STANDARDIZATION OF REFRACTORIES

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According to a decree issued by the Central Committee of the Communist Party of the Soviet Union and the Council of Ministers of the USSR the contribution made by standardization in the matter of improving product quality is to be increased. The decree notes that the cost-benefit indices of manufactured products improved during the 8th five-year plan but many types of products still fail to meet modern requirements despite the fact that the manufacture of low-quality products harms the economy of the country and provokes justified complaints from the users.

Some ministries and authorities fail to introduce effective measures to ensure the properly timed introduction of standards and technical specifications (TS) and display an indulgent attitude to infringements.

Standards and TS often do not reflect the present-day requirements of the national economy in terms of product quality.

To increase the part played by standards in improving product quality and production efficiency the Central Committee of the Communist Party of the Soviet Union and the Council of Ministers of the USSR have charged the heads of ministries, authorities, establishments, and organizations with the task of developing and introducing at every establishment and their branches measures intended to strengthen state discipline and increase responsibility at production and management levels for the prompt adoption and rigorous observation of standards and TS, and of adopting measures aimed at a radical improvement in the method of preparing and in the scientific and technical level of standards and TS.

During the period 1971–1975 the State Standards Committee of the Council of Ministers of the USSR (USSR State Standards Committee) intends to revise, in collaboration with the ministries and authorities concerned, all standards ratified up to 1966.

The Central Committee of the Party and the Council of Ministers consider an improvement in product quality to be one of the most important economic and political tasks facing the Soviet people at this stage of development of communist construction.

Standards and TS are of considerable importance in the manufacture of refractory materials.

Standards and TS enable an establishment to develop a stable production process, subsequently to improve it, to mechanize and automate, and to modify technological equipment so that product quality is improved and labor productivity increases. The compliance with all requirements of the standards and TS to the point where the user is supplied a product which meets State Standard (GOST) specifications in every single detail must be mandatory.

Standard modifications put forward by organizations are considered from the standpoint of their contribution to technical advance and after verification by the production of experimental batches of specimens are either taken into account in existing State Standards or used as a basis for new standards and TS strictly in accordance with established procedure.

In 1968 the USSR Standards Committee ratified State Standard GOST 4385-68 "Refractory Products—Classification (technical)" which is based on the nomenclature of all existing refractory materials grouped in accordance with density and refactoriness. This standard is taken as a guide in the preparation of State Standards and TS for the individual types of refractory material.

In addition the USSR Standards Committee has issued standards relating to the basic aspects of a standardization system, its organs and services, the procedure for preparing and ratifying State and Industrial Standards, Standards of the Union Republics and standards of individual establishments, and to the formulation, content and presentation of Standards and the award of the State Badge of Quality (GOST 1.0-68, 1.1-68, 1.2-68, 1.3-68, 1.4-68, 1.5-68, and 1.9-67).

When preparing a standard the institute concerned must be guided by these basic Standards, by the product indices actually submitted by the producing plant, by all new developments in the production of a given type of refractory, and by the cost of the refractory to the user.

Up to August 1, 1973, a total of 12 of the 35 standards issued prior to 1966 for products and materials had been revised. Four more State Standards will be submitted for ratification to the USSR Standards Committee by the end of 1973.

The Ukrainian Scientific Research Institute for Refractories is currently engaged in the preparation for revision of State Standard GOST 1599-53 "Refractory Products for the Lining of Blast Furnace Regenerators." The increase in the heating temperature of the air in the regenerators places more stringent requirements on the physicochemical properties, dimensions, and configuration of refractory products for the crown, walls, and checkerwork.

The refractories for the checker were decided taking into account data relating to the temperature distribution and thermal loads in experimental regenerators:

- Class B chamotte refractories for the low-temperature zone for a static load not above 12 kg/cm² at a temperature not exceeding 800°C and for a static load not above 20 kg/cm² at a temperature not exceeding 400°C;
- kaolin and mullite refractories containing at least 62% Al₂O₃ for the high-temperature zone for a load not above 5 kg/cm² at a temperature not exceeding 1200°C;
- dinas and mullite-corundum refractories containing at least 72% Al₂O₃ for the high-temperature zone for a load not exceeding 5 kg/cm² at a temperature of 1200-1300°C and for a load not exceeding 1 kg/cm² at a temperature of 1300-1350°C.

Chamotte, kaolin, high-alumina, and dinas refractories are dealt with in a single Standard.

The revised version of the State Standard for blast furnace refractories will take into account the changes which have occurred in blast furnace practice, i.e., the increase in furnace volume to 5000 m³ and the intensification of the process by enriching the blast with oxygen. The blast furnace stacks are currently lined with kaolin brick of a porosity not above 12% and a compression strength not below 700 kg/cm² with minimum dimensional and curvature tolerances. The brick is produced by the Zaporozhe refractory plant.

An improvement in steel quality, the higher temperature of the liquid steel in continuous-casting plants, the greater corrosive action of low-alloy and carbon steels and slags are factors which call for a considerable improvement in the quality of steel-making products and will be taken into account in the revised version of State Standard GOST-5500-64.

In 1972 the USSR Standards Committee ratified State Standard GOST 17630-72 "Technological Processes in the Manufacture of Refractories - Terms and Definitions" which came into effect July 1, 1973. This Standard specifies the terms and definitions to be used in science, engineering, and production work for the main concepts in the field of the technological process in the manufacture of refractories and their use is obligatory in all relevant documents, textbooks, teaching aids, and technical and reference literature.

There are about 270 technical specifications of groups 1 and 2 for refractories. The Main Administration of the Refractories Industry has revised and reissued all TS published up to 1966.

The technical specifications ratified by the Main Administration of the Refractories Industry of the USSR Ministry of Ferrous Metallurgy and the Technical Administration of the Ukrainian Ministry of Ferrous Metallurgy are prepared mainly by the All-Union Institute of Refractories, the Ukrainian Scientific Research Institute for Refractories and the Eastern Institute of Refractories in accordance with their special interests. The All-Union Institute of Refractories is the organizational base for standardization.