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Development of technology for production of new types fire extinguishing powders and foam-suspensions

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The aim of the presented investigation is the elaboration of eco-safe, high-efficient, fire extinguishing powders on the basis of local mineral raw materials of silicate origin and production of highly effective foam-suspensions based on such powders. The technology for production of these materials is simple and significantly differs from the serial production technology. Such fire-extinguishing powders are prepared according to the mechanical treatment and mixing of raw materials, which do not require modification with expensive, halogen-containing hydrofobizaing additives. On the one hand it simplifies the technological process of production of powder and on the other hand, decreases prices of powder. Such powders are characterized by high-performance properties as well as fire- extinguishing effect. Also, they have good compatibility with water and foams. The addition of surface-active substances into powder suspensions decreases water surface tension, increases permeability and causes powder flotation, which will enable to spray powder together with water and foam. Thus, foam-suspensions are prepared by mechanical blending of waters, obtained fire-extinguishing powders and surface-active substances. Thus, foam-suspensions elaborated on the basis of the received powders, have higher cooling effect and permeability compared to powders, while differing from water and foam they make homogeneous, as well as, heterogeneous inhibition of burning process. Therefore, they have higher extinguishing ability than water or powders taken separately. Fire-extinguishing powders of our preparation may be effectively used for extinguishing of all classes of fires in underground and aboveground objects, within large temperature range, as well as at such low temperatures when CO_2, water and foam cannot be used and in complex with water and foams for extinguishing of large-scale fires like forest fires.

Biography

Lasha Tkemaladze, a physicist, undergraduate. He is working in LEPL G Tsulukidze Mining Institute (Georgia) at the Department Rock Properties and in-solid Physical Processes Research, Scope of scientific interests: physical science, physical engineering, ecological engineering. He has 10 publications, including in the In factorial Journal-2. The last 10 years he participated in 2 scientific grant. Currently, he is a participant of the grant # 216770 New type fire-extinguishing powders and foam-suspensions based on local mineral raw materials funder by the National Science Foundation. He participated in some international conferences and congresses: Elenite Holiday Village, Bulgaria; Rome, Italy; Paris, France and Tbilisi, Georgia. He has some years of experience in the study and evaluation of fire extinguishing and fire- protective materials.

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