

Company Profile

Name of the enterprise: JSC «Polotsk-Steklovolokno»

Activity profile: production of glass fiber the products on its basis

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JSC "Polotsk - Steklovolokno" is one of leading manufacturers of glass fiber based materials in the world. It is a modern, dynamically developing industrial complex with the area of 1 million sq.m. having more than thousand units of modern special equipment. There is a team of 4.5 thousand highly qualified employees who work at the company.

JSC "Polotsk - Steklovolokno" is an integrated enterprise uniting in the uniform complex the technological processes of raw materials preparation, glass melting, forming of glass fiber and its textile processing, finishing treatment of glass fabrics and production of glass reinforced plastics (GRPs). This allows for the enterprise to be stable, flexible, to provide for the markets a wider range of products and promptly react to the wishes of our clients.

JSC "Polotsk-Steklovolokno" is export oriented enterprise, having business with more than 40 countries in the world. The enterprise is integrated into the global economy by means of in-time and qualitative fulfillment of the orders for such science-intensive branches of industry like machine-building, automotive industry, electronics, military-industrial complex, as well as for other fields of application.

The products are manufactured on the basis of various kinds of glasses, i.e. alumoborosilicate "E" glass, silica glass – for high temperature insulation, as well as high-strength "S-2" glass.

JSC "Polotsk-Steklovolokno" is specialized in production of the following types of products:

- electric insulation glass fabric
- building materials (glass fabrics, glass meshes)
- silica materials (glass fabrics, glass meshes, fiber, ready-made articles)
- construction glass fabrics
- thermal insulation materials
- glass yarns
- rovings
- hollow fiber and the fabrics on their basis
- chopped fiber
- glass plastic articles

Having a huge experience of work, modern equipment, high technologies and scientific potential, the team of the enterprise is ready to solve any tasks of the customers.

Types of products, description:

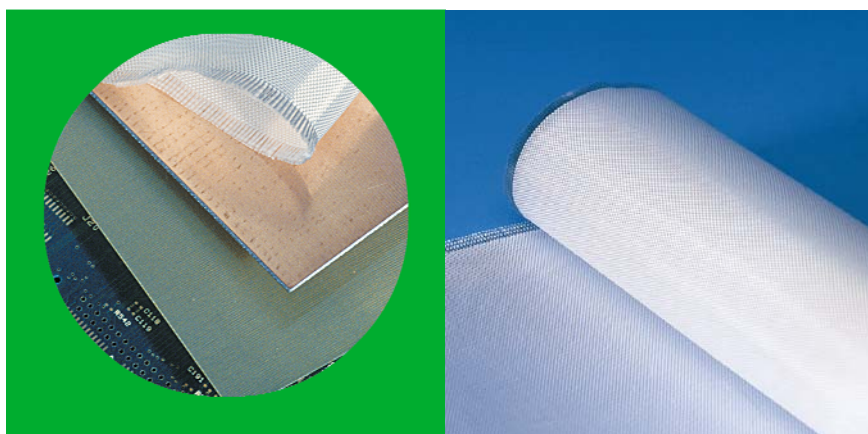
1. Electric insulation materials

Glass insulation fabric for production of laminates

Electric insulation fabrics with the weight from 49 up to 230 g/sq.m are designed for production of foiled laminates from which one side, two sides and multilayer printed circuit boards are produced.

Thanks to the unique properties of electric insulation fabrics the materials on their basis have high mechanical and electric insulation properties, are easily subjected to mechanical treatment such as cutting, drilling and stamping.

As an additional service production of electric insulation fabrics with cut and glued edge "C+C" is possible. The fabric is applied for production of printed circuit boards of computers, domestic and industrial equipment.



Glass fabrics for production of non-foiled dielectrics

Electric insulation glass fabrics with the weight from 49 up to 230 g/sq.m. are designed for production of non-foiled dielectrics. At the order of the client we produce electric insulation glass fabrics on textile size or finished.

As an additional service production of electric insulation fabrics with cut and glued edge "C+C" is possible.

High mechanical properties and electrical stability will allow to make mechanical treatment of the material and use it for construction details of electric equipment.

Glass fabrics for production of flexible insulation

Thin electric insulation glass fabrics are used for production of varnished glass fabrics, micanites and other micalike materials in flexible insulation. The given materials are produced on textile size or finished.

The materials on the basis of thin electric insulation glass fabrics are a laminated electric insulation material manufactured by the method of mechanical gluing of mica on Silicium-organic, oil-bitumen gluing varnish with further hot pressing and have superb electric insulation properties, which have found wide application as an insulating material in electric machines, units and in energetics in general.

2. Building materials

Enterprise manufactures building materials, the application of which is practically not restricted in different branches of industry - from construction of underground communications and buildings up to installation and repair of roofs.

Fabrics - the basis of roofing materials

The given glass fabrics are designed as a basis for production of hardfacing roofing materials, for making of new built-up roofing and repair of old roofing of any configuration, as well as for hydroinsulation of concrete reservoirs, hydrochannels, bridges, water pipelines, drain sewerage systems, foundations and underground structures in a wide range of temperatures and different climatic conditions.

The fabrics of the type RATL are manufactured with the density 120, 190 and 210 g/sq.m with different treatment, agreed with the customer for adding of better properties to them for adhesion with bitumen.



Glass meshes

CC-50 is used for stuffing of cracks on the ceilings, walls before filling with putty, painting, glueing wall paper, for sealing of joints of gipsum carton, fibre board (DSP), wood particle board (DVP), as well as other building sheet materials. The given glass mesh is used for manufacturing of self glueing tape.

CCSH-160 is designed for reinforcement of plaster and as reinforcing material for thermal insulation of guard structures of buildings using the technologies of the type “Thermal fur coat”, “PCL”, “Radex”, as well as a number of foreign analogues. The given systems are designed for increasing of thermal resistance of outer walls of the buildings and are the most effective method of saving of thermal energy.



3. High temperature insulation - Silica products

Silica materials have low thermal conductivity, high resistance to thermal shock, have superb electric insulation properties at high temperatures, can be used for a long period of time without changing of their properties at the temperature 1000 C (on new material PURESIL up to 1200 C) and for a short period of time at higher temperatures (do not melt, do not evaporate at the temperature up to 1700 C).

Articles made of silica glass are extremely inert to the majority of chemical reagents, resistant to organic and mineral acids of any concentration even at the elevated temperature (except of hydrofluoric, phosphoric and hydrochloric acid) and weak alkalies of molten metals (except of Mg, Na, Si) and alloys. They have high chemical resistance to water and steam of high pressure, are capable to absorb moisture, but are not split in the presence of water, stable in vacuum.

The given materials are superb high temperature thermal insulation and thermal protection materials, used in many branches of industry. In the CIS countries these are first of all the enterprises of military-industrial complex, as well as the enterprises, manufacturing thermal insulation articles and glass plants. In foreign countries silica materials are used as replacement of asbestos and are used mainly in refinery, electrotechnical, aerospace industries, in metallurgy and shipbuilding.



Silica fabrics

Silica fabrics are used as high temperature insulation, thermal protection for different branches of technique, namely for refractory paddings, gaskets and blankets, protecting from flame, splashes of molten metal, excessive heat, as a filler for composite materials, for manufacture of filters used for cleaning of the corrosive medium.

Silica meshes

They are used as an effective filtering material for cleaning of melts of ferrous and non-ferrous metals while pouring of them into the moulds. The filter of necessary size is cut and installed into the gating system or directly under the pouring gate between the bottom and top moulding boxes of a mould.



Silica yarns

They are equalized twisted yarns. They are made of glass N 11 or new material PURESIL in several plies. In future the produced yarn is subjected to chemical and thermal treatments. After that the produced yarn is wound on cones.

For special fields of application, which do not allow presence of shrinkage at the influence of temperatures such yarns are manufactured which possess all the above mentioned properties, but they are additionally finished for phenol or epoxy binding and have minimum shrinkage at the operating temperature.



Silica fibre

Recently silica fibre has been forming at the enterprise as production waste, but still it has been a valuable product, used as thermal insulation materials. Since 1996 production capacities have been created for production of silica fibre as a separate type. Besides that our enterprise manufactures chopped silica fibre which is reinforcing material in different friction articles.

Ready-made articles made of silica materials

The most widely used are fire protective blankets, designed for localization of burning at the initial stage of fire, as well as for extinguishing of clothes of an injured person by means of stopping of oxygen supply. The blankets are made of silica fabrics. The given article satisfies the requirements of the Russian Sea Register of Navigation.

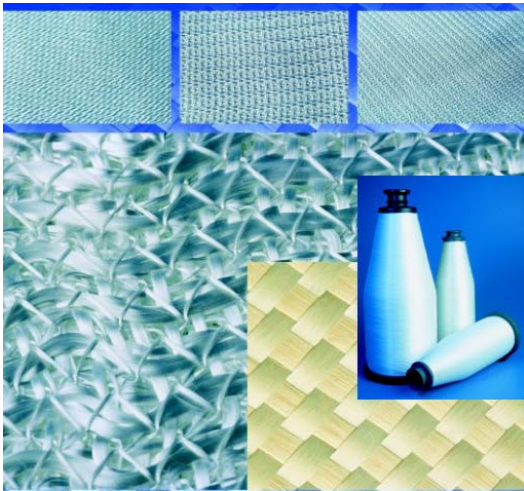
Fire protective blanket is folded and packed into a bright red container, which is put on a wall or fire shield and in case of necessity it can be put into operating state very quickly.

The objects where application of a given article is necessary - departments and laboratories of industrial enterprises, airports, schools, hospitals and so on. The production of analogous articles: blankets, curtains is based on high thermal insulation and fire resistant properties of silica fabrics and they are used mainly for extinguishing of domestic fires (kitchen stoves and bake ovens).

4. Construction fabrics

Construction glass fabrics are a type of glass fibre materials which are designed for producing of glass plastics as a reinforcing material.

Glass plastics on the basis of the woven materials in comparison with the glass plastics on the basis of non-woven materials have higher physical-mechanical properties and are used during manufacturing of critical parts and constructions.



Because of the fact that the given glass plastics have such properties as: high impact strength, temperature resistance, high tensile strength, corrosion resistance, antimagnetic properties, locality of destruction of the damaged area, high dielectric properties make their application irreplaceable in all the branches of industry in production of spare parts of the car bodies, yachts, launches, aircraft technique and their decorative elements, different constructions of any kind of profiles, protective covering, chemical tanks, apparatus, pipeworks and so on.

Construction glass fabrics are made of aluminoborosilicate glass (type E) with the surface density from 210 to 850 g/sq.m. with different weaving structure, either untreated or preliminary impregnated for the improved interaction with polyesters, epoxy, formaldehyde, epoxyphenolic and other types of resins.

5. Thermal insulation materials

The materials have high thermal and sound proofing properties, frost resistance, temperature resistance. They are made of glass "E" with fibre thickness 6-13 mkm.

The given thermal insulation materials can be used both in south regions and in the regions of the extreme north, because their working temperature range is from -60 C to +60 C. They are handy

in work and are safe for people health, are not combustible, are not toxic, chemically neutral, are not subject to rotting.

Non-woven materials is a cloth made of chaotically located glass fibres, bonded by multiple needlepiercing - types IPM, IPC and the type PSX, sewn by glass yarn.

They are designed for thermal insulation of piping and equipment. They have superb thermal insulation properties, have a long service life and are convenient in work. They correspond to sanitary norms and regulations.

Needle felts made of “E” glass (IPM)

They are superb thermal insulation and thermal protection. The given materials have low thermal conductivity, are not subjected to influence of steam, water, they have high temperature stability. They are manufactured from chaotically located glass fibres with the diameter of elementary fibre 6 or 13 mkm.

The main direction of their usage IPM - as thermal insulation of the equipment, communications - where changing of temperature regime is not allowed, where heat can be controlled and kept, where application of binding resins is not allowed. Needle piercing materials are used practically in all the branches of national economy: metallurgy, energetics, machine building, automotive building.



Roll glass plastics of the type RCT

Roll glass plastics of the type RCT are used as a covering layer while thermal insulation of pipes indoors and outdoors, under ground. They can be used at the ambient temperature from -40 C up to +60 C. They are manufactured with the density 185, 250, 430 g/sq.m and width 90 - 127 cm.

6. Glass yarns complex twisted

Taking into account technical and technological possibilities and the equipment our enterprise has the possibility to produce glass yarns from “E” glass with the linear density from 3.4 to 136 tex with the elementary fibre diameter from 4 to 11 mkm.

Glass yarns are applied for production of fabrics, tapes and meshes of different application (electric insulation, building, construction), as electrical insulation winding of wires and cables,

starters and transformers; reinforcing filler of construction materials; in the form of cords and stockings.

Depending upon the application glass yarns are made on different types of emulsion in order to provide the best consumption and technological properties during their further processing.



The type of emulsion, tex, yarn structure (number of plies, twist value) can be chosen taking into account the customer's requirements.

Packaging of yarn is made into carton boxes, which are placed on a pallet and wrapped by a film, preventing penetration of moisture. Net weight of yarn on a pallet is approximately 800 kg.

7. Rovings

Roving is nontwisted strand, consisting of several complex yarns and is characterized by their quantity, tex and diameter of the elementary fibre.

If the roving consists of one complex yarn, it is called **one-process (type RBO)** or **direct roving** and is used the same as the other types. Glass plastic, in which roving is used as reinforcement, is much cheaper and simpler in fabrication.

Our enterprise can produce rovings of the type RBO and RBT with the diameter of the elementary yarn from 10 to 13 mkm and tex from 240 to 2400 on the emulsions, providing inter-connection with resins of different types in fabrication of glass plastic products.



Depending upon its designation roving is divided into 3 groups:

Spray-up roving (type RBR) - in the chopped form it is used for manufacturing of mats (chop mat); premixes; glass plastics by method of spraying; reinforcement of polyamides, fibroconcrete, gypsum.

Technical roving (type RBT) - is applied for manufacturing of woven materials as a sewing material of glass and mineralwool products.

Roving for winding (type RBN) - is applied for manufacturing of glass plastic products by the method of winding (obtaining of cylindrical surfaces) and pulling or pultrusion (obtaining of different profiles).

8. Hollow fibres and construction fabrics on their basis

Our enterprise produces hollow fibre according to the special technology with the potential capacity up to 1000 t/year.

Hollow fibre has a continuous hole with an area 45-50 % from the cross section area of the elementary fibre and the size of the hole is characterized by the capillarity index, which is calculated by the ratio of these areas.

Nonwoven materials and fabrics, produced on the basis of hollow fibres, are used as a reinforcing material in the production of lightweight glass plastics, which are 20-30 % lighter than the usual ones.

As a result of this yarns and fabrics made of hollow fibre have a smaller specific weight in comparison with the ordinary ones and do not require development of new technologies in production of fabrics and glass plastics.

Lightened glass plastics are used in the aircraft industry, sport machine building and shipbuilding, game constructions, i.e. where the reduction of the construction weight is required while keeping the same strength characteristics.

The enterprise has a possibility to produce fabrics with the surface density from 80 to 400 g/sq.m. with different weave structure and on different types of emulsions in order to provide the best consumption and technological properties, proceeding from the customer's requirements.

9. Chopped fibre

Chopped fibre made of E-glass is manufactured with fibre diameter from 6 to 13 mkmm and has a length 4,5-6-12 mm. Depending upon the application chopped fibre is manufactured on different types of size, agreed at the requirements of the customer.

One of the main directions of application of chopped fibre made of E-glass are: production of nonwoven materials: rigid and soft felts or construction mats of different densities and

designation; - glass paper, glass veil, glass felt. - as reinforcing material in production of glass



filled polymers, gypsum, friction parts.

Nonwoven materials in production of glass plastic replaced woven materials, as having less prime cost of production, best impregnation in processing by resins and less expenses, moulding of articles do not require application of expensive equipment.

Chopped fibre is packed into polyethylene bags 20 - 25 kg each, the bags are placed into a carton box with the total weight up to 1000 kg.

10. ARTICLES MADE OF GLASS FIBER REINFORCED PLASTICS

- pleasure boats.
- Sports row vessels: canoe and kayak in racing and training execution.
- Swimming pools and glass reinforced trays, designated for growing предназначенные для выращивания juvenile fresh water fish in fishery organizations.
- Skiing sticks: for pleasure and children.
- Glass reinforced plastic fishing rods and spinnings.
- Brooms, Мётла, shovels, ski binding.
- Glass reinforced plastic fittings (used as flexible connections for reinforcement in building).
- GRP tubes.

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