



The Republic of Belarus,
212011, Mogilev, Grishina Str., 89

e-mail: machinatex@mail.ru
www.mahina-tst.com

Tel./Fax: +375 222 258445, 220606

BRIGHT OUTLOOK
HIGH TECHNOLOGY

Content

Company profile	1
Geotextiles	2
Geotextile fabric: STABBUDTEX	3
Geogrid: GSS	4
Geogrid: GSST	5
Geogrid: GSS PROSET	6
Geogrid: anti-erosion GSS-3D	7
Substrates for PVC coating: OTTP and TST	8
Special textiles: TBG-360 and TK-80	9
Basalt Geogrids	10
Construction Grids	12

Company profile

Machina-TST, Limited Liability Company is a young but successful and rapidly developing manufacturing company. Founded in 2007 the company has become one of the leading manufacturers of technical textiles in the post-Soviet space. The wide range of materials for various industry branches and guaranteed high quality of the finished products have become the recipe for success and a stimulus for further development.



The major direction of the production programme is manufacture of a wide range of geosynthetical materials using the advanced European technology. Machina-TST owns the state-of-the-art equipment ensuring production of materials of various strengths, coated and non-coated.

The "rich" configuration of the equipment provides flexibility of products range, high efficiency and stability of qualitative indices. Due to high requirements to physical-mechanical parameters of the finished product, the quality of raw materials is given careful consideration. The raw materials are purchased from the leading global manufacturers.

The product manufactured by Machina-TST is competitive with the leading European goods and is successfully sold thanks to reasonable pricing.

We are open to constructive cooperation and ready to meet the most complicated requirements of our customers.



We are glad to see you among our clients, partners and friends!

Together we can do more!



Geosynthetics is a perspective segment of construction materials industry and road construction in particular where high-tech materials are in great demand. The use of modern geosynthetics ensures the essential stiffness of the road dressing and enables to reduce costs and reach high production effectiveness.

The correct choice of reinforcing materials combined with the correct conception of construction ensures increase of economic effect of road reinforcement.

The use of geosynthetics is a new solution, a new wave in construction which helps to:

- enable long-term and reliable operation of construction facilities including road pavements;
- prevent road deterioration, soil erosion, subsidence and crack formation;
- simplify the process of construction works;
- shorten the period of construction works;
- improve the quality of facilities under construction.

The economic effect of use of geosynthetics in road construction is 6-8%, at the same time 40% of mineral materials scope is saved. The economic effect of use of geosynthetics in repair works can reach up to 20% thanks to reduction of repairs frequency.

With the use of geosynthetics the costs reduction is reached by means of:

- construction materials saving;
- reduction of earth works scope, reduction of materials consumption due to thinning of road dressing layers, change of embankment height or slope steepness etc.;
- reduction of equipment operating costs and direct labour costs due to reduction of transportation costs and costs of road laying and stabilization;
- reduction of repair costs (for instance, extension of service life between repairs) and maintenance costs due to the high service reliability of the road structure.

Additional advantages of geosynthetics are:

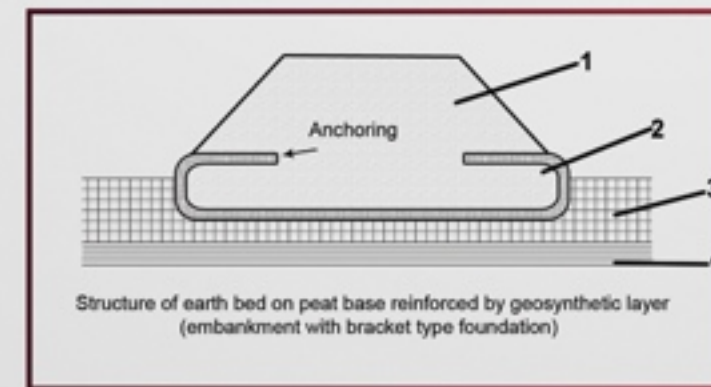
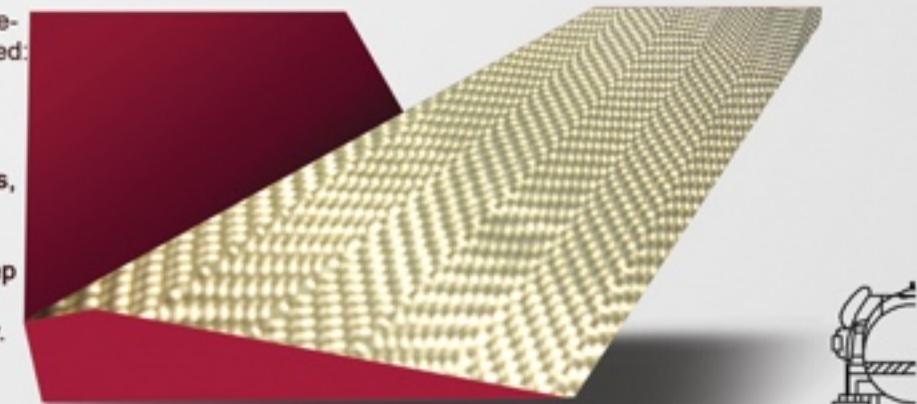
- easy handling and transportation;
- easy installation (without use of any special equipment);
- comparatively low self-cost.

Minimum interference in environment makes the use of geotextiles ecologically safe and effective which nowadays is the essential feature and advantage of construction materials.

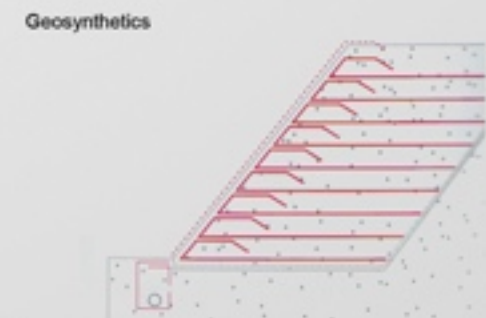
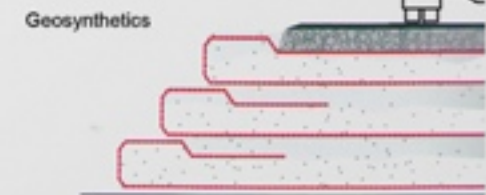
Geotextile fabric is produced of high modulus polyester. Due to its high strength index Stabbudtex endures high tensile loads at low elongation while breaking strength of the material equals 400 kN/m depending on the material type. Besides, geotextile fabric is distinguished by high resistance to chemical and biological influence.

Stabbudtex acts as a reinforcing base due to its high adhesion to soil and stress-relieving ability. Therefore it is applied:

- for construction of embankments on soft soils;
- in hydraulic engineering for construction of dams, wave breakers and quays;
- for reinforcement of steep slopes of dumps;
- for construction of supporting structures for steep slopes;
- for reinforcement of soils with low bearing capacity.



1 - embankment; 2 - Stabbudtex; 3 - peat; 4 - mineral bed.



STABBUDTEX	WARPWEFT TENSILE STRENGTH, KN/M	WARPWEFT ELONGATION AT BREAK, %	WIDTH (MAXIMUM)
Stabbudtex 80/80	80/80	9/9	woven up to 3.4 m; warp knitted up to 5.4 m
Stabbudtex 100/100	100/100	10/9	woven up to 3.4 m; warp knitted up to 5.4 m
Stabbudtex 150/50	150/50	10/10	woven up to 3.4 m; warp knitted up to 5.4 m
Stabbudtex 150/150	150/150	10/10	woven up to 3.4 m; warp knitted up to 5.4 m
Stabbudtex 200/50	200/50	10/10	woven up to 3.4 m; warp knitted up to 5.4 m
Stabbudtex 200/100	200/100	11/10	woven up to 3.4 m; warp knitted up to 5.4 m
Stabbudtex 200/200	200/200	10/10	woven up to 3.4 m; warp knitted up to 5.4 m
Stabbudtex 300/50	300/50	11/11	woven up to 3.4 m; warp knitted up to 5.4 m
Stabbudtex 400/50	400/50	12/11	woven up to 3.4 m; warp knitted up to 5.4 m

GEOGRID

Geogrids are produced of high modulus low shrinkage synthetic yarns or glass rovings and coated by a protective polymer layer. There is a great variety of geogrid types for various loads with a wide range of tensile strength values. GSS and GSST geogrids are resistant to high temperature, biochemical factors (like corrosion) and chemically aggressive media, and are environmentally safe. The main application of these geogrids is asphalt concrete overlay on roads.

The material qualitative characteristics are competitive with those of similar materials of European origin. The material is produced with the use of high quality raw materials according to state-of-the-art technology.

The research of these geogrids performed in Russian Federation and Belarus has shown that the application of this type of material can be various:

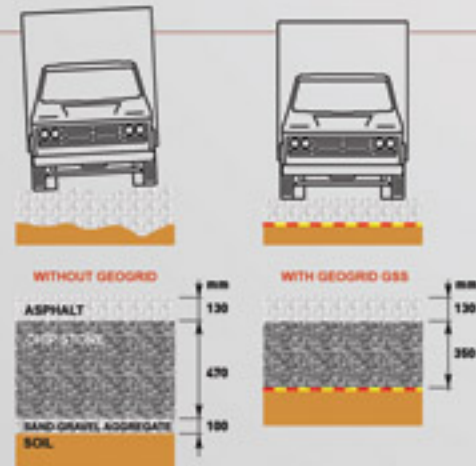
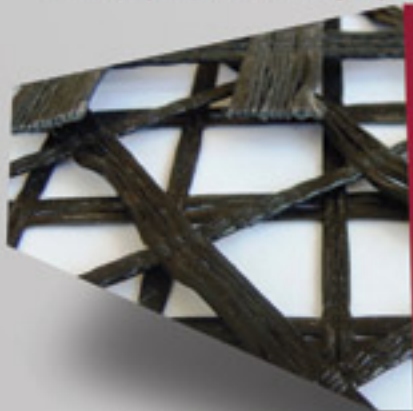
- reinforcement of pavement structural layers at construction of new and reconstruction of the existing roads;
- road construction on "problem" soils;
- construction of roads with heavy loads (parking lots, logistic terminals, warehouses, airfields);
- recultivation of technogenic soils;
- creation of stiff base for further construction;
- construction of temporary (service) roads;



Geogrid: GSS

TYPE	COMPOSITION	WARPWEFT TENSILE STRENGTH, KN/M	GRID CELL DIMENSIONS, MM	WARPWEFT ELONGATION AT BREAK, %	WIDTH (MAXIMUM)
GSS 20/20	Polyester yarn, polymer impregnation	20/20	20x20-50x50	13	Up to 5.2 m.
GSS 30/30		30/30		13	
GSS 40/40		40/40		13	
GSS 50/50		50/50		13	
GSS 55/55		55/55		13	
GSS 60/60		60/60		13	
GSS 100/100		100/100		14.5	

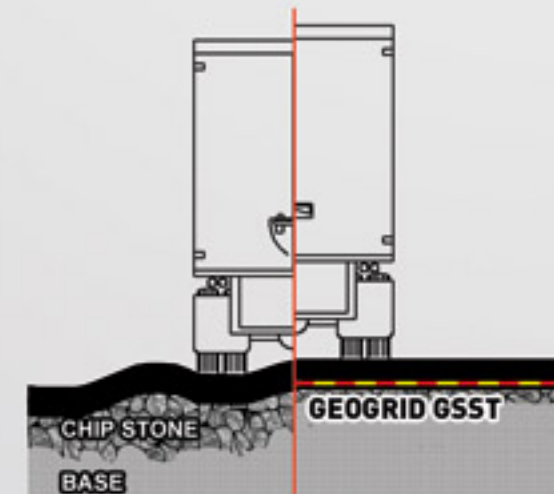
* Production of geogrids with polypropylene nonwoven substrates is possible. The company can produce a wide range of geogrids with other parameters required by the customer.



Geogrid: GSST

TYPE	COMPOSITION	WARPWEFT TENSILE STRENGTH, KN/M	GRID CELL DIMENSIONS, MM	WARPWEFT ELONGATION AT BREAK, %	WIDTH (MAXIMUM)
GSST 50/50	Glass roving, polymer impregnation	50/50	20x20-50x50	3	Up to 5.2 m.
GSST 100/100	Glass roving, polymer impregnation	100/100	20x20-50x50	3	Up to 5.2 m.

* Production of geogrids with polypropylene nonwoven substrates is possible. The company can produce a wide range of geogrids with other parameters required by the customer.



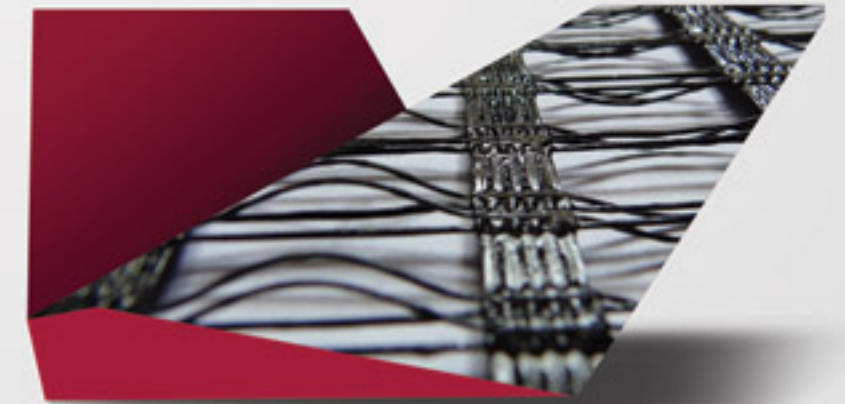
SLOPES, EMBANKMENTS, COASTLINES REINFORCEMENT : GSS PROSET AND ANTI-EROSION GSS-3D

Reinforcement of soil slopes is accompanied by a number of complicated construction arrangements. A badly fixed slope can cause a lot of troubles and even lead to landslides. Slope fixing is necessary to prevent water and wind erosion. Our textiles GSS PROSET and GSS-3D can be the most effective and cost-efficient solution of this problem. The materials are resistant to low temperature, ultraviolet and aggressive media, corrosion and degradation. One of their distinctive features is high tensile strength.

Geogrid: GSS PROSET



Anti-erosion geogrid: GSS-3D



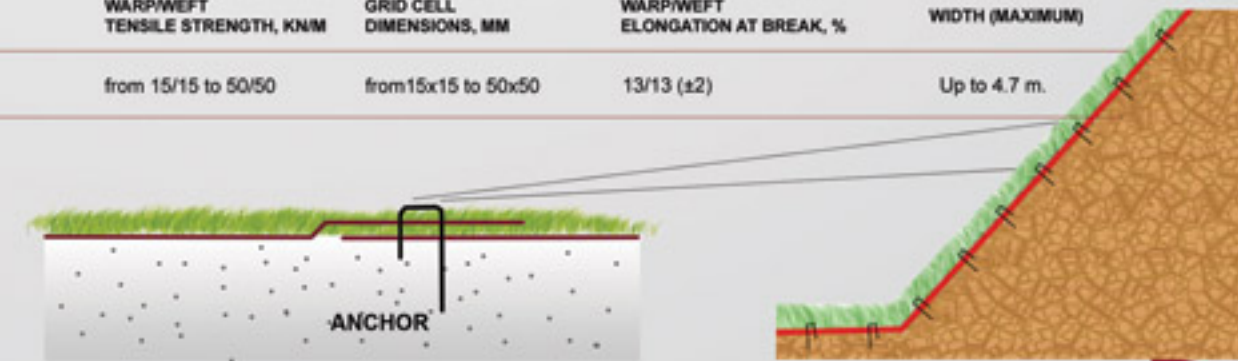
STANDARD GSS PROSET

TYPE	TENSILE STRENGTH (AT LEAST), KN/M	GRID CELL DIMENSIONS, MM
GSS PROSET 20/20	20/20	4,0x4,0
GSS PROSET 30/30	30/30	2,5x2,5

RAW MATERIAL COMPOSITION	IMPREGNATION COMPOUND	WARP/WEFT ELONGATION AT BREAK, %	WIDTH
HIGH TENACITY POLYESTER	PVC	13/13 (±2)	Up to 5,2 m.

GENERAL CHARACTERISTICS OF GSS-3D ANTI-EROSION GEOGRIDS

RAW MATERIAL COMPOSITION	IMPREGNATION COMPOUND	WARP/WEFT TENSILE STRENGTH, KN/M	GRID CELL DIMENSIONS, MM	WARP/WEFT ELONGATION AT BREAK, %	WIDTH (MAXIMUM)
High tenacity polyester	PVC	from 15/15 to 50/50	from 15x15 to 50x50	13/13 (±2)	Up to 4.7 m.



SUBSTRATES FOR PVC COATING: OTPP AND TST

Special fabrics: TBG-360 and TK-80

OTPP



OTPP is used as a substrate (reinforcing element) in the structure of complex materials based on PVC compounds. Application range is very extensive and is constantly growing: protective tents, advertisement billboards, insulation materials, roofing membranes and other PVC coated materials. OTPP are warp knitted fabrics. As a rule, for warp and weft filaments a polyester industrial high tenacity low shrinkage (twisted or intermingled) yarn is used. For the binding filament a thinner polyester textile intermingled yarn is used.

The use of OTPP enables to decrease the surface density of the PVC coated material and to obtain a better coverage of the surface. This will help the customers to produce high quality PVC coated materials with excellent physical and mechanical properties with lower consumption of PVC paste.

	Unit	OTPP-01	OTPP-02	OTPP-07	OTPP-08	OTPP-05
SURFACE DENSITY	g/m ²	175±8	190±9	160±8	150±7	110±5
WARP/WEFT TENSILE STRENGTH OF A SAMPLE SIZED 50X200 MM, AT LEAST	kgs	210/190	210/210	210/140	210/110	120/110
WARP/WEFT ELONGATION AT BREAK, AT LEAST	%	28/28	28/28	28/25	28/25	25/25
SHRINKAGE IN HOT AIR (200 C, 10 MIN) CROSSWISE, NOT MORE THAN	%	5	5	5	5	5
WIDTH (MAXIMUM)	m	Up to 6.1	Up to 6.1	Up to 6.1	Up to 6.1	Up to 6.1

TST



Machina-TST produces gray technical fabrics (TST) of high tenacity polyester yarns of width up to 3.4 m with leno selvage. The materials are manufactured on advanced high-speed rapier weaving machines. The application of TST fabric is similar to the one of OTPP – PVC coated materials. Use of high technology weaving and warping, careful selection of raw materials guarantee steadily high quality of TST material. Depending on the customer's requirements the range of finished products can vary. Fabric of required density can be produced using both twisted and flat intermingled polyester high tenacity low shrinkage yarns.

	Unit	TST-01	TST-02	TST-03
SURFACE DENSITY	g/m ²	140±5	160±8	180±10
WARP/WEFT TENSILE STRENGTH OF A SAMPLE SIZED 50X200 MM, AT LEAST	kgs	2100/2100	2200/2200	2600/2600
WARP/WEFT ELONGATION AT BREAK, AT LEAST	%	28/28	28/28	28/28
SHRINKAGE IN HOT AIR (200 C, 10 MIN) CROSSWISE, NOT MORE THAN	%	5	5	5
WIDTH (MAXIMUM)	m	Up to 3.4	Up to 3.4	Up to 3.4

TBG-360 and TK-80 fabrics are produced of high tenacity technical polyamide or polyester yarns. The range of applications of these materials is rather extensive: production of soft supporting belts, polymer container ballasting devices, textile containers; steel piping ballasting; production of conveyer belts, technical rubber goods, special containers, geomatrix etc..



	Unit	TBG-360	TK-80
SURFACE DENSITY	g/m ²	360±30	295±15
WARP/WEFT TENSILE STRENGTH OF A SAMPLE SIZED 50X200 MM, AT LEAST	kgs	360/360	440/325
WARP/WEFT ELONGATION AT BREAK, AT LEAST	%	30/30	25/24
FABRIC LENGTH IN A ROLL	m	200	200



Geogrids: **BASALT**

Our company offers new revolutionary solutions of reinforcement of different objects with the help of the grid produced of basalt continuous filaments.

The major advantages of basalt-based grids in comparison with glassfibre grids are as follows:

- higher resistance to high temperature;
- higher strength;
- higher resistance to aggressive media.

Basalt geogrid: **MINE GRID BSS**



BSS mine grid is used as an alternative to metal mesh for supporting mine roofs and ribs. The reinforcing element is basalt filament. The coating is composed of special PVC which exhibits antistatic properties and complies with the fire safety regulations. The grid can be applied in development face as well as in working face as a safety breast support. To compare to metal lining, the use of BSS grid helps to reduce labour costs at mounting-dismounting operations, increase miners' working efficiency and secure safety of the working zone.

GENERAL CHARACTERISTICS

RAW MATERIAL COMPOSITION	WARP/WEFT TENSILE STRENGTH, KN/M, AT LEAST	GRID CELL DIMENSIONS, MM	WARP/WEFT ELONGATION AT BREAK, %	WIDTH (MAXIMUM), M
Basalt roving, fire-resistant and antistatic PVC	from 15/15 to 150/150	from 15x15 to 80x80	3	Up to 5,2 m.

* The company can produce grids with other parameters required by the customer.

The advantages of BSS grid over metal mesh are:

- light material weight (which causes reduction of transportation costs);
- possibility of material re-use;
- long service life;
- ease of mounting;
- corrosion resistance;
- safe working conditions.

BSS mine grid is mounted to the mine rock with the use of anchors of different types depending on the type and geometry of the mine tunnel.

Basalt geogrid: **BSD**



BSD grid is used as a reinforcing interlayer for reinforcement of road parts (cracks repair) and the whole asphalt-concrete surface. Using BSD grids for roads repair it is possible to essentially prolong intervals between scheduled reconstructions of asphalt-concrete road bed. Polymer-bituminous impregnation provides high adhesion to asphalt-concrete surface.

GENERAL CHARACTERISTICS

RAW MATERIAL COMPOSITION	WARP/WEFT TENSILE STRENGTH, KN/M, AT LEAST	GRID CELL DIMENSIONS, MM	WARP/WEFT ELONGATION AT BREAK, %	WIDTH (MAXIMUM), M
Basalt roving, polymer-bituminous impregnation пропитка	from 15/15 to 150/150	from 15x15 to 80x80	3	Up to 5,2 m.

* The company can produce grids with other parameters required by the customer.

The advantages of BSD grid:

- increases road surface resistance to temperature deformation;
- increases rigidity modulus of road surface;
- increases resistance to plastic flows (rutting);
- prevents reflective cracking.

CONSTRUCTION GRIDS

Geogrid: BASALT CONSTRUCTION GRID (SSB)



SSB grid is an advanced material based on basalt filament which is successfully used in bricklaying; for reinforcement of large-size bricks, aerated stone, foam blocks, gas silicate blocks, wall blocks of aerated concrete; for bonding works; for jointing facing and inner (bearing) layers of walls. It is also used as a reinforcing element of concrete blinding coats and self-leveling floors. A special alkali-resistant polymer impregnating compound ensures perfect grid protection against aggressive media and excellent adhesion to material. SSB grid is easy to use. Application of SSB grid in construction helps to achieve the essential increase of strength and durability of a facility at low cost.

GENERAL CHARACTERISTICS

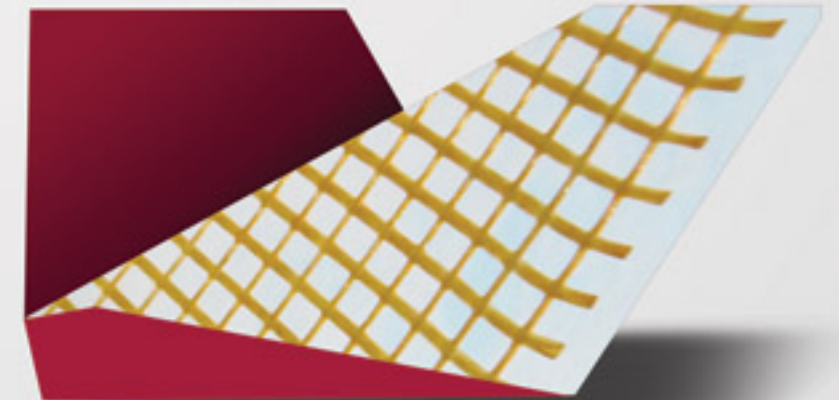
RAW MATERIAL COMPOSITION	WARP/WEFT TENSILE STRENGTH, KN/M, AT LEAST	GRID CELL DIMENSIONS, MM	WARP/WEFT ELONGATION AT BREAK, %	WIDTH (MAXIMUM), M
Basalt roving, polymer impregnation	from 15/15 to 150/150	from 15x15 to 80x80	3	Up to 5,2 m.

* The company can produce grids with other parameters required by the customer.

The advantages of SSB grid over metal mesh are:

- light material weight (which causes reduction of transportation costs and eases mounting);
- thermal conductivity of basalt is 100 times lower, consequently, there are no "cold bridges";
- easy to cut to the required size;
- corrosion resistance;
- safe working conditions.

Plaster glass mesh SS-MASTER



SS-Master glass meshes are produced of two systems of glass rovings or complex yarns stitched with one another by high tenacity yarn. The meshes are impregnated with polymer compounds to obtain stiffness and alkali-resistance. Plaster mesh is of high elasticity therefore is recommended for works on moving ("breathing") surfaces. It is ideal for application on brick walls. Plaster mesh effectively prevents cracking and increases layers stability. Plaster mesh is used for reinforcement of plaster layers on building face, protection of surface from cracking and creep failure, reinforcement of door and window frames in points adjacent to walls, reinforcement of surfaces for thermal insulation of buildings by "thermocoat" technology.

GENERAL CHARACTERISTICS

RAW MATERIAL COMPOSITION	WARP/WEFT TENSILE STRENGTH, N/5 CM, AT LEAST	WARP/WEFT TENSILE STRENGTH UPON 28 DAYS' HOLD IN ALKALI SOLUTION NaOH, N/5 CM, AT LEAST	SIZE OF MESH, MM	SURFACE DENSITY, G/M2
Glass rovings, polymer impregnation	1800/1800	900/900	5x5	160(±10)

* The company can produce grids with other parameters required by the customer.

The advantages of SS-Master plaster mesh are as follows:

- light weight and high strength;
- corrosion resistance (rust stains excluded);
- highly transformable on various surface reliefs;
- does not split the plasterwork into two layers thereby enlarging the area of cementing particles adhesion;
- high resistance to acid-alkali media;
- wear-proof and nice looking*.

