FINE-GRAINED CORUNDUM (ALPHA ALUMINA)
OF SPECIFIED GRAIN SIZE

Description
A new technology is suggested for producing fine-grained corundum of standard quality. The ready product is white powder, more than 99% alpha alumina, consisting of colourless transparent single crystals of corundum and colorless unconsolidated aggregates of single crystals.
The technology ensures production of crystals with user-specified grain sizes, exact sizes less than 1µm and in the ranges of 0.5-1 µm and 0.5-2 µm. Corundum crystals of grain sizes <0.5 µm are of spherical shapes. Crystals are synthesised from aluminium oxides and aluminium hydroxide.

Technical appraisal and economic benefits
Corundum crystals of specific sizes are synthesised using standard equipment. Synthesis is technologically simple and occurs at 1100-1250°C and the atmospheric pressure. The economic benefits not estimated, as larger-scale production of crystals has been so far impracticable.

Application areas
Corundum crystals of specific sizes can be used as base material or modifying agents for the production of:
- sintered ceramics (including high-grade ceramics), ceramic composites, and composite materials in various industries;
- abrasive compositions, brighteners, and suspensions used instead diamond dust for fine surfacing in engineering (including production of engines, ball-bearings, etc).

Development stage
Pilot models manufactured in the Institute of Mineralogy and Petrography SB RAS (Novosibirsk) and in a large-scale enterprise in Russia.

Patent situation

Commercial offers
- Investment contract for commercialization of the project (organization of production);
- Joint commercialization;
- Licensing agreement;
- Joint production;
- Production and supply contracts.

Estimated cost
Under the contract.

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