TECHNOLOGY FOR PRODUCING BLUE ULTRAMARINE FROM LOCAL RAW MATERIAL

Description
A method for producing a blue pigment of the ultramarine type was designed which involves soft sulfidation of white clay of the Obskoi open pit with the addition of sodium carbonate and protection of the mixture from oxidation using carbon or coke. The white clay of the Obskoi open pit contains aluminum and silicon in a ratio close to that in the sodalite cell of ultramarine \( \text{Na}_{8.5}\text{Al}_6\text{Si}_8\text{O}_{28}\text{S}_{4.5} \); therefore, it is sufficient to introduce sodium carbonate and sulfur into the mixture. The mixture placed in ceramic crucibles is subjected to thermal treatment in electric furnaces. The treatment results in the formation of a blue pigment, which can be used as a commercial product after grinding, washing-off of excess sodium salts, and drying.

Technical appraisal and economic benefits
The white clay used has an insignificant admixture of iron; therefore, washing of the clay with acid solutions is excluded and the technology is environmentally more appropriate. The process of ultramarine production is made cheaper by reducing the sulfur content by a factor of 4 to 5 and by decreasing the temperature of the process.

Application areas
Ultramarine is used in the food, varnish-and-paint, ceramic, and glass industries; it is also employed to color concrete, cement, and plastics and to manufacture aqueous dispersion paints.

Development stage
Technical specifications for obtaining the pigment under laboratory conditions have been developed. Experimental lots have been manufactured and forwarded for testing in paving slab. The technology is being tested at the Novosibirsk Ceramic Product Plant; in case of investment, large-scale production of the pigment is possible.

Patent situation
A patent was granted in the Russian Federation.

Commercial offers
Delivery of small lots of the pigment under contracts. Launching joint production. Sale of licenses.

Estimated cost
The cost of the pigment is 50-70 rubles/kg in ton-scale production (at the level of iron oxide pigments).

Contacts
Cand.Sc. Pavel P. Samoylov, Scientific Secretary
Nikolaev Institute of Inorganic Chemistry, Siberian Branch of the Russian Academy of Sciences
3, Prosp. Akademika Lavrentyeva, Novosibirsk, 630090, Russia
Phone: (383) 330-94-86
Fax: (383) 330-94-89
E-mail: sam@che.nsk.su
http://www.che.nsk.su