Description
A technology was designed to produce nicotinic acid by direct oxidation of β-picoline by atmospheric oxygen. The process is carried out in a tubular reactor using a highly selective oxide catalyst. Extraction of crystalline nicotinic acid from the reaction mixture is performed in a crystallizer pan immediately after the reactor. The content of the main component in the product is not lower than 99.5%. Reburning of unreacted β-picoline and traces of uncondensed reaction products is carried out in a separate reactor using an oxide catalyst. The employed ring-shaped catalyst is produced by a nonwaste technology and ensures a yield of nicotinic acid of up to 85%.

Technical specifications
Expenditure of materials and electric power in production of 1 kg of nicotinic acid:
- β-picoline [kg] 0.91 – 0.93
- catalyst [kg] 0.001
- electric power [kW/hr] 0.9 – 1.0
- steam [kg] 2.8 – 3.1

Technical appraisal and economic benefits
- lack of sewage, solid waste, and toxic gas emissions;
- minimum number of process stages and process continuity;
- low power consumptions;
- use of standard equipment.
No foreign analogs of the technology are available

Application areas
Medicine, pharmaceutics, agriculture, food and cosmetic industries.
**Development stage**
A production plant with a capacity of 500 tons nicotinic acid per year has been designed (Khimplast company, Novosibirsk).
The launching of the first phase of the project with a capacity of 200 tons/year has been completed; batches of nicotinic acid have been produced.

**Patent situation**

**Commercial offers**
Sale of licenses for the process.
Delivery of the catalyst.

**Estimated cost**
To be negotiated

**Contacts**
Dr.Sc. Valentina I. Simagina, Head of Coordination Laboratory,
Boreskov Institute of Catalysis, Siberian Branch of the Russian Academy of Sciences
5, Prosp. Akademika Lavrentieva, Novosibirsk 630090, Russia
Phone: (383) 330-73-36
Fax: (383) 330-80-56
E-mail: bic@catalysis.nsk.su
http://www.catalysis.nsk.su