



JSC POLOTSK-STEKLOVOLOKNO



SILICA MATERIALS products for high temperature insulation

- Replacement of asbestos
- High temperature insulation
- Amorphous structure
- Low thermal conductivity
- Inertness to the majority of chemical reagents
- Non-toxicity
- Fire resistance
- Resistance to influence of molten metal and thermal radiation

FIELDS OF APPLICATION OF MATERIALS MADE OF SILICA FIBER

- welding blankets, curtains;
- protective shields during welding works;
- high temperature insulation of furnaces;
- high temperature insulation, thermal protection and fire protection in machine building, ship building and aerospace technique;
- as insulation removing stress during welding on pipework;
- insulation in car building, in particular insulation in mufflers;
- turbine insulation;
- high temperature composites;
- fire resistant doors;
- insulation of thermocouples;
- protective shelters for firemen;
- insulation and protection of equipment of firemen;
- elements of protective clothes of firemen, workers of foundry;
- blankets for localization of the center of inflammability in industry and household activity.

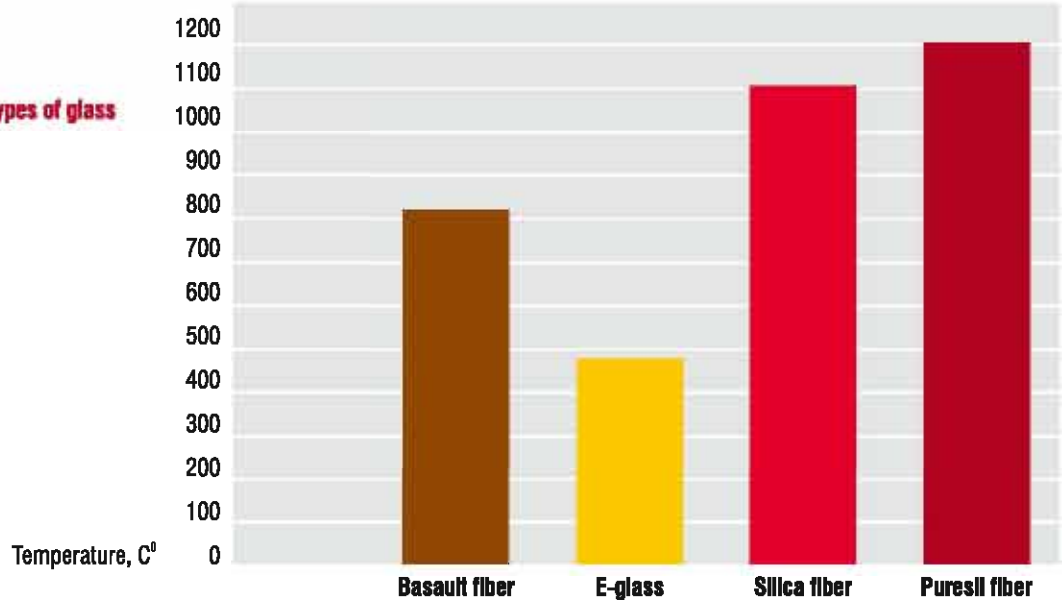


- Silica materials are resistant to influence of high temperatures, operating temperature is more than +1000 °C, for a short period of time they withstand temperatures up to +1400 °C. This is continuous fiber with amorphous structure and thermal characteristics of refractory materials. They are made in the form of fiber, yarn, meshes and fabrics.
- Silica materials retain their strength and elasticity within a long period of time at the temperature +1000 °C and are a thermal barrier and protection device from fire and influence of extremely high temperatures in different technological processes.
- Silica materials have low thermal conductivity, high resistance to thermal shock, are inert to the majority of chemical reagents, resistant to organic and mineral acids of any concentration even at high temperatures (except of hydrofluoric, phosphoric and hydrochloric acid) and weak alkalis of molten metals (except of Mg, Na, Si) and alloys and effectively work in aggressive medium and elevated radiation.



The major fields of applications: insulation and protection in the industry: metallurgy, rocket-building, aircraft industry, ship building, car building, atomic energy, machine building.

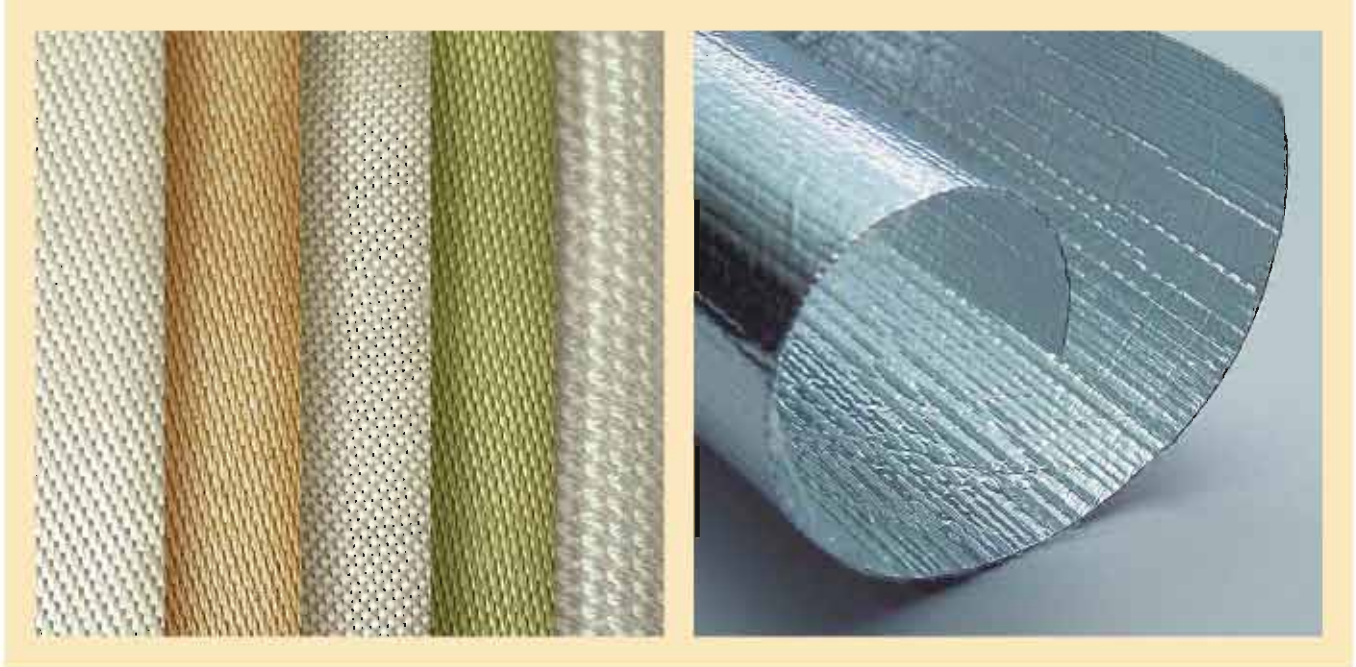
Operating temperature of fibers made of different types of glass



SILICA FABRICS

We manufacture a wide range of silica fabrics with the weight from 120 to 1400 g/m², with the weave linen or satin, with the width from 900 to 2000 mm, with different types of finish, improving properties.

And our qualified technical personnel is ready to consider a possibility of production of new types of fabrics for new perspective applications in accordance with the requirements of a customer, terms of operation and fabric application.



Silica fabrics received wide application as high temperature insulation practically in all the fields of industry because of low thermal conductivity, high resistance to thermal shock, silica fabrics have superb electric insulation properties at high temperatures, can be used for a long period of time without changing of the properties at the temperature +1000 °C and for a short period of time at higher temperatures.

Silica fabrics are designated for usage as high temperature thermal insulation, thermal protection in different branches of industry, as insulation and protection in metallurgy, rocket building, aircraft building, ship building, car building, atomic energy and machine building.

One of the biggest sectors of applications of silica fabrics production of welding blankets, fire resistant blankets, shields for protection of the equipment and personnel from metal splashes, sparks, thermal radiation.

For improvement of fabrics' properties, increasing of mechanical properties, higher thermal resistance and resistance to abrasion it is proposed to coat fabrics with chrome, vermiculite.

Additional thermal treatment of fabric is made for maximum reduction of shrinkage in applications where maintaining of article dimensions while operation at high temperatures is necessary.

Fabrics made of silica fiber have a number of important properties among which are: ecological purity of the material, high thermal resistance, incombustibility, the fabrics are resistant to influence of mildew and microorganisms. Application of silica fabric will allow to achieve economy by means of durability of the material and increases safety of operation of industrial objects.

See page 6 for technical specification



SILICA YARNS

JSC Polotsk-Steklovloknno proposes a wide range of silica yarns from 68 to 540 tex, single and plied, with the diameter 6 or 9 mkm, preshrunk and non-shrunk, with package weight from 3 kg, there is a possibility of texturizing of yarns up to 1200 tex.

Silica yarns are twisted equalized yarns, made of glass No 11 (SiO_2 contents is 94-96%) and Puresil glass ($\text{SiO}_2 > 98\%$). The yarns operate for a long period of time at the temperature $+1000\text{ }^\circ\text{C}$, do not melt at temperatures up to $+1700\text{ }^\circ\text{C}$.

Yarns made of silica fiber have low thermal conductivity, high resistance to thermal shock, superb electric insulation characteristics at high temperatures, acid and alkali resistance (up to pH 14) in comparison with fibers made of E-glass and basalt, operate effectively under conditions of cyclic thermal loads. After thermal treatment and finishing silica yarn has residual shrinkage at the temperature $+1000\text{ }^\circ\text{C}$ not less than 1% and low weight loss on ignition. It should be noted that preshrunk yarn has sufficient bending resistance and other properties providing a possibility of its textile processing. Finishing promotes increasing of yarn adhesion to phenolic and epoxy binding.

Yarns are the basis for weaving of tapes, different textile articles, knitted wear, insulation braiding, sleeves, tubings, packings, ropes.

See page 6 for technical specification



SILICA FIBERS

Silica fiber is made of glass N 11 (SiO_2 contents is 94-96%) and Puresil glass ($\text{SiO}_2 > 98\%$).

The main field of application production of needle felt, having a wide application on car building, metallurgy, atomic and thermal power stations, oil refining and chemical industry, insulation in electric and combustion furnaces.

We have a possibility to produce chopped silica fiber of different length, which can be used as raw material for production of silica paper and reinforcement of plastics.

Articles made of silica fiber have goods ecological indices do not contain carcinogens, maximally effective, reliable and durable.

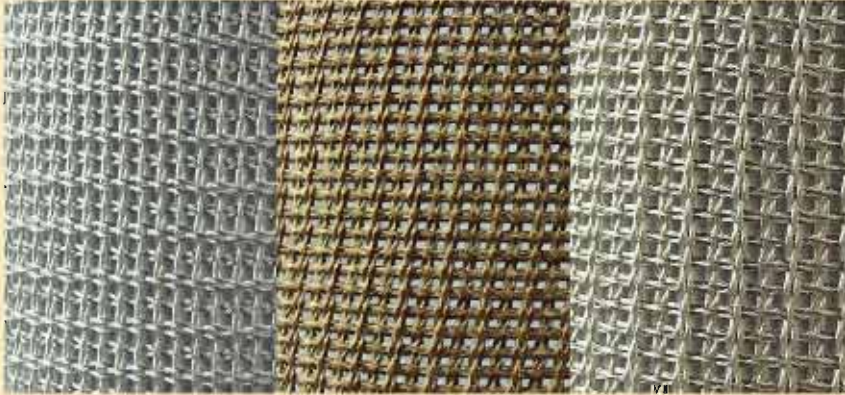
See page 6 for technical specification



SILICA FILTRATION MESHES

Highly effective woven material for cleaning of melts of ferrous and non-ferrous metals while pouring of them into the moulds. The peculiarity of filters made of silica mesh efficiency of filtration of all traditional metals and melts (aluminium, magnesium and others), different types of cast iron and steel.

Preshrunk silica meshes are subjected to additional thermal treatment which allows to have minimum shrinkage while using of the mesh and to keep shape. Silica meshes can be treated with special coatings, providing necessary stiffness of the filter while its installation into the mould.



Usage of silica mesh filters allows to reduce 1,5-2 times casting defects, to improve the metal structure, to increase its physical-mechanical and technological properties.

ARTICLES MADE OF SILICA FABRICS

Fire protective blanket is one of the main types of articles made of silica fabrics which is widely used in the field of insulation and means of the first protection at the initial stage of fire and localization of combustion. They are specially developed for prevention and extinguishing of fires in different potentially dangerous situations.

- furnishing of marine and river craft vessels with fire protective blankets, petrol stations and objects of civil designation while sewing of thermal reflective suits for firemen;
- antismoke and fire protective curtains, shields;
- insulation mats for insulation of reactors at atomic stations of the Russian Federation;
- modular insulation casing expensive equipment;
- military complex of the Russian Federation (ship building, rocket building).

In household applications fire protective blankets are widely used as means of first protection at the initial stage of fire at the kitchens, restaurants, bars, in civil institutions schools, hospitals, passenger vessels and so on.

Welding blankets are used in all the works connected with welding and cutting of metals, provides better protection from sparks and molten steel. In production there is a department for sewing of different thermal insulation and fire protective articles, we are ready to consider a possibility of sewing of an article necessary for you. The enterprise developed and uses sewing silica yarn with PTFE coating, which has high tensile characteristics and withstands temperature more than +1000 °C. Traditional articles are blankets, curtains, thermal belts, felts.



SILICA MATERIALS: TECHNICAL SPECIFICATION

SILICA FABRICS

Name	Weave	Density, yarns/cm Warp	Density, yarns/cm weft	Surface density, g/m ²	Tensile strength N(kgf) warp	Tensile strength N(kgf) weft	L.O.I., % not more than	Width, cm
KT-11-30K	Linen	9±1	8±1	300±30	785(80)	735(75)7	7-12	88±3
KT-11-TO-30K	Linen	9±1	8±1	300+40/-30	294(30)	294(30)	1.0	82±3
PS-120	Linen	16+1	13±1	120±25	392(40)	392(40)	7-12	88-100±2
PS-180	Linen	10+1	10±1	180±30	490(50)	392(40)	7-12	88-100±2
PS-300-S	5/3 satin	20±1	14±1	325±25	686(70)	539(55)	7-12	98.0±3.0
PS-300-TO	Linen	9±1	8±1	300+40-30	294(30)	245(25)	4	82±3
PS-600-S	8/3 satin	19±1	13±1	580±60	1078(110)	784(80)	7-12	94.0-200.0
PS-600-S-V	8/3 satin	19±1	13±1	630±60	1274(130)	980(100)	7-12	94.0-200.0
PS-600-S-TO	8/3 satin	19±1	13±1	550±100	490(50)	294(30)	2.0	94.0-200.0
PS-1000-S	12/5 satin	17±1	13±1	1100±100	1764(180)	1372(140)	7-12	94.0-200.0
PS-1000-S-V	12/5 satin	17±1	13±1	1200±150	1764(180)	1372(140)	7-12	94.0-200.0
PS-1000-S-TO	12/5 satin	17±1	13±1	1100±100	784(80)	490(50)	4.0	94.0-200.0
PS-1400-T	Linen	12+1	6±1	1400±140	735(75) for 25mm	343(35) for 25mm	7-12	95-100±2
PS-1400-T-V	Linen	12+1	6±1	1400±100	735(75) for 25mm	343(35) for 25mm	7-12	95-100±2

SILICA YARNS

Name	Nominal linear density, Tex	Number of twists per 1 m, twists / m	Tolerances twists / m	Tensile strength, N(kgf) Not less than	L.O.I., %
SiO₂-94-96%					
K11C6-68	68±5	150, 200	±10%	14.7(1.5)	7-12
K11C6-90	90±7	150	±10%	19.6(2.0)	7-12
K11C6-136	136±10	80, 130	±15%	29.4(3.0)	7-12
K11C6-180	180±14	120-150	±10%	39(4.0)	7-12
K11C6-180x3	540±42	20, 100	±20%	98.0(10)	7-12
K11C6-170BA	170±20	130, 150	±10%	39.2(4.0)	not more than 2
K11C6-170BAx2	340±40	20, 100	±20%	68.6(7.0)	not more than 2
K11C6-170BAx3	510±60	20, 100	±20%	98.0(10)	not more than 2
K11C6-170 S250 BAF	220±26	250	±10%	59.0 (6.0)	not less than 17
SiO₂-98%					
PS9-136	136±10	80, 130	±15%	24.5(2.5)	7-12
PS9-180	180±14	120, 150	±10%	29.4(3.0)	7-12
PS9-180x3	540±42	20, 100	±10%	88.2(9)	7-12

Texturized silica yarns

Name	Nominal linear density, Tex	Number of twists per 1 m, twists / m	Tolerances twists / m	Tensile strength, N(kgf) Not less than	L.O.I., %
K11C6 540 T	6±1	540	+12 /-5	75(8)	7-12
K11C6 1150 T	6±1	1150	+12/ -5	90(9)	7-12

SILICA FIBER

Name	Fiber length, mm	Fiber diameter, μm	L.O.I., % not more than	Na ₂ O content, % not more than	Humidity, % not more
KB-11 (6)	50-100	6±1	7-12	0,8	3,5
PS-23 (6)	50-100	6±1	7-12	0,8	3,5
KB-11 (9)	50-100	9±1	7-12	0,8	3,5
PS-23 (9)	50-100	9±1	7-12	0,8	3,5

SILICA MESHES

Name	Weave	Density, yarns / 10 cm warp	Density, yarns / 10 cm weft	Surface density, g/m ²	Tensile strength N(kgf) warp	Tensile strength N(kgf) weft	Width, cm
KS-11-LA	Mock leno; Leno	96±3	81±3	530±60	1470(150)	980(100)	88±3
KS-11-LA-2	Mock leno; Leno	78±3	66±3	470±60	1470(150)	980(100)	88±3
KS-11-LA-1.0-TO	Mock leno; Leno	102+3/-0	90+6/-0	540±60	490(50)	392(40)	82-100±3
KS-11-LA-1.5-TO	Mock leno; Leno	81+3/-0	75+6/-0	620±60	490(50)	392(40)	82-100±3
KS-11-LA-2.0-TO	Mock leno; Leno	75+3/-0	69+6/-0	560±60	490(50)	392(40)	82-100±3



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