

CONSTRUCTION MIXTURES RHEOLOGY FOR FILLING THE GOAF OF COPPER-NICKEL DEPOSITS

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The problem of complex use of raw materials, waste management and the establishment of clear productions is one of the main problems nowadays. One of the important ways of increasing the integrated development of mineral resources is the use of industrial waste from separating plants and metallurgical plants.

It is advisable to fill the goaf with the help of special hardening mixtures in the process of underground mining. Goaf stowing allow to keep surface from caving, which makes it possible to simultaneously carry out and underground mining process. Hardening mixture and strengthening (injectable) solutions are used for erecting monolithic back fill. Mixtures are prepared on the surface or underground backfill complexes and are transported to the exhaust chamber through pipes in the gravity or gravity-pneumatic mode.

The following main characteristics are determined by selecting the composition of mixtures and evaluation of the rheological condition and structural features of hardening of composite materials: transportability of stowing mixtures; filtrational and water retaining ability of back fills; speed of changing in strengthening, bending and compression properties of backfill mixtures; in case of artificial arrays construction by the combined method, in particular by the separate concreting method, penetration, ability of hardening mixtures for various modes of filtration is estimated.

One of the most effective ways of regulating the rheological properties, and the hardening velocity and the strengthening characteristics of backfill mixtures is the use of plasticizers mean surfactant as a component of the mixture.

Suitable rheological properties of stowing mixtures based on industrial wastes (high density magnesia-ferrous slag, tailings), using surfactants, have developed in this work. Receiving suitable strengthening, rheological and filtration properties of mixtures achieved by using concrete aggregate, which consist of granulated magnesia-ferrous slag of copper and nickel production (50-70 %, the concrete aggregates fineness modulus: 1.7-1.9, the uniformity coefficient: 6-7), dumped flotation tailings (30-50%). Backfilling massive with this composition has a minimum deformability and a minimum compression backfilling shrinkage.