

**Название публикации:**

Effective and ecological technologies of application of structured materials for roadbed in the permafrost regions

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**Наименование журнала:**

Solid State Phenomena

Volume 284 SSP, 2018, Pages 950-955

4th International Conference on Industrial Engineering, ICIE 2018; Moscow; Russian Federation; 15 May 2018 до 18 May 2018; Код 219259

**Аннотация:**

The work is devoted to effective and ecological technologies for the application of functional structured materials for roads, railways, airfields on permafrost with forced cooling of the sub-soil foundation. The physical and mathematical simulation of the thermal state of frozen ground with single and double-layer coatings was performed. The temperature profiles of a model combine roadbed on the longstanding permafrost have been calculated at winter conditions of the Northern Hemisphere. This roadbed include an upper surface coating with low thermal conductivity and high emissivity in the long-wavelength IR range at convective-radiative heat exchange. The second high-conductive subsurface coating is laid on the underlying sub-soil and ensures its cooling as the "heat pump". The efficiency of the proposed technology of roadbed construction based on the use of non-toxic waste of numerous industrial productions. The carried out research will be in demand for the specialists of transport support, engineering glaciology, in the field of climatology, oceanology, construction, environmental measures, and also in the presentation of financial and economic forecasts of the prospects for the development of polar and subpolar regions, the Arctic and the Antarctic, and high-mountain

**Ключевые слова:**

Coating, Cooling, Emissivity, Heat conductivity, Road surface, Roadbed, Temperature regime