

Polina Obschanskaya
E.A. Yakesheva, research supervisor
T.I. Morozova, language adviser
SHEI «National Mining University», Dnipropetrovsk

Using Wastes of Rock Processing While Producing Nonmetal Building Materials

Complex application of natural resources including wastes (screening of crushing broken stone) is required for efficient development of building material industry. While producing broken stone from igneous rock the amount of screening can reach 25% and from sedimentary rock it exceeds 45% from processing rock mass. Taking into account the tendency to use nonmetal building materials of higher quality the amount of screening increases. It particularly concerns igneous rock. Unfortunately systematic recording of waste crushing amount has never been carried out. According to approximate evaluation total amount of crushing screening at enterprises producing broken stone is currently about 28³⁵ mln m³ including screening of igneous rock " 12¹⁵ mln m³, screening of carbonate rock " 16²⁰ mln m³. Technogen deposits formed from screening can be considered as mineral raw material base of producing fine fractions of broken stone, sand and other types of production for building industry. There is a deficit of railway transport in national building industry in the period of more intensive construction work. Transportation of such a cheap material as screenings is not rational for great distance. That is why they can be considered as domestic raw materials. It is efficient to divide screening into fractions. It increases interest of various enterprises, cost and shoulder of rational transportation.

Rout selection of screening application demands complex study of its properties, including estimation of mineralogical, petrographic and chemical compositions, structural and textural peculiarities of rock. In bituminous concrete mixtures screens are used as fine aggregate. But if they belong to igneous rock in their composition, dust constituent of screenings partly replaces mineral powder from carbonate rock. Screenings with high content of dust particles are used in small volume (more than 10%). But for more efficient application of screenings in cement road concrete it is required the amount of dust constituent to be not more than 3%. It is also necessary to improve grain shape. It should be noted that screens of igneous and metamorphic rocks sometimes have fancy properties depending on color and texture of rock. Such materials are widely used in architecture concrete which emphasizes buildings and constructions. It may be concluded that rout selection of rational screen application is required to carry out on the basis of complex study raw materials and wastes (screens of crushing, analysis of potential consumers in the region of manufacturer, creating flexible technological lines for new types of production from screens on the basis of current national and foreign technology and equipment. Particularity of complex application of crushing screens calls for further more detailed consideration of research, economic and ecological aspects.