPECIAL MATERIAL

The production and processing of glass fibre combines the technologies of the textiles, chemical and glass processing industries. The filaments drawn at about 1,250°C are treated with a watery dispersion or "sizing". This ensures that the glassy fibres acquire the necessary properties required for further processing. The sizing gives the filaments used at BIW not only the necessary suppleness and wear-resistance for braiding and knitting, but also determines the ability to bond with the coating materials such as silicone or acrylic.

The individual filaments are wound with a defined number of revolutions in the stipulated direction to produce yarns, which are processed at BIW primarily by knitting procedures. Braided articles on the other hand are best produced using textile glass twine consisting of two or three yarns twisted together. Only E glass-fibres are used for this purpose, sleeve excellent qualities include high temperature resistance and good mechanical stability, making them ideal in particular for electrical insulation.

Textile processing technology at BIW naturally also allows for the use of other filaments and fibres, such as

- Aramide (carbon fibre) for improved tensile strength with minimum stretch
- Basalt fibre or quartz glass for increased temperature requirements
- Polyester or polyamide (PA6.6) for high wear-resistance with high dynamic loadability

As the main material used for braided and knitted applications, glass-fibre has the following advantages:

- high mechanical strength (specific strength = tensile strength/density is greater in glass-fibre than in steel)
- temperature resistance (high temperature to more than +500°C)
- fire-resistance (as mineral material, glass-fibre is non-flammable)
- electrical properties (glass-fibre has excellent insulation properties even in only slight material thicknesses)

- dimensional stability (the low thermal expansion coefficient minimises the effects of fluctuating temperature and humidity levels)
- low thermal conductivity (prevents thermal bridges and ensures a high temperature delta)
- good chemical resistance and almost no ageing
- compatibility with organic materials (the use of different kinds of sizing makes it ideal for combination with elastomers such as silicone, acrylic and PU)
- no environmental hazard, no water hazard
- not toxic, not carcinogenic and not respirable.



INDIVIDUALITY AND VARIETY



At BIW, various glass yarns and twines are processed by textile glass technology to produce sleeves, cords, tapes and seals used in many different branches. As an alternative to braiding machines, today modern knitting machines are used so that there are practically no limits to the kind of construction. The range insulating and protection sleeves is increased even further with various techniques and materials being used for impregnating, coating and sheathing the fibre structure.

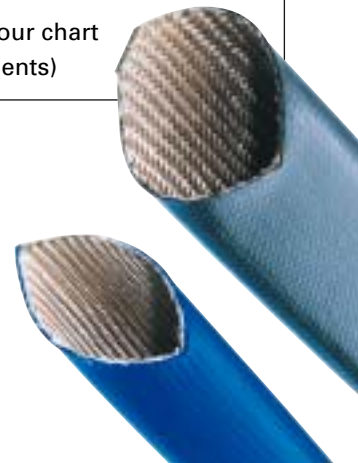
Together with treatment in the liquid phase (soaking, impregnating), BIW also uses extrusion to produce a unique solid rubber coating with elastomers. The standard program also includes wrapping with metallic foils among others to produce a firm material bond.

Customised production is safeguarded by the wide range of available techniques and materials. Talk to our experts and our technology centre.



BIW PROTECTIVE SLEEVES: GENERAL TECHNICAL INFORMATION

<p>Dimension</p>	<ul style="list-style-type: none"> - Inner diameter (ID) from 0.5 to 60 mm - Stated in nominal widths [mm] or [in] and using the AWG nomenclature - Tolerances approx. $\pm 5\%$ of ID, as per AWG or on request - Wall thicknesses 0.5 to 2.5 mm; with foam coating up to 3.0 ± 0.5 mm - Special versions on request
<p>Finish</p>	<ul style="list-style-type: none"> - Continuous lengths rolled to a ring; standard 25/50/100/200 m ring depending on ID - from ID > 40 mm in 5m lengths - Cut to customised lengths - No fraying when cut to length - On request, the ends can also be impregnated to prevent fraying
<p>Availability</p>	<ul style="list-style-type: none"> - All articles in customised production - Competitive standard delivery times - Sufficient capacities available for large quantities and short-notice demand; raw materials are organised for minimum stocks - Some standard types available ex stocks; see our website: www.biw.de
<p>Standards/Specifications</p>	<ul style="list-style-type: none"> - BIW develops and produces according to ISO/TS 16949 according to customer specifications; among others, BIW protective sleeves are already produced according to the following customer standards and specifications: IEC 684/EN 60684, VW 75151, VW 2.8.1, TL 1010, Audi WSK 013 250, SAE J369, SAE J1128, SAE ARP 1536, Delphi M4613, Delphi M3558, Ford SJM-99D9720A, Bosch N28 NS05 S., Bosch 5 637 1... .., Boch 5 997 851 ..., UL 1441 File E-165094 with "Yellow Card", UL 94 V0, JIS C2411 Class 1, FAR 25.853, ATS 1000 and other material standards such as BGVV, FDA, DVGW etc.
<p>Ecology</p>	<ul style="list-style-type: none"> - BIW protective sleeves are: · not a water hazard and not an environment hazard · free of asbestos and not carcinogenic · free of solvents · suitable for incineration or landfill disposal · IMDS-listed as per EU used car directive (Directive 2000/53/EC & 2002/525/EC)
<p>Qualities</p>	<ul style="list-style-type: none"> - Excellent chemical resistance, including: salt spray mist, cleaning agents, diesel and other fuels as well as weak acids and alkalis - Thermal stability for standard products -40 to +200°C, for special products to over 600°C - Practically non-flammable and self-extinguishing qualities as per UL possible - Insulation classes as per VDE: B, F, H and C - High dielectric strengths to more than 8 kV on request - Wide ranges can be coloured as required according to RAL colour chart - Individual qualities available on request (to customer requirements)



TECHNICAL EXPERTISE AND A PROFESSIONAL APPROACH



Whereas knitting uses different knitting heads to define the diameter of a sleeve, in braiding it is the number of bobbins per braiding machine that counts. For this purpose, first the glass fibre has to be rewound onto corresponding machines..

Together with the filament and yarn thickness, it is also possible to vary the braiding angle to obtain differing stretching ability of the sleeve. Finished highly flexible (ultra-flex) sleeves can be stretched in diameter to more than twice the original dimension.

As there are only few applications in the electrical industry for "raw" glass-fibre protection and insulation sleeves, BIW offers a wide range of pre- and post-treatment procedures, such as de-sizing, soaking, impregnating, coating and sheathing.

One special aspect here is the textile pre-treatment procedure developed and refined here at BIW, which not only desizes and pre-impregnates the glass-fibre sleeve but also brings it to the required stability and roundness. This so-called pre-rounding process makes handling much easier for the subsequent final user thanks to sleeve stability and roundness for fast assembly with cables and conductors.

Sleeves produced in continuous lengths are frequently treated in tower furnaces with impregnating baths or impregnating heads, using liquid silicone (LSR – Liquid Silicone Rubber), silicone resin (emulsion), acrylic or polyurethane.



On the other hand, one specific BIW peculiarity is extrusion coating with high-viscosity elastomers using cross head extruders and downstream heating zones for fast vulcanisation. The high-temperature vulcanising silicone rubber (HTV) used here together with the glass-fibre guarantees the outstanding properties of the BIW quality products which are so successfully established on the market:

- High elasticity and flexibility
- Pronounced stretching ability
- Unique resilience
- Constantly high dielectric strength
- Smooth, uniform surface with no smears and no pimples
- Slightly talcumed "lubricated" cover layer (anti "frog" effect)
- Firm cutting version

The silicone coating mixture which is used is produced by BIW's own compounding process, for optimisation of the protective sleeve according to the specific requirements. Compounds are used which satisfy the very toughest demands. Basically the coating procedure is capable of producing the same outstanding properties of silicone as classical extrusion or injection moulding.

Another advantage of glass-fibre as material for electrical protection insulation is its "vitrification" effect on overheating. As a result, no conductive carbon residues are left over but instead, an insulating glass rod which still offers adequate emergency insulation in static state. For such extreme situations, the glass fibre is coated with ceramifying types of silicone.

The continuous coated sleeves undergo 100% manual final control on rolling stations to guarantee the high standard of quality; at the same time they are tied into rings for simple handling.

Finally, cutting, chopping and slicing machines together with other special equipment also allow BIW to supply the customer with the products in a finally assembled state, which is the best solution for optimum further processing.



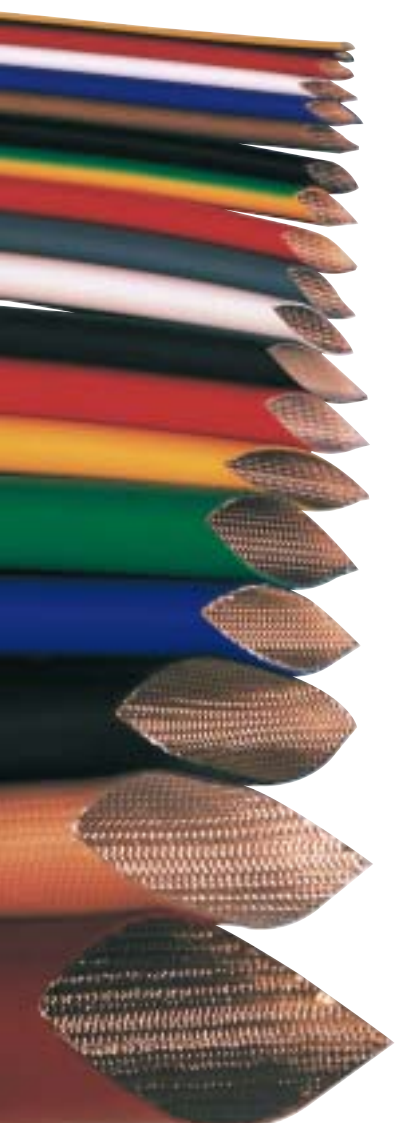
BIW CABLE PROTECTION SYSTEMS - AN OVERVIEW

Textile material	Structure	Impregnation/coating	Product name	Function/properties	
Glass-fibre Textile glass (E glass)	braided, standard	raw	Isotex raw	mechanical protection, binding	
		impregnated with silicone resin	Isotex RI	mechan./thermal protection, non-fraying	
		impregnated with silicone rubber	Isotex SI	mechan./thermal protection, non-fraying	
		coated with silicone rubber	Isotex	mechan./thermal protection, smooth surface, round, slightly talcumed, "electrical insulating sleeve"	
		coated with LSR	Isotex L	mechanical/thermal protection	
		coated with silicone foam	Isotex F	mechanical/thermal/rattling protection	
		coated with silicone/aluminium	Isotex 300R	mechanical/special thermal protection	
		coated with LSR/aluminium	Isotex L 300R	mechanical/special thermal protection	
		impregnated with SI-resin/alum.	Thermotex 650 R	mechan./significant thermal protection	
		laminated with aluminium	Alutex	thermal radiation protection	
	impregnated with acrylic	Acrytex	fuel-resistant mechanical protection		
	coated with PU varnish	Polytex	electrical insulating sleeve		
	braided, with radial stretch, highly versatile for cable assembly	coated with silicone rubber	Ultraflex	mechanical/thermal protection, smooth surface, round, slightly talcumed	
		impregnated with silicone rubber	Ultraflex SI	mechan./thermal protection, non-fraying	
		coated with LSR	Ultraflex L	mechanical/thermal protection	
		coated with silicone/aluminium	Ultraflex 300R	mechanical/special thermal protection	
		coated with LSR/aluminium	Ultraflex L 300R	mechanical/special thermal protection	
		impregnated with SI-resin/alum.	Ultraflex 650R	mechan./significant thermal protection	
	braided, thick-walled, good thermal insulation	raw	Thermoflex raw	mechanical/thermal protection	
		coated with silicone rubber	Thermoflex	mechanical/thermal protection, smooth surface, round, slightly talcumed	
		coated with silicone foam	Thermoflex F	mechanical/thermal/rattling protection	
		coated with silicone/aluminium	Thermoflex 300R	mechanical/special thermal protection	
		impregnated with SI-resin/alum. laminated with aluminium	Thermoflex 650R Alutex thermo	mechan./significant thermal protection thermal radiation protection	
	knitted	coated with silicone rubber	Isoflex	mechanical/thermal protection, uniform surface, round, slightly talcumed	
		coated with LSR	Isoflex L	mechanical/thermal protection	
		coated with silicone foam	Isoflex F	mechanical/thermal/rattling protection	
		coated with silicone/aluminium	Isoflex 300R	mechanical/special thermal protection	
		coated with LSR/aluminium	Isoflex L 300R	mechanical/special thermal protection	
	woven, punched, with push-buttons and/or sewn	laminated with aluminium	Alubag	thermal radiation protection with individual finish	
	Polyester	braided, multi-filament	raw	PET-Tex	mechanical protection
			raw, flame-retardant	PET-Tex FR	mechan. prot., practically non-flammable
			impregnated with acrylic	Peatex	fuel-resistant, mechanical protection
		braided, monofilament	raw	Expandex PET	cable and lead harnesses, mechanical protection
Polyamid 6.6	braided, monofilament	raw	Expandex 66	cable and lead harnesses, mechanical protection	
Aramide	knitted, high tensile strength	raw	Aratex	mechanical protection, bindings	
		impregnated with silicone rubber	Aratex SI	mechan./thermal protection, non-fraying	
		impregnated with acrylic	Aralon	fuel-resistant, mechanical protection	

	Dimensions	Temperature * resistance	Colour	IMDS- Code	Product photos – examples:	
	0.5 - 60 mm Ø	-40 to +350°C	white	GRO	 <p>Isotex RI</p>	 <p>Isotex</p>
	0.5 - 60 mm Ø	-40 to +350°C	natural, black	GSH		
	0.5 - 60 mm Ø	-40 to +220°C	natural, black	GSH		
	0.5 - 60 mm Ø	-40 to +300°C	any	GS		
	0.5 - 60 mm Ø	-40 to +250°C	any	GSL	 <p>Thermotex 650R</p>	 <p>Alutex</p>
	0.5 - 60 mm Ø	-40 to +280°C	any	GS		
	0.5 - 60 mm Ø	-40 to +330°C	silver-grey	GS		
	0.5 - 60 mm Ø	-40 to +300°C	silver-grey	GSL		
	0.5 - 60 mm Ø	-40 to +650°C	silver-grey	GSH		
	10 - 60 mm Ø	-40 to +600°C	silver	GRA		
	0.5 - 60 mm Ø	-40 to +200°C	black	GSA		
	0.5 - 14 mm Ø	-20 to +155°C	any	GP		
	0.5 - 60 mm Ø	-40 to +300°C	any	GS	 <p>Ultraflex</p>	 <p>Ultraflex 300R</p>
	0.5 - 60 mm Ø	-40 to +220°C	natural, black	GSL		
	0.5 - 60 mm Ø	-40 to +250°C	any	GSL		
	0.5 - 60 mm Ø	-40 to +330°C	silver-grey	GS		
	0.5 - 60 mm Ø	-40 to +300°C	silver-grey	GSL		
	0.5 - 60 mm Ø	-40 to +650°C	silver-grey	GS		
	4 - 60 mm Ø	-40 to +350°C	white	GRO	 <p>Thermoflex</p>	 <p>Thermoflex 300R</p>
	4 - 60 mm Ø	-40 to +300°C	any	GS		
	4 - 60 mm Ø	-40 to +280°C	any	GS		
	4 - 60 mm Ø	-40 to +330°C	silver-grey	GS		
	4 - 60 mm Ø	-40 to +650°C	silver-grey	GS		
	10 - 60 mm Ø	-40 to +600°C	silver	GRA		
	4 - 30 mm Ø	-40 to +300°C	any	GS	 <p>Isoflex F</p>	 <p>Alubag</p>
	4 - 30 mm Ø	-40 to +250°C	any	GSL		
	4 - 30 mm Ø	-40 to +280°C	any	GS		
	4 - 30 mm Ø	-40 to +330°C	silver-grey	GS		
	4 - 30 mm Ø	-40 to +300°C	silver-grey	GSL		
	Width: up to 300 mm Length: up to 600 mm	-40 to +600°C	silver	ALB		
	3 - 40 mm Ø	-40 to +180°C	black	PSS	 <p>Pet-Tex FR</p>	 <p>Expandex PET</p>
	3 - 40 mm Ø	-40 to +180°C	black	PSS		
	3 - 40 mm Ø	-40 to +200°C	black	PSA		
	3 - 40 mm Ø	-40 to +180°C	black	PSS		
	3 - 40 mm Ø	-40 to +180°C	black	PAS	 <p>Aratex</p>	 <p>Aralon</p>
	5 - 20 mm Ø	-40 to +350°C	dark yellow	ARA		
	5 - 20 mm Ø	-40 to +220°C	dark yellow	ARA		
	5 - 20 mm Ø	-40 to +200°C	black	ARA		

* The application temperature in some applications corresponds to the surface temperature of neighbouring surfaces (e.g. Alutex).

GLASS-FIBRE CABLE PROTECTION SYSTEMS

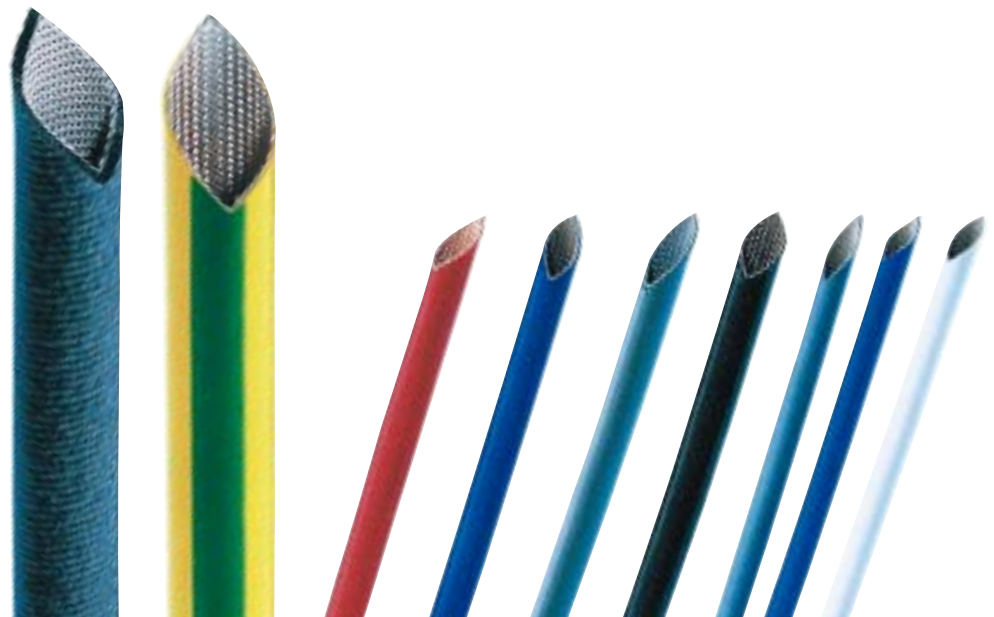


Silicone-coated glass-fibre sleeves have become indispensable particularly in the production of cable harnesses for the automotive industry. Together with its advantages of highly flexible mechanical and thermal protection against buckling, wear and heat as well as the electrical properties, it is above all the extraordinary quality level and competitive value for money that convinces customers.

The outstanding features of BIW sleeves include their smooth, firm inner walls so that individual strands of cables can be pushed through quickly and easily during manufacture. The even, non-adhesive surface also contributes to easy and therefore low-cost handling, and prevents materials from sticking together.

Another advantage of silicone-coated BIW sleeves is the elastic force (spring effect) which plays a vital role in installation and subsequent insulation of the electrical connections.

As insulating sleeves, glass-fibre silicone sleeves can basically be equipped with any high dielectric strength, with 4 kW being the standard. A classical use for these products is the domestic appliance industry where high temperature resistance is just as important as good dielectric strength. On the other hand, high abrasion resistance and the anti-adhesion effect of the coating are very important when used for roller coverings, for example in continuous furnaces. In motor construction primarily acrylic or PU coated glass-fibre sleeves are used which produce an outstanding compound with impregnating resins.



UV-hardening systems allow for the use of solvent-free varnishes and ensure that the manufacturing process is environment-friendly.

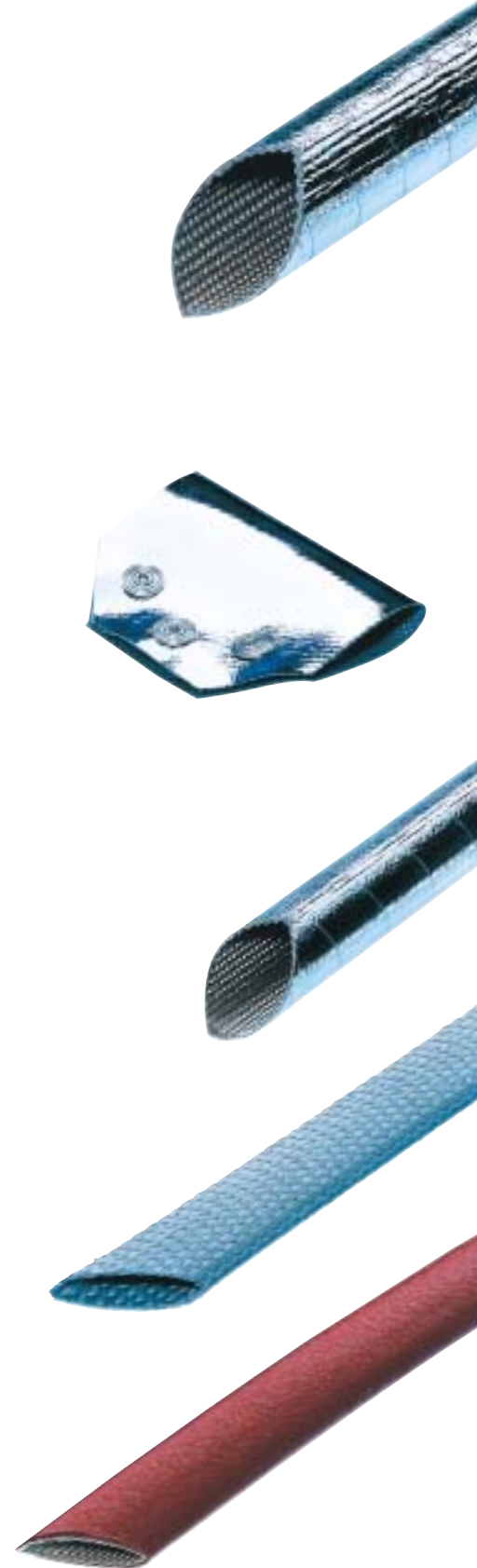
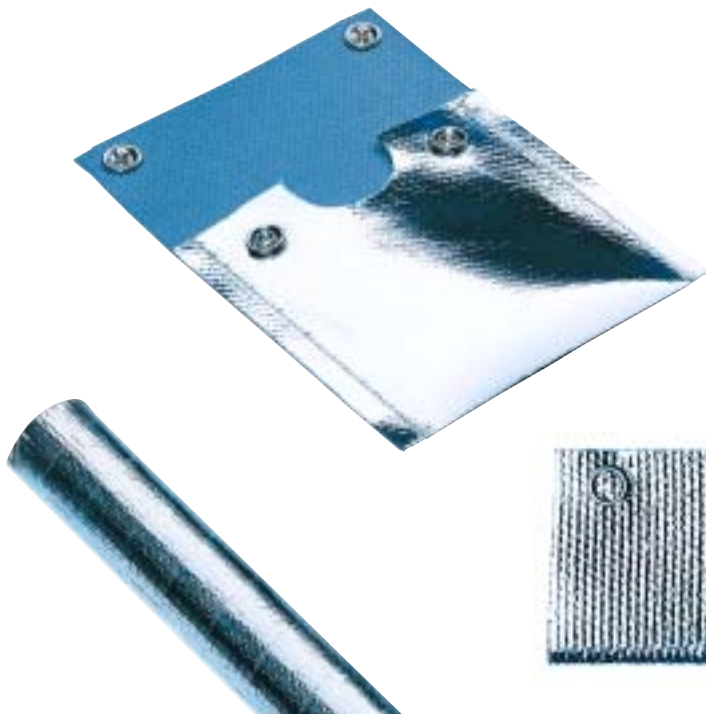
The main use for treated textile protective sleeves is cable assembly in the automotive industry, where not only top quality requirements must be met: in addition the products must be easily handled on the assembly line and offer competitive value for money on the world market.

Whereas in the engine room and around the exhaust system silicone is used as coating because of its temperature resistance properties, acrylic polymer solutions are used for the electronic control of diesel pumps thanks to the outstanding oil and diesel fuel resistance. BIW offers aluminium-

laminated glass-fibre sleeves for areas with extreme radiation heat as these offer optimum thermal reflection, with the polymer-based systems also providing a firm bond with the glass-fibre braid even at high temperatures.

To combine the thermal reflection effect of aluminium with the elastomer properties of silicone, BIW offers silicone-soaking procedures with aluminium particles or silicone rubber coatings which reflect the radiation heat.

Thermal protection mats and bags of aluminium-laminated glass-fibre can be equipped with push-buttons for fast assembly and simple handling, or can be sewn on several sides depending on the application.



SPECIAL MATERIALS – INDIVIDUAL PROTECTION SYSTEMS

The textile technologies of braiding and knitting can be used to process a large number of other materials as well as glass-fibre such as carbon fibres (e.g. Aramide), polyester (PES) or polyamide (PA6.6). PES or PA braided sleeves in particular are used in cable assembly as wear-proof mechanical protection for cable harnesses. The open structure makes these sleeves particularly expandable, allowing for variable diameters through to a multiple of the nominal diameter.

Together with classical sleeve coatings, the combination of glass-fibre and silicone can also be used for:

- multi-ply sleeve systems with different braided or knitted layers
- metal sleeve sheaths with closed silicone cover
- braided elastomer sleeve leads with a textile outer layer
- assembled protection sleeve systems with branches or connection pieces.

The customer can decide whether he wants to be supplied with the product cut in lengths, rolled in rings or cable drums. It goes without saying that in addition to standard dimensions, intermediate sizes and customised tolerance agreements are also possible. What we don't compromise on is quality. Together with dimensional control with laser micrometer gauges, a 100% manual final control guarantees the very best quality.

On-line coding or printing of the protection sleeves is also possible on request from the customer.

In addition, the in-house compounding process can be used to give silicone-coated glass-fibre sleeves any required colour. The materials used are physiologically harmless and the ingredients comply with the VDA requirements of the automotive industry. The articles are IMDS-listed, free of asbestos and ecologically safe, posing a hazard neither to the environment nor to water. They have outstanding resistance to water/glycol mixtures, water vapour and cleaning agents such as cold cleaners and soap suds, and are resistant to salt spray mist. They even withstand temporary exposure to fuels and lubricants.



GLASS-FIBRE CORDS, TAPES AND SEALS

Thanks to their outstanding physical qualities, flat sleeves, tapes, cords and seals of glass-fibre in raw quality are used above all for electrical insulation in the construction of motors, generators and transformers, and for thermal insulation, for example in high-temperature furnaces. They contain no harmful or polluting substances and are therefore seen as a safe alternative to asbestos, in terms of both ecological and occupational safety aspects.

The technical properties depend on the glass type, filament diameter, fibre fineness and type of sizing. The twisted or textured (roughened) E-glass fibres (Alumoboron silicate glass) generally used by BIW are characterised by a water absorption rate of less than 0.1% and can therefore be described as water resistant.

Twisted threads and yarns or assembled yarns with a protective twist which are processed into sealing tapes, cords, profiles and sleeves, have the advantage of possessing high tensile strength and low stretching capabilities. Apart from E-glass seals with a temperature resistance of more than +500°C, the production programme also includes quartz-glass braidings capable of withstanding temperatures of up to +1000°C. All BIW glass-fibre products are classified as A1 or A2 "non-flammable materials" according to DIN 4102.

Depending on the individual application, seals can be thermally desized, treated with acrylates, soaked in not hardened epoxy resins (B-state) or immersed in chloroprene rubber (CR, e.g. Neoprene® by DuPont) and in ethylene vinyl acetate (EVA; e.g. Levaprene® by Bayer). Possible uses include windings and spacers for power stations or railway vehicles.

Untreated bindings, such as tapes and flat sleeves, are used in motors and generators.





Articles impregnated with accelerators are suitable for the VPI total immersion procedure, in particular for windings under great tensile loads. The outstanding characteristics of these products include their positive effect on the reaction time of the resin, particularly for thick bindings. The advantage of reinforcement and bracing elements treated with epoxy resin with low hardening temperatures (80°C, approx. 15h, resin-80) is that they can harden out from the inherent heat of the generator during the trial run. Shrinking polyester knitted textiles impregnated with resin as winding head simplify assembly procedures without any need for subsequent impregnation with acrylic or epoxy resin.

Product properties and features:

- Flat sleeves 2 mm to 50 mm wide
- Strings (filled sleeves, e.g. with sliver or roving), diameter 6 mm to 60 mm
- Cords, diameter 1 mm to 10 mm
- Tapes from 0.08 mm to 0.2 mm thick and 6 mm to 100 mm wide
- Polyester needle felt
- Low stretching ability, good tensile strength
- No water absorption
- Textured or twisted fibres

- Assembled yarns
- Firm-cutting soaking/impregnation
- Temperature-stabilised to +500 °C or +1.000 °C
- Shrinking bindings in B-state
- Environment-friendly accelerator systems
- Compatible with impregnating resin
- Resin systems in B-state for insulation class F hardening at 80°C, 6 months shelf life: resin-80
- Combined fillings for multiple requirements

As high-temperature insulating stuffing, glass-fibre seals are used for a wide range of applications for industrial and drying furnaces, heating appliances and boilers and in the construction of machinery, plant and equipment.

BIW with its technical centre, testing facilities and know-how acquired over decades also develops and manufactures customised individual solutions, as well as standard products. Why don't you challenge our unique expertise, arising from the combination of textile fibre processing with elastomer compounding and moulding (extrusion and injection moulding)?



STRINGS

Dimension	Sheath		Filling			Impregnation			
	Glass	PES	Glass sliver	Glass roving	PES sliver	raw	BSL – A	BSL – B	Harz - 80
Outer Ø [mm]									
4	+	+	+	+	+	+	+	+	+
6	+	+	+	+	+	+	+	+	+
8	+	+	+	+	+	+	+	+	+
10	+	+	+	+	+	+	+	+	+
12	+	+	+	+	-	+	+	+	+
15	+	+	+	+	-	+	+	+	+
20	+	+	+	+	-	+	+	+	+
25	+	+	+	-	-	+	+	+	+
30	+	+	+	-	-	+	+	+	-
35	+	+	+	-	-	+	-	-	-
40	+	+	+	-	-	+	-	-	-

All the figures in the table are indicative values, because the dimensions depend to a great extent on the filling, degree of filling and impregnation. The stated dimensions are most frequently used in generator construction thanks to the groove and gap dimensions and are therefore considered to be standard. Other possibilities are feasible, particularly in the combination of filling and impregnation. Strings of polyester can be made from shrinking material (up to 10% shrinkage).

TAPES

Dimension		Material		Impregnation				
Width [mm]	Thickness [mm]	Glass	PES	raw	Levapren	BSL - A	BSL - B	Harz - 80
6	0.08-0,2	+	+	+	+	+	+	+
10	0.08-0,2	+	+	+	+	+	+	+
12	0.08-0,2	+	+	+	+	+	+	+
16	0.11-0,2	+	+	+	+	+	+	+
18.5	0.11-0,2	+	+	+	+	+	+	+
20	0.11-0,2	+	+	+	+	+	+	+
25	0.11-0,2	+	+	+	+	+	+	-
30	0.11-0,2	+	+	+	+	+	+	-
40	0.11-0,2	+	-	+	-	-	-	-

The tapes shown in the table are available from BIW ex stock in raw quality. The delivery range includes wide fabrics up to 1 m in width consisting of glass rovings with PES edge protection, cut to lengths or in continuous lengths, as well as bead and double-bead tapes.

The VPI impregnation procedure usually uses zinc naphthenate accelerator systems (BSL-A). The alternative accelerator system BSL-B offers not only environment-friendly production but also low impregnating resin infection and good processing ability.



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