
Developing and testing heat-resistant pipelines coatings made of short basalt fibers

© M.A. Komkov, Yu.V. Badanina, M.P. Timofeev

Bauman Moscow State Technical University, Moscow, 105005, Russia

The article is devoted to one of the most important and urgent tasks in engineering development — obtaining lightweight, non-flammable, environmentally friendly and cost-effective insulating materials. The study shows that the highly porous basalt fiber material is the most efficient insulation for heat-insulating coating of pump-compressor pipes (PCP), operating at temperatures up to 420 °C. The study tested the process of filtration deposition of short basalt fibers with mineral binder from alumina of heat-insulating PCP coatings in the form of cylinders and cylindrical shell. The research relies on the thermal characteristics of basalt fibers and technological features of manufacturing highly porous coating and results in determining the thickness of highly porous insulating PCP coating. During continuous hot air pumping through the PCP samples with thermal insulation and a protective layer of fiberglass it was possible to experimentally establish the heat conductivity coefficient of the multilayer material.

Keywords: pump-compressor pipes, heat insulation, basalt fiber, heat conductivity coefficient, porosity, filtration deposition, cylindrical rings, shells, mass per unit length.

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Komkov M.A. (b. 1938) graduated from Bauman Moscow Higher Technical School in 1966. Dr. Sci. (Eng.), Professor of the Department "Rocket and Space Technology Engineering " at Bauman Moscow State Technical University. Author of more than 130 scientific papers in the field of engineering technology and composite structures. e-mail: m_komkov@list.ru

Badanina Yu.V. (b. 1990) graduated from Bauman Moscow State Technical University in 2013. Postgraduate student of the Department "Rocket and Space Technology Engineering" at Bauman Moscow State Technical University. Author of 4 scientific publications in the field of space engineering. e-mail: julia555-90@yandex.ru

Timofeev M.P. (b. 1957) graduated from Bauman Moscow Higher Technical School in 1986. Ph.D., Assoc. Professor of the Department "Rocket and Space Technology Engineering" at Bauman Moscow State Technical University. Author of more than 15 scientific papers in the field of engineering technology. e-mail: sm5-3@yandex.ru
