
An approximate method of calculating time of a slush-like cryogenic product melting in a spherical container

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The article presents an approximate analytical method for calculating the melting time of a slush-like cryogenic product in a spherical container when drain storage. The problem of finding the position of the interface between the pure liquid region and slush is examined with allowance for the heat flow from the walls and the area of pure liquid. It is accepted that the area of slush is isothermal and has a melting point of the solid phase, the interface slush — pure liquid is flat, free surface of the liquid is stationary and has a saturation temperature at a given pressure. The temperature in the area of pure liquid is linearly distributed. The resulting approximate relations allow us to evaluate the melting time of a slush-like cryogenic product in the container without a detailed calculation of the temperature fields in the pure liquid.

Keywords: cryogenic liquid, cryogenic product, drain storage, liquid, slush, melting, container.

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