

ried out. The optimal ratio of precursors Ti:B with the smallest particles 56.1 nm is 26.7:73.3. In the synthesized product, the predominant content of

hexagonal and cubic titanium diboride particles was found.

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FLUSHING CATHODE DEPOSIT FROM SODIUM, POTASSIUM AND LITHIUM FLUORIDES

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As a result of electrolysis of UF₄ in the molten salt FLiNaK (the composition is given in Table 1), metallic uranium is obtained [1].

In order to obtain pure uranium powder, it is necessary to separate it from fluoride salts of electrolyte (LiF, NaF, KF), complex uranium-containing salts, micro impurities that are contained because of the primary components, and also because of corrosion processes.

FLiNaK melt salts must be extracted from an economic point of view. They can be returned to the cycle, thereby reducing the cost of the resulting metallic uranium.

To solve these problems, we can offer several methods of flushing:

1) "Aqueous" way of separating the cathode deposit.

It is necessary to thoroughly reground the performed precipitate to create a larger reaction surface.

The quantity of substance is mixed with distilled water upon the application of heat. After filtra-

tion, the residue is mixed with HCl and AlCl₃. The resulting solution will contain fluoride salts.

After this, it is necessary to evaporate the water in order to separate the salts. The costs of heating and evaporation of water significantly increase the cost of uranium. Therefore, it is necessary to find another, more cost-effective way of flushing the cathode deposit.

Moreover, the difficulty of this method is that it is possible to form an oxide film on metallic uranium. It is necessary to take additional measures to destroy it.

2) Flushing the cathode deposit with ethyl hydroxide.

The cathode deposit is comminuted. Quantity

Table 1. FLiNaK salt composition

Fluoride	Content, % wt.
LiF	29.21
NaF	11.7
KF	59.09

Table 2. Mass values for salt dissolution in ethanol at room temperature

Fluoride	Weight of the sample before dissolution, g	Weight after dissolution in ethanol, g
KF	0.4	0.39
LiF	0.4	0.38
NaF	0.4	0.15

Table 3. Mass values for salt dissolution in ethanol upon the application of heat

Fluoride	Weight of the sample before dissolution, g	Weight after dissolution in ethanol, g
KF	0.2	0.2
LiF	0.2	0.18
NaF	0.2	0.06

of substance is selected. Deposit is dissolved in ethyl hydroxide. During the dissolution, it is necessary to create conditions for constant mixing.

Fluorides of alkali metals are low-solubility in ethanol. But the cost of evaporating ethanol is much less than the evaporation of water.

The proposed method was tested in laboratory conditions. During the separation of the uranium powder from the electrolyte, it is found that a suspension is formed which is poorly filtered. This significantly complicates the separation of sediment

from the solution.

The experimentally obtained data for solubility of salts:

From the obtained values, it can be said that the proposed method can be used as the first stage for flushing the cathode deposit (for separation from KF).

For industrial applications it is necessary to develop a fundamentally new method that will minimize the amount of waste and not increase the cost of uranium powder.

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PAINTS FROM WASTE POLYSTYRENE

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The use of chemical industry waste reduces the cost of raw materials and solves the environmental problem – environmental protection. The object of study for the production of building paints in our study was the waste polystyrene (PPP) they are formed in the manufacture of thermal insulation products and packaging.

There is a well-known shortage of construction paints. We decided to unite the above two problems. Subject to recycling PPP is used to create a lacquer base for the production of low-cost building paints.

It is known to obtain polystyrene paints, where polystyrene is used as a film-forming agent [1]. The essence of ways of reception of polystyrene paints consists in preparation of 14–25% of solutions of polystyrene (varnish) in solvent: toluene, solvent, xylene and others. The prepared varnish is mixed with plasticizers, pigments, dyes, fillers, various modifying additives and is used as a finished product for applying a protective paint (material) coating – paint. The quality of the paintwork depends on the quality of mixing (the degree of rubbing). Therefore, at this stage, special equipment is used: paint grinders, bead mills, ball mills, etc.

Disadvantages: a long time mixing stage (rubbing) and polystyrene coatings have a weak luster, which certainly affects the consumer value of the

product.

According to the American patent for the production of polystyrene paint container equipped with a stirrer, load polystyrene in the form of dust or granules and the appropriate amount of solvent. The contents are stirred until the polystyrene is completely dissolved, additives (plasticizer, corrosion inhibitor) and filler, pigment(s) are introduced. The mixture is stirred to obtain a homogeneous mass [2]. Disadvantages of this method: the duration of the mixing stage of the filler and additives (plasticizer-inhibitor-pigment) with polystyrene varnish; the increased content of volatile substances at the drying stage; the faint glitter of the obtained coatings.

In this paper, the problem of improving the process by changing the parameters of existing technologies was solved. It was possible to reduce the time at the stage of mixing grinding, to reduce the content of volatile substances during drying, to increase the gloss of the finished product on the protected surfaces of metal, concrete or wood.

The task is carried out by dissolving polystyrene in a solvent, mixing with a plasticizer, filler, additive to the formation of the finished product. In the case of obtaining a PPS painted, before dissolving get painted polystyrene by extrusion at a tem-