

Sifting of Loose Material

Feature of the bulk materials flow is the formation of arched structures during its movement to a smaller diameter holes. Terms of this kind of combinations are determined by the physical properties of materials: the size of primary shift resistance; particle size distribution; correlation of liner particle size and diameter of holes; moisture content in the material.

Purpose of the research was experimental imitation of conditions of carbon (anthracite) movement for junction of the designed 10 kg/h furnace of fluidized layer capacity and a water cooler with 20 mm diameter of a channel for free sifting of finish product. Refrigerator dimensions were determined by effective cooling of the material. Prototype have fractional composition 0.8-5 mm.

Experimental unit (fig. 1) consisted of tank 1, connected with a tube 2, internal diameter of which is 200mm. The tube with closed end and the tank are filled with 1300 grams of prototype material. Then lower end opened for free output of material

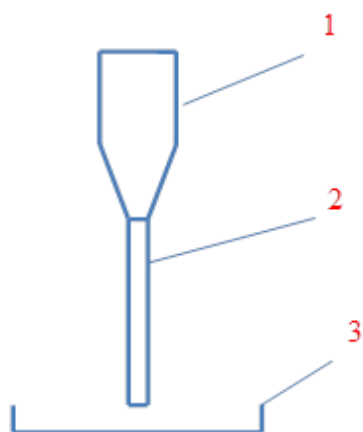


Fig.1 Picture of the experimental unit.
1-tank material; 2-tube; 3-unload tabel.

on the unloading table 3. The stopwatch timed expiry time.

Based on the results of the experiments reached the following conclusions can be made.

-in all cases, the layout shows larger degree of sifting than the designed 10 kg/h furnace.

-for the layout with 200 mm tube long combination of arched structures was not observed. The nature of the material from the 200 mm tube was discrete, portional but from the 500 mm tube it was smooth.

-expiration time of the material through the 200 mm tube was more than from 500 mm tube in 8-16%. Such dependence is due to the low hydraulic 200 mm tube resistance, respectively, rapid acceleration and hanging material at the outlet of the tank.

-in tube $L = 500$ mm for model No. 1-3, which has the greatest heterogeneity in granulometric composition (0.8-5mm), the formation of unstable arched structures that are easily destroyed with little vibration layout was seen.