EVALUATION OF HYDROGENATING PROPERTIES OF CATALYSTS

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Activity is the most important characteristic of a catalyst, as it determines its performance and cost-effectiveness of use [1-3]. In the process of heterogeneous catalysis, which includes the hydrogenation of fats and oils, the activity of the catalyst can be expressed by the reaction rate constant related to the catalyst loading surface:

$$A_{\mathbb{G}} = \frac{\mathcal{K}}{\mathcal{S}}$$

Where: **A** – activity,

К – reaction rate constant,

S – the surface of the catalyst. However, the determination of the catalyst surface is associated with significant experimental difficulties, therefore, in practice, the following indicators are often used as a criterion for catalyst activity:

$$A_{\surd} = \frac{K}{\surd_k} \quad (6) \quad or \quad A_q = \frac{K}{q_k}$$

where: **V_q** - the volume of catalyst loading

q_k - catalyst loading weight The constant rate of hydrogenation of oils and fats can be determined by the ratio:

$$K = \frac{И \cdot ч_с - И \cdot ч_г}{\tau}$$

where **$Й_о ч_с$ и $Й_о ч_г$** - the iodine number of the field raw materials and hydrogenate, respectively

τ - The duration of the contact is one hour. The duration of contact of the raw material with the stationary catalyst is inversely proportional to the volumetric feed rate of the raw material:

$$\tau = \frac{I}{\surd}$$

Therefore

$$K = \frac{И \cdot ч_с - И \cdot ч_г}{\tau} = (И \cdot ч_с - И \cdot ч_г) \cdot \surd = \Delta И \cdot ч \cdot \surd$$

Then:

$$A_{\surd} = \frac{K}{\surd_k} = \frac{р, ч \cdot \surd}{\surd_k} = \frac{I}{мл, час}$$

The activity of the catalysts was estimated using the formula (40). In order to establish the role of the promoter, the "promotional" effect and the "specific promotional" effect of additives to the catalyst were also determined. An increase in the activity of the catalyst attributed to a unit of its mass is considered to be a promotional effect:

$$э_{II} = \frac{A - A_O}{A_O} . 100\%$$

where: **А и A$_0$** - the activity of the promoted and non-promoted catalysts, respectively.

The specific promotional effect is an increase in the activity of the catalyst per unit mass of the promoter.

$$Эу = \frac{Э_п}{П} \cdot$$

where: П – the content of the promoter in the catalyst,%.

The characteristics of the catalysts established above ensure the study of the main kinetic patterns of hydrogenation and allow us to determine the most effective catalytic systems.

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