

$$\Sigma m_{input} = \Sigma m_{consumption}$$

The material balance is compiled per unit mass of the target product or per unit (reactor) and is expressed in mass units (kg, t) or mass fractions (μ). For periodic processes, the material balance is compiled for one operation, for continuous processes - per unit of time.

On the basis of the material balance, expenditure coefficients are calculated, the size of the apparatus is determined and the optimal values of the parameters of the technological mode of the process are established.

A material flow is a graphic display of the movement and change of substances involved in the chemical process. The material flow is expressed in the form of a material-flow graph (MFG) of the process, that is, a graphic scheme that reflects the nature of the substance, the direction of its movement, the change in the state of aggregation and chemical composition. In MFG, there are “knots”, that is, devices and machines, and “edges” - substances moving in the process.

Material flows can be of three types:

- divergent, in which the number of products increases as a result of the process (for example, electrolysis of an aqueous solution of sodium chloride),
- converging, in which the number of products as a result of the process is reduced (for example, ammonia synthesis),
- intersecting, in which the number of products as a result of the process does not change explicitly (for example, roasting of pyrites).

The maximum allowable (permissible) concentrations (MAC or MPC) are concentrations of substances that, with daily (except weekend) work for 8 hours or with a different working day, but not more than 41 hours a week, cannot cause diseases or abnormalities in the state of health during the whole working period. The harmfulness of the substance can be judged by **MAC** of them in the air of the working area.

The mechanism of the chemical process is the set of all intermediates and transition states of the chemical process, which explains the transformation of the initial reagents into final products.

Mercaptans are organic compounds having the general formula R-SH.

Mercury porosimetry is a method of porosimetry based on the property of liquid mercury not moisten (wet) the majority of solid bodies. The volume of mercury entering the pores is measured, depending on the applied pressure. The method can be used to determine the pore size in a wide range (from 3 nm to 400 μ m).

Mesopores are pores with an effective size of 2 nm to 50 nm.

Methanation is a catalytic process of removing small amounts of carbon monoxide from a gas stream. It leads to the production of methane by the reaction $\text{CO} + 3\text{H}_2 \rightarrow \text{CH}_4 + \text{H}_2\text{O}$. Nickel supported on alumina is used as the catalyst. The process can be carried out at any pressure, typical process temperatures are 200-370°C.

Methyl alcohol (methanol; wood alcohol) is a colorless, volatile, inflammable, and poisonous alcohol (CH_3OH) traditionally formed by destructive distillation of wood or, more recently, as a result of synthetic distillation in chemical plants.

Micropores are pores with effective size less than 2 nm.

The microspherical catalyst is the catalyst in the form of microspheres with a diameter from 20 to 200 microns used in a fluidized bed reactor.

The moisture capacity of the carrier is the amount of solvent that is absorbed when the porous system is filled in a pre-dried carrier.

Mineral oil is the older term for petroleum; the term was introduced in the nineteenth century as a means of differentiating petroleum (rock oil) from whale oil which, at the time, was the predominant illuminant for oil.

Mineral seal oil is a distillate fraction boiling between kerosine and gas oil.