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HIGH-ALUMINA SUBSTANCE FOR PREPARING LIGHTWEIGHT
FOAMED HEAT-INSULATING ARTICLES

by

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HIGH-ALUMINA SUBSTANCE FOR PREPARING LIGHTWEIGHT FOAMED
HEAT-INSULATING ARTICLES

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(Applicant: Ukrainian Scientific-Research Institute of Refractory
Materials)

The composition of a high-alumina substance for preparing
lightweight foamed heat-insulating articles including disthene-
sillimanite concentrate and plastic clay with additives is known.

The goal of the invention is to increase the strength and to
improve the heat-insulating properties of articles derived from the
proposed high-alumina substance.

This is achieved in that the described high-alumina substance
contains methylcellulose and wood sawdust as additives, whereas
the components of the substance are taken in the following percentage
ratio by weight:

disthene-sillimanite concentrate (unroasted) with grain size of 0.2-0.088 mm	40-60
disthene-sillimanite concentrate finely- ground	25-50
plastic refractory clay	10-15
soluble methylcellulose	0.1-0.2% by weight
	of the dry components
wood sawdust with grains less than 5 mm	3-5%
	over 100%.

The technology for preparing a lightweight foamed brick from a substance of the proposed composition consists of the following.

A flowing slip with water content of 30-32% is prepared from coarse grain and finely-ground concentrate with a plastic clay additive.

To increase the stability of the foamed mass during drying of the raw material we add to the slip with a water seal methylcellulose, which preliminarily mixes in the water. Besides this, sawdust with grains less than 5 mm is introduced into the slip.

To obtain a casting foamed ceramic substance, the slip is mechanically mixed with a prepared stable foam obtained from a rosin-glue emulsion.

The volumetric weight of the foamed substance is maintained within the limits 0.9-1.30 g/cm² depending on the given volumetric weight of the resulting articles. The obtained foamed ceramic substance is poured into metal molds in which drying of the casting takes place in chamber or conveyer-type drying kilns according to the method used for foamed fireclay articles.

Heating of the raw material is accomplished in ceramic ovens of constant or periodic operation at temperatures from 1300 to 1600°C depending on the service temperature limits. After heating the half-finished material is mechanically processed by cutting with carborundum discs to obtain standard size bricks.

The content of Al₂O₃ in the foamed lightweight substance obtained according to the described method is 55%.

With the goal of obtaining articles with a low content of ferric oxides for service in a carbon-containing medium it is recommended that grinding be accomplished, for example, in jet grinders

Subject of the Invention

A high-alumina substance for preparing lightweight foamed heat-insulating articles containing disthene-sillimanite concentrate and plastic clay with additives is distinguished by the fact that with the goal of increasing the strength and improving the heat-insulating properties, it contains methylcellulose as an additive and wood sawdust whereupon the components of the substance are given in the following percentage ratio by weight:

disthene-sillimanite concentrate (unroasted) with grain size of 0.2-0.088 mm	40-60
disthene-sillimanite concentrate finely- ground	25-50
plastic refractory clay	10-15
soluble methylcellulose	0.1-0.2% by weight
of the dry components	
wood sawdust with grains less than 5 mm	3.5%
	over 100%.

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13. ABSTRACT High-alumina substance includes a disthene-sillimanite conc. and plastic clay with additives. To increase the strength and improve the thermal insulating properties, the substance contains Me cellulose and wood sawdust as additives. It consists of: unroasted disthene-sillimanite concn. with 0.2-0.088 mm. grains 40-60, finely ground disthene-sillimanite concn. 25-50, plastic refractory clay 10-15 parts by wt., sol. Me cellulose 0.1-0.2 wt. percent of the dry components, and wood sawdust with approximately 5 mm. particles 3-5 percent of the total of all ingredients. [AA9044057]			

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