



norms and recommendations for standardization on territory of Russian Federation, if other is not established by the international agreements of Russian Federation.

Works on standardization in the field of construction will organize and carries out on all above listed directions Gosstroi of Russia.

Other state organs of management participate in works on standardization within the limits of their competence (Minpriroda, Minzdrav, and MVD of Russia).

### **The main frame**

The works on standardization and certification in glass branch of industry also are divided between Gosstandart and Gosstroi of Russia. All kinds of flat glasses and glass products, which find the application in construction concern to a line of business of Gosstroi Russian Federation.

Now in Russia are applied:

- State standards USSR, if not has expired their validity;
- State standards of CIS;
- State standards of Russia.

In Russia, all production is divided into classes by the All-Russian Qualifier of Production (AQP). The glass (building and technical assignment) is incorporated in 59 classes. It is an extensive class of diverse materials and glasses-based items, which includes:

- Flat glass has a code AQP 59 1100;
- Figured glass has a code AQP 59 1220;
- Laminated sheet glass has a code AQP 59 2330;
- Building profile glass has a code AQP 59 1310;
- Reinforced glass has a code AQP 59 1210;
- Glass blocks has a code AQP 59 1330;
- Insulated glass units has a code AQP 59 1320;
- Tempered glass has a code AQP 59 1460;
- Glass pipes has a code AQP 59 2500;
- Heat-insulating materials from fiber glass has a code AQP 59 5000;
- Structural materials based on fiberglass (fibrous glass reinforced plastic, glass concrete etc.);
- Foam glass has a code AQP 59 1470;
- Finishing materials:
  - Glass tiles has a code AQP 59 2140;
  - Sheets and plates from glass-ceramic slag has a code AQP 59 6200;
  - Structural glass “Steklokristallit” (“Steklokremnezit”) or glass-crystal materials has a code AQP 59 1480;
  - Tessera has a code AQP 59 1450;
  - Glass for intarsia (stained glass) has a code AQP 59 1250.

The development and confirmation of State Standards on various kinds of glasses and articles from it passes on two departments: Gosstandart and Gosstroi Russian Federation.

The list of State Standards on glass and the items from it acting in Russia and fixed for Gosstroi Russian Federation are indicated in appendix 1.

All activity in the field of standardization is carried out in the correspondence with a State System of Standardization (SSS). Because of that the standards on production are subdivided into kinds:

- The standards of general specifications, which contain requests presented to groups to homogeneous production;
- The standards of specifications, which contain requests to concrete production;
- The standards on methods of monitoring (tests, measurements, analysis), which allow to ensure objective check of requirements to quality of production determined in the standards on it.

The requirements presented to quality to production are divided on mandatory and recommended that precisely should be stipulated in the standards. In case in the standards there is no separation of requirements, it is meant, that all requirements presented to production, are mandatory, that it is important to know for want of realizations of products certification.

The analysis of the normative documentation, acting in Russia, on building glasses shows the following:

a) In a quantitative sense:

- The overwhelming majority of the standards regulate requests to production and looks like technical specifications;

- 12 standards are devoted to test methods;

- The standards on application of a building glass and protection of an environment are absent;

b) In a qualitative sense:

- By development of the standards, the study and application of the international standards, in particular, ISO, CEN standards, of national standards of foreign countries are carried out;

- On used terms the standards oriented in main on the experts having the significant sum of knowledge in the given area;

- By development of State Standards on building glass and items from it the large attention is given, to that where and for what problems solution indicated production will be applied. Taking into account that on a large part of territory of Russia the severe climatic conditions, in standards on production are mortgaged such requests as: durability, frost resistance and accordingly methods of their tests;

- The standards necessarily contain section “Rules of acceptance”, in which determines the order of realization of acceptance of production, size of presented consignments, plan of monitoring, inspected parameters, program of tests (acceptance, periodic, typical). Besides, for each test determine periodicity of its realization, and checked characteristics of production, properties and sequence of their test. For selective and statistical monitoring specify the plan of monitoring (volume of an inspected consignment, volume of selection, control specifications and decisive rules);

- The section “Methods of monitoring”, contains methods of testing, including requirements to means of measurements, request to samples for tests, sequence of operations for want of monitoring, rule of processing of outcomes of measurements and decision making about production quality, which should ensure objective check of requests to quality of production and correspond to the nomenclature of parameters of quality (requests) presented to production, and practically they are based on the measurement methods, tests and analysis of finish products.

- The standards contain sections “Packing”, which determines requests to packing materials, method of production packing (depending on conditions of transportation in container, without container and etc.), specify consumer transportation packing with allowance for of requests on used type of transport, distance of carriage, economic forces, including multiturnaround container, unification of sizes, auxiliary materials used for want of packing.

- The standards contain sections “Transportation and storage”, which largely depend on the concrete terms of delivery, distances of transportation, type of transport, regional conditions and other features of application.

## **Conclusion**

From accumulated experience, in a basis of development of the standards in the field of a building glass it is offered to put technical philosophy, which can shortly be formulated as the following theses:

- The standards should organize a hierarchical system connected to the standards from adjacent branches, and enveloping nomenclature, requirements to production, requirements to test methods, and also recommendation and requirements on application;

- All system and each standard separately should, first of all, answer to interests of the consumers and not only in a sense of requirements to regulated parameters of quality, but also on construction, simplicity, clearness and availability of an exposition;
- The standards should be a means simplifying the conclusion of the agreements on delivery of production that is why to contain the optimum nomenclature of mandatory quality parameters and sufficient information for the consumer and designer as reference data;
- The standards should reflect a modern scientific and technical level of development not only productions (manufacturer), but also the designer, consumer, and not only concerning requirements to quality, but also on a range, so, for example, the development of the standards on such kinds of a building glass, as glass with special heat-physical properties (heat-adsorbing, heat-reflection, sun-protection) is considered perspective. The reasonable application of such glass allows to create inside locations increased comfort and to save energy going on it heating and cooling. The special attention should be given to development of the block of the standards on safe building glasses and methods of their tests: laminated sheet glasses and glasses of increased strength.
- The mandatory requirements, first of all ensuring safety of the person, protection of an environment and unification, on which the mandatory certification should be conducted, should be entered into all standards;
- The standards should be as much as possible unified with the International standards ISO and CEN with allowance for specificity of the operating conditions and application of building materials in Russia;
- The system can be in the long term supplemented by other blocks, for example, standards of technological preparation of production, standards on protection of an environment, and also recommendation documents, such as the specifications for consumption of energy, expenditure of raw material etc.;
- The standards should promote increase of a professional level of the russian businessmen and ensure their successful activity.

Alongside with State Standards the Technical Specifications act also which are developed by the manufacturers producing specific kinds of production. The Technical Specifications have broad distribution, since they, as a rule, are developed by the enterprise on concrete produced production, affirmed by the organization - developer of Technical Specifications, passed the coordination with the customer and examination in Parent standardisation organizations on various industries (depending on that on what kind of production the Technical Specifications are developed). In the field of production from a glass parent Organization on standardization is joint-stock company "GRI". On all cycle from development up to the confirmation of Technical Specifications is expended much less than time, than on development of State Standards, than and their mobility and broad application at the manufacturers and by the consumers is explained. Alongside with it the Technical Specifications contain all same sections, as State Standards. Still important request presented to Technical Specifications, that the requirements determined in TS should not contradict mandatory requirements of State Standards extending on similar production.

The certification in Russia is divided on mandatory and voluntary. To mandatory certification from glass articles are subject: the domestic glassware, glass container for food articles, medical glass, insulated glass units, heat- and soundproof finishing materials (including bases on fiberglass), the automobile glasses; all remaining items from a glass are subject to voluntary certification. The mandatory certification is carried out on mandatory requirements to production indicated in the standards and the List of production, being a subject mandatory certification authorized by Government of Russia. However, many customers demand availability of the certificates on all used building materials, for example, Government of Moscow, Government of the Moscow area, Central bank of Russian Federation, therefore it is better to have Russian certificates on all kinds of a glass, especially building assignment.

The certification of items from a glass is carried out accredited Gosstandart and Gosstroi of Russia in the correspondence with areas of their activity certified centres, and the tests for the purposes of certification carry out the accredited test centres. Each certified or test centre has the list of kinds of production, which it is authorised to test or to certificate, and list of kinds of tests, which it is authorised to carry out.

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## Appendix 1

### THE LIST of STATE STANDARDS ON GLASS of BUILDING ASSIGNMENT

#	Number of the standard	The name of the standard	The note
1.	GOST 111-90	Polished glass. Specifications	
2.	GOST 5533-86	Figured sheet glass. Specifications	
3.	GOST 7481-78	Wired sheet glass. Specifications	
4.	GOST 8894-86	Glass pipes and fittings. Specifications	
5.	GOST 9272-81	Hollow glass blocks. Specifications	
6.	GOST 21992-83	Profile building glass. Specifications	
7.	GOST 24866-89	Sealed insulating glass units. Specifications	Is revised, are subject to mandatory certification
8.	GOST 17057-89	Glass carpet-mosaic facing tiles and carpets from them. Specifications	
9.	GOST 10134.0-82 - GOST 10134.3-82	Glass inorganic and glass-crystal materials. Methods for determination of chemical stability	
10.	GOST 11067-85	Inorganic glass and glass-crystal materials. Methods for determination of impact strength	
11.	GOST 10978-83	Glass inorganic and glass-crystal materials. Method for determination of temperature coefficient of linear extension	
12.	GOST 9900-85	Inorganic glass and glass-crystal materials. Methods for determination of elasticity module static bending at cross	
13.	GOST 25535-82	Glass wares. The method for test of thermal stability	
14.	GOST 9553-74	Silicate glass and glass-crystal materials. Method for determination of density	
15.	GOST 22279-76	Glass tempered enamelled - stemalit. Specifications	Is cancelled
16.	GOST 26302-93	Glass. Methods of determination of light regular transmittance and light regular reflection	
17.	GOST R 51136-98	Protective laminate glass. General specifications	

#	Number of the standard	The name of the standard	The note
18.		Glass with low-emissivities hard cover. Specifications	For the first time is developed
19.	GOST 10499-95	Heat insulating products made of glass staple fibre. Specifications	Are subject to mandatory certification
20.	GOST 22620-83	Stonemelted pipes. Specifications	Is cancelled
21.	GOST 19246-82	Sheets and plates of slagsital. Specifications	Is cancelled
22.	GOST 17177-94	Thermal insulating materials and products for building application. Test methods	
23.	GOST 7076-87	Building materials and products. Method of thermal conductivity determination	
24.	GOST 26602-85	Windows. Method for determination of a heat transfer resistance	
25.	GOST R 50418-92	Soluble sodium silicate. Specifications	
26.	GOST 11103-85	Inorganic glass and glass-crystal materials. Method for determination of thermal stability	
27.	GOST 16297-80	Sound isolating and soundproof materials. Test methods	
28.	St SEV 2052-79	Glass. A method of monitoring of internal stress in glass units	Standard of Council of Economic Mutual Aid
29.		Laminated sheet building glass	The developed standard
30.		Tempered building glass	The developed standard