IC-30-1 HIGH-SILICA ZEOLITE CATALYSTS FOR PRODUCTION OF NONLEADED HIGH-OCTANE GASOLINES

Description
The Institute of Catalysis of the Siberian Branch of the Russian Academy of Sciences in cooperation with the Zeosit Engineering Research Center of the Siberian Branch of the Russian Academy of Sciences and the Novosibirsk Chemical Concentrates Plant designed a commercial technology for producing zeolite catalysts with granules of various shapes and sizes:

- small spheres $\varnothing$ 0.5–1.0 mm
- beads $\varnothing$ 2–4 mm,
- extrudates $\varnothing$ 2–4 mm, length 3–10 mm

Technical appraisal and economic benefits
• high activity and stability;
• lower cost compared to conventional technologies, which is due to:
  - nonuse of expensive organic templates in the synthesis of zeolite powders;
  - a decrease in the number of stages in catalyst preparation;
  - a decrease in the energy expenditure (by 50-70%).
• hydrogen-containing media are not required;
• resistance to poisoning by nitrogen and sulfur-containing compounds;
• large service cycle.

Application areas
Production of nonleaded high-octane gasolines and their components from straight-run oil fractions, gas condensates, casing head gasolines, and chemical wastes, including mixtures of alcohols and olefins;
production of aromatic hydrocarbons (benzene, toluene, xylenes) from olefin-containing petroleum gases;
replacement of mineral acids used as catalysts and metal halides in organic syntheses.
(alkylation, amination, gas-phase nitration).

**Development stage**
Full-scale catalyst production was launched in Novosibirsk.

**Patent situation**
Patents were granted in the Russian Federation (1994 and 1996). The holder of the patents and licenses for the catalyst production technology is the Institute of Catalysis, Siberian Branch of the Russian Academy of Sciences.

**Commercial offers**
Commercial implementation of processes using the catalysts; quality control of supplied catalyst batches.

**Estimated cost**
Price is to be negotiated.

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