

# MODERN CONDITION OF THE Mica INDUSTRY IN RUSSIA. PROBLEMS AND PROSPECTS.

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**History of using of mica.** The first large-leaved mica, which European civilization met, was mined in Karelia. In the 17th-18th centuries, its large shipments were exported to the west via the Archangel port, and it was one of the most important export goods of Russia. In the middle of the 17th century an independent mica mining center appeared in Siberia. The role of local consumption of mica was quite high. The Siberian industry developed pretty fast. At the end of the 17th century, deposits of mica were discovered on Aldan. They were not exploited and were forgotten. Only 250 years later, before the Great Patriotic War, they were reopened. Then began their exploitation, which gave mica for the defense of the country. By the last quarter of the 17th century, the discovery of mica deposits in the Mamsk region of the Irkutsk region will take place. For the first time, mica was used for insertions into window bindings of ancient Novgorod in the 10th and 11th centuries, when the wealth of the Kola Peninsula was being developed in this center of Russian civilization. The great demand for large-mica mica was in the 16th century. The English merchants exported it from Russia in large batches, preferring mica windows to glass that wasn't perfect yet. In the first quarter of the 18th century, this mica was mainly used for ship windows, lanterns and windows of small houses in towns and villages in Siberia. In the late 19th and early 20th century, mica was mainly used for various economic needs. The next stage in the development of the mica industry of the Soviet Union took place during the Great Patriotic War.

**Mica's properties and species.** Mica is one of the most spread minerals in the Earth's crust. Its content in the upper layers of the earth's crust composes 2-4% of the total volume of rocks. Despite the wide distribution of various micas in nature, including biotite (magnesian-ferruginous mica), lepidolite, zinnwaldite (lithium mica), and others, muscovite  $\text{KA}_{12}[\text{AlSi}_3\text{O}_{10}](\text{OH},\text{F})_2$  (potassium-aluminium mica) and phlogopite  $\text{K}(\text{Mg},\text{Fe})_3[\text{AlSi}_3\text{O}_{10}](\text{OH},\text{F})_2$  (potassium-magnesian mica) have the greatest industrial importance [1].

**Mica's stocks in Irkutsk district.** In the bowels of the Irkutsk region there are two types of mica: muscovite (light-potassium mica, lying in the Mamsko-Chui and Gutar-Biryusinsky regions), phlogopite (ferruginous-magnesian mica, concentrated in the Slyudyansky-phlogopite region). The forecast resources of all types of mica are estimated at 1,640 million. The Slyudyansky phlogopite region is located on the southern shore of Lake Baikal, in the vicinity of Slyudyanka. Now the forecast resources of phlogopite in the Slyudyansky district are estimated at about 300 thousand tons.

**Areas of use of mica.** To date, a new field of use of composite materials based on mica (micalex) has been revealed - as radiation-resistant materials for the disposal of radiation waste. The possibility of using mikalex in the electronics industry, as a substitute for ultrahigh-vacuum ceramics, and also in the field of space technologies. [2,3]

At the moment, mica is used in many industries, including electronics. Due to its rich physical, chemical and thermal properties. Rare natural qualities of mica will have great significance in the development of future technologies, for example, in nano-technologies. The use

of mica will be in demand in almost all macro- and nano-spheres of tomorrow. Therefore, further research into this mineral attracts the inquisitive minds of scientists.

**Conclusions:** the most promising areas for the use of mica are:

- In the environment.
- As a sorbent for cleaning from various pollutants.
- Promising areas for the use of mica and materials based on it for radiation protection and disposal of radioactive waste are recommended.
- The possibility of using mica in the space area.
- Use of mica in nano-technologies. The main attention can be paid to silicate containing nano-composites, as machine-building materials, optimally combining high parameters of physical-mechanical, technical-economic and technological characteristics and long-term development prospects.

#### **References**

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