UDC 661.66:621.52

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METHODS FOR PRODUCING OF POROUS CARBON MATERIALS WITH POREPHORES

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The results of analysis of existing technologies for production of porous carbon materials with porephores were analyzed. They were found nota allowing fully to ensure the given porosity of carbon materials by controlling the sizes of poroses.

Keywords: carbon material, porephore material, low density, methods of production, foam material, foam coke

Low-density high temperature materials have the special value for a modern technique, as they characterized by the high level of operating parameters, including. by the low-density of t and by a heat-conducting, providing possibility of their using for a high temperature.

For the production of high-porous carbon materials on the basis of the made foam polymers (foam cokes) use foam plastics (gasfilled cellular materials are with the isolated pores-bubbles) and cellular plastic (the made foam materials are with open pores-cavities). Foam- and cellular get from synthetic resins, using porous formations [1,2].

Results of works [2,3] showed that polymers from the chainlets of macromols without tie-bars or with their two-bit/pl during pyrolysis practically fully destructive, creating the coke rest, and polymers with the spatial structure of macromols (by the reticulated structure) which differ in a hard structure with the far of tie-bars (foamphenoplasts, siliconorganic suds and modification) allow to provide the high output of coke remain (55 %), transforming on foamcokes.

Entry of carbon felling materials (soot, powders of coke, graphite) to initial raw material something reduces contraction which, at the conditions of the even heating, during pyrolysis is identical in all directions.

Through low durability of foamcokes can not be used as heat-insulation in devices from relatively large internal and external mechanical actions, and also which are added to the shock loading and friction. With the purpose of increase of wearproofness of foamcokes and increase of their durability use deposition of pyrocarbon from a gas phase which increases chemical firmness of material.

For the increase of durability of foamcokes to initial polymeric compositions enter powders of graphite, metals, oxides, carbides or saturate them the suspension of refractory materials with the next drying and heat treatment. However introduction of growing quantity of the mentioned matters (felling material) brings to the increase of

size of prevailing pores and appearance of separate large pores diameter a to 5-8 mm over.

For the reducing of foammaterials, that is strong at a high temperature, it work [4] it is offered foamcoke to saturate with mixture of the boron and silicon in a vacuum furnace for temperatures 2073-2273 K. For maintenance of initial structure of foamcoke in the system «silicon-boron-carbon» the part of the first two elements must fold a less than 30 % mass of carbon. The density of composition is regulated by both the density of foamcoke and measure of impregnation, with the increase of which the concentration of the boron and silicon rises, and concentration of carbon - goes down.

To the category of high-porous carbon materials it follows also to take materials on the basis of soot (with its large content) and the use as astringent different polymeric resins.

Porous materials due to an original structure are specific structurally-dependent characteristics which sharply differ (in a number of cases on an order and more) from properties corresponding by it's at chemical composition of compact materials. Usually open porosity prevails in porous materials, only in ceramics which is got gas methods, there is the closed porosity: gas cells, isolated by shells which was fully baked.

Results of researches, sacred to the search of optimal technology of reducing of high-porous materials with the use of porousformation, and also partly generalized producing of industrial products in work [5], where the method of entry is most full considered to the charge of porous formation. There were got rectilineal dependence of general porosity of materials on content of porous formation, which at its large content has nonlinear character. It is predefined by that during heat treatment such porous formations fully is not laid out, but create a coke remain which reduces general porosity of materials.

Quite good results can be got during the use as porous formation mixture of matters with the different temperatures of decomposition. It improves exit of volatiles conditions, allowing to enter the greater quantity of porous formations to initial composition to execute heat treatment of billets by the operating modes of burning of batch production.

It is possible to change properties of these materials application of row of technological receptions. So, for creation of materials from fine porous by the of the same type structure of porous formation, which in is good time ground up in a vibromill, mix up with other components in a bullet mill, and for the reducing of materials with the increased imaginary density use the common growing and mixing of all of the tools shallow directly in a vibromill.

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