tension is minimal. It is shown that the minimum value of the surface number is observed at optimal SAS concentrations, that is, with the minimum value of the surface tension coefficient.

5. The range of surface numbers for aqueous solutions of SAS (86-140) and milk at the optimum concentration of natural SAS (127-106) has been established. It is shown that the surface number is a function of the values of the surface tension coefficient of the coolant.

6. Reducing the surface tension coefficient minimizes the average thickness of the LBL, as a result, increases the average velocities in the LBL, which contributes to more efficient heat transfer.

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NOMENCLATURE

A	spreading area, m^2
$\cos\theta$	cosine of wetting angle
d	diameter of the pipe, m
D_r	strain rate
f	hydraulic friction coefficient
K_T	turbulization coefficient
L	length of the pipe, m
N	modified Reynolds number in LBL
P_o	supface number in LBL
Re	Reynolds number
Re_{cr}	critical Reynolds number
V_z	average fluid velocity in LBL, $m.s^{-1}$

Greek symbols

δ	average thickness of the LBL, m
μ	dynamic viscosity coefficient, Pa.s
ρ	fluid density, $kg.m^{-3}$
σ	surface tension of the liquid, $N.m^{-1}$
τ_r	stress deformation

Subscripts

aver	average
cr	critical

Abbreviations

CCM	critical concentration of micelle
LBL	laminar boundary layer
SAS	surfactants