SYNTHESIS IN PETROCHEMICALS

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Annotation: The petrochemical industry has mastered the processes of obtaining oxygen storage products based on hydrocarbon feedstocks of oil and gas, and therefore released a large amount of valuable food raw materials.

Key words: petrochemical, gas, product, oxygen, alcohol, raw materials, oxide, carbohydrate, production, hydrocarbon, molecule.

The production of an oxygen-retaining product includes the production of acids, alcohols, aldehydes, ketones, olefin oxides, the most advanced and refers to the production of large petrochemicals. As a result of the development of the petrochemical synthesis industry, the processes of oxygen oxidation of hydrocarbons, carried out according to a continuous scheme, instead of multi-stage and non-large-speed natural oxidation, enzymatic Fusion, inorganic oxidizing processes, have entered. The petrochemical industry has mastered the processes of obtaining oxygen storage products based on hydrocarbon feedstocks of oil and gas, and therefore released a large amount of valuable food raw materials.

The production of oxygen storage products can be divided into two main groups:

1. Oxidation of hydrocarbons.

2. Other methods of obtaining oxygen-retaining products (mainly alcohols)are hydration, hydroformylation, etc.

Hydrocarbon oxidation

From valuable products oxidizing hydrocarbons, fats, alcohols and acids, olefins oxide, phenol, adipinic acid, etc.are obtained. However, there are serious disadvantages inherent in hydrocarbon oxidation processes. First, the process of oxidation of hydrocarbons generally follows a chain radical mechanism: radicals attack the points where the primordial molecules are exposed, resulting in the oxidation process going in multiple directions, i.e., noselective. Secondly, oxidation goes with increasing exothermicity: the deeper the oxidation goes, the more heat is released, so it is difficult to interrupt the oxidation process in the initial stages, while the oxidation products obtained in the first stages are the most valuable.

Ways to solve these problems include:

1. Transition from noncatalytic oxidation to a catalytic process that increases selectivity.

2. The use of oxygen-specific transporters that ensure the receipt of targeted products.

3. Synthetic preparation of raw materials or the addition to the first raw materials of special substances that give rise to loose points in them (oxidation through these points leads to the formation of purposeful products). In the petrochemical industry, the following different hydrocarbons are oxidized: paraffin, olefin, aromatics, naphthene.

Synthetic tar by polycondensating formaldehyde with phenol and mochevina; pentaeritrite by condensation with acetaldehyde; glycolic acid by reaction with carbon

dioxide and hydrogen, and then ethylene glycol; polymerizing paraform-aldehyde are obtained. Methyl alcohol. 50% of methyl alcohol is used to produce formaldehyde. Methanol is used both as a solvent and in the synthesis of the ether of acrylic and phthalic acids. Acetic acid. Vinegar is used to obtain angidride, vinylacetate, various metal acetate. Acetaldehyde. It is used in the production of acetic acid, acetic anhydride, pentaeritrite, acrolein, chlorinated derivatives. The processes of direct oxidation of lower paraffin hydrocarbons do not have a wide development due to the low selectivity of the process, the difficulty of extracting oxidation products, but these processes are constantly being perfected.

There are other ways to get phenol:

1. The sulfonate method is to sulfurize benzene and dissolve the resulting benzolsulfoacid with alkali to form phenol;

2. Chlorine method-with chlorination of benzene;

3. The oxidative chlorination method (Rashig method) is the interaction of benzene, hydrogen chloride and air with the hydrolysis of the resulting chlorbenzene.

The first method is associated with greater consumption of sulfuric acid, and the second with chlorine. From this point of view, the Rashig method is more perfect, since the main mass of hydrogen chloride is regenerated. However, the latter method is associated with a lot of heat consumption and strong corrosion of the apparatus. When coking coal, 0.3–0.6 kg of phenol is obtained from 1 T of coal. Of all industrial methods of obtaining phenol, the kumol method is the most economically preferred method. If the cost of phenol obtained according to the cumol method is given as 100%, then the one in sulfonate is 103%, and the one in chlorine methods is 126-128%. Phenol can also be obtained from toluol, a new method, by benzolic acid and phenylbenzoates. Oxidative phenol extraction of cyclogexane from 85 Naphthene hydrocarbons was also developed (1963-y.). Phenolformaldehyde Tar, caprolactam, alkylphenols have been used to obtain synthetic detergents and polymer materials and prisades to petroleum distillates, and phenol is widely used in the production of these products.

In the petrochemical industry, alcohols are one of the most important and multi-ton products. The wide and varied nature of the use in different oblasts depending on the specification, in turn, dictates the variety of methods for their production as well. Currently, the main methods of production of alcohols are:

1. Direct hydration of olefins (ethylene and propylene).

2. Hydration of olefins using sulfuric acid. With this method, secondary alcohols from C3 To C4 are obtained in ethyl alcohol and chain.

3. Method of oxosynthesis. With this method, aldehydes and primary alcohols with an ISO –and normal structure with a carbon atom C4 – C8 are obtained in the chain.

4. Primary alcohols are obtained using aluminiorganic compounds.

In 1873, a. M. Butlerov and V. Goryainovs studied in detail the hydration of ethylene using sulfuric acid. It was only in 1939 that the first industrial device for the extraction of ethyl alcohol from petroleum gases came into operation. Currently, the sulfuric acid method and the direct hydration of downstream molecules (ethylene, propylene, butylenes) olefins are used in industry in the production of downstream alcohols. The simplicity of the process has revealed the possibility of its use in the production of high alcohols, but until now it has not been used in industry. The reason is the difficulty in obtaining Olefins at a high level of purity, the sagging of alcohol in small quantities in low-fat products, the formation of secondary

alcohols with limited needs. Only in recent years have methods of obtaining Olefins at high purity levels (cracking and dehydrogenation of paraffins, polymerization of olefins) been developed by the petrochemical industry. On the other hand, the need for secondary high-fat alcohols arose.

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