



## NEW TYPE OF FERTILIZER FOR DEVELOPMENT OF AGROCHEMICAL PRODUCTION

### Description:

Creation of small scale production of chlorine-less potash mineral fertilizer "ZEOKALI" with output of 2000 tons per annually is the aim of given proposal. Received fertilizer represents a commercial product by itself. Potassium is an irreplaceable compound of mineral fertilizers. Great interest towards non-traditional methods of reception of potash fertilizers from sea and ocean waters is shown in recent years in countries where potassium containing deposits are not available. The offered by us technology of extraction of potassium cations from sea-water and reception of potassium mineral fertilizers is based on specific character of dependency of system "sea water - KI" from temperature, where KI is used as a substratum and sea-water as a source of potassium. This effect enables to develop "dual-temperature" technology in which for concentration of potassium from sea-water does not require use of any chemical.

### Innovative Aspect and Main Advantages:

Presented technology for reception of potash mineral fertilizer is environment-friendly, no chemical reagents are needed and thus there are no by-products and toxic emissions. Technology has following advantages:

- ✓ availability of accessible and cheap raw material
- ✓ simplicity, profitability and ecological compatibility of process
- ✓ high consumer qualities of received product (prolonged action, combination ability, absence of chlorine, conditioning properties)
- ✓ increasing of productivity of agricultural crops, reduction of toxic substances in plant and grain, improvement of plant and fruit structure

### Areas of Application

Received product "ZEOKALI" –klinoptilolite enriched by potassium can be used as complete fertilizer both in natural and artificial soils and irrigating systems. Product will be purchased and used by large and small agrarian and hothouse enterprises or farms inside and outside of the country. "ZEOKALI" will be cheaper than existing analogues approximately by 20%. Selling of received product in Southern Caucasus (Georgia, Armenia, Azerbaijan) and Black Sea coastal countries (Greece, Bulgaria, Turkey, Syria, Romania), in Saudi Arabia and Germany will be very prospective. Selling of license and introduction of mentioned technology in sea coastal countries having deposit of natural zeolites is economically favorable also.

### Stage of Development:

Presented technology is developed on the basis of long-term scientific researches and laboratory experiments at the Department of Physical and Analytical Chemistry of the TSU and Scientific-Research Institute of Membrane Technologies, Batumi. Currently, all scientific-experimental works on establishment of main technological parameters under ISTC scientific project G-1302 are already finished and sample of end-product is received in laboratory conditions. The model-experimental installation is developed, made and tested. Approximately 60 kg of chlorine-free zeolite-based potassium fertilizer "ZEOKALI" with content of potassium 5-6% per zeolite mass is received.

The technology to be developed has common scientific foundations which can be viewed as a full-scale agrochemical system capable of addressing practical tasks facing agro chemistry. Application, with reasonable combination, of the new kind of fertilizer, will bring about the following results:

- A possibility for agriculture to improve the quality of its agrochemical system
- An opportunity for real and tangible reduction of agrochemical service costs in plant growing sector, without affecting the quality and quantity of agrarian produce
- Creation of new prospects for using the new technology; including the first-ever chance of introducing a new kind of agrochemical service in the farming sphere.

As a result of the project implementation, building an own production unit is planned

Attraction of investors is planned in order to set up fertilizer production facilities.

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