

HYDROGENATION OF FATTY ACIDS INDUSTRIAL CATALYSTS

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Annotation. *This article provides a general technical description of nickel catalysts used in the hydrogenation of fats, oils and fatty acids, as well as indicators of the technological properties of the catalyst*

Keywords. *catalyst, fatty acids, nickel, fat, oil products, activator, inhibitor.*

Catalyst macrostructure used in the hydrogenation industry and according to the technique of application, disperses (powdery) and stationary (stationary) divided into catalysts. As an active metal in the preparation of catalysts D.I. Mendeleev elements periodic system as in elements periodic the VIII brass metals of the system-platinum, palladium, nickel, etc. used. Under certain conditions, other groups can be found in intermediate metals, including copper Ham exhibits hydrogenation activity, fat and fat in recent years acid hydrogenation catalysts are being prepared on the basis of nickel. Increase the activity, selectivity, barcarity of catalysts and other to improve their properties, they are given an amount of 0.5-5% promoters-zirconium,

magnesium oxides and a number of other metals are added.

A promoter is a substance that has or does not have a catalytic effect, but enhances the activity of active metal-catalysts. To improve their properties, 0.5-5% of promoters are added to them-zirconium, magnesium oxides and a number of other metals.

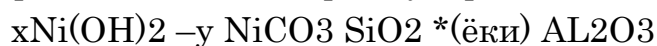
Powdery catalysts are dispersed in hydrogenated feedstock and filtered out of hydrogenate. The filtered catalysts are dispersed in the hydrogenated feedstock and filtered out of the hydrogenated. The filtered catalysts are partially returned to the hydrogenation process and the remainder is used to obtain new catalysts for the active metal. Stagnant catalysts hydrogenation in their reactors, the magnified bulib is used until their activity, selectivity and mechanical barcarity are knocked down.

Catalysts are divided by the method of obtaining into such types as impregnated, precipitated and alloy. Hydrogenation of fat and fatty acids the commodity form of catalysts depends on the conditions in which they are used. In raw materials, a dispersed catalyst is prepared in a suspension or powder sheet in solid oil, and stationary catalysts are prepared in a granule or tablet sheet. In the process of hydrogenation of fat and fatty acids, nickel catalysts

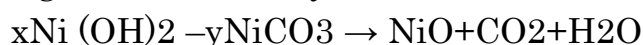
suspended in the hydrogenated feedstock, immersed in the Messenger, are widely used.

Production of nickel catalysts. The technological scheme for the production of a precipitated high-dispersion nickel catalyst is made up of the main stages in the sheep: The first step is to sink the nickel carbonate base into the Eller. By heating an aqueous solution of sodium carbonate (Na_2CO_3) to 60-800 C, Super –crushed Elter- SiO_2 and AL_2O_3 are added to it, and aqueous solutions of catalytic metal salts-nickel chloride, nickel nitrate and nickel sulfate-are added to the suspension at a high speed of the promoter in the bath.

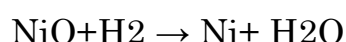
Under such conditions, sediments of small crystals in the elterite of nickel carbonate, which are poorly soluble in water, become characteristic. A Holda precipitate that fails to qualify a promoter can be represented by the formula



The second stage is the thermal decomposition of nickel carbonate. the sediment in the filter is washed clean of sulfates, nitrates and chlorides, water is added and dried in a desiccant that splits into small particles. Nickel carbonate is thermally processed into dry, high-dispersion powder in rotating heating ovens at a decay rate.



In addition to nickel oxide (NiO) in heated products, nickel silicates are chromium, which is characteristic in the thermal decomposition and deposition of elator and promoter carbonates. The third stage is the return of nickel oxide. In addition to nickel oxide (NiO), nickel oxide is returned with hot hydrogen at 450-5100s in horizontal rotating furnaces.



The return of nickel oxide does not go to the end. The actual returned catalyst would contain Ni, NiO , SiO_2 or AL_2O_3 , and a small amount of difficult reversible nickel silicates (if a silicate Elter was used).

The fourth stage is to bring the catalyst into the form of a commodity. Returned nickel catalysts are rapidly combustible. In an open pit, high-dispersion nickel, a cup of heat is released and quickly oxidized with oxygen. Therefore, catalysts completely lose their hydrogenation activity, heats up and makes large-large pieces dressing. To chemo the returned catalyst from accelerated oxidation, it is mixed with deeply hydrogenated oil, then the suspension is cooled and the form is given.

Previously, commodity-shaped catalysts were in the form of a tang-shaped solid precipitate, in which the catalyst particles were evenly spread out. And in recent years, catalysts are being prepared on a flat drop carpet. This led to a reduction in the cost of packing, storing, and transporting catalysts with less

dust dressing in the process of loading and unloading it at Ham. Another method passivates the nickel surface with dosed oxidation to reduce rapid flammability.

General technical description of nickel catalysts used in the hydrogenation of fats, oils and fatty acids.

The technological properties of the catalyst to be achieved are as follows indicators are used: hydrogenation activity, selectivity isomerization property; filtration; resistance to catalytic poisons and viscosity. In Russia and a number of other countries, standardized methods of Catalyst bakholization are used.

Hydrogenation activity by the vnij method of Catalyst hydrogenation activity is enriched through the saturation level of dry, refined and refined sunflower oil. In a laboratory reactor with a diameter of 30 mm and a working capacity of 100 mm, 50 g of hydrogenated oil is applied to it and hydrogen heated to 1800s in the stream. A catalyst suspension with a nickel content of 0.05% is added in the heated oil. Hydrogenation takes 1 hour at 200 + 30s with a hydrogen barbotage rate of 3 l /min and the sample is taken after 0.5 hours. The degree of hydrogenation is determined by the decrease in the refractive index of the oil. If the beam refractive index of the oil consisting of glycerides of fatty acids of the C16-C18 series decreases to 0.0001, its iodine number will be reduced by one unit.

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