

STUDY OF THE EFFICIENCY OF APPLICATION OF SCALE INHIBITORS FOR WATER

Inna Trus ^{a*}, Olena Makarenko ^b, Vita Halysh ^{a,c}, Mariia Tverdokhlib ^a, Evhen Chuprinov ^d,
Vadim Fedin ^a

^a*Department of Ecology and Technology of Plant Polymers, Faculty of Chemical Engineering, Igor Sikorsky Kyiv Polytechnic Institute, 37/4, Peremogy av., Kyiv 03056, Ukraine*

^b*Frantsevich Institute for Problems of Materials Science of National Academy of Science of Ukraine, 3, Omelyana Pritsaka (Krzhyzhanovsky) str., Kyiv, 03142, Ukraine*

^c*Chuiko Institute of Surface Chemistry, National Academy of Sciences of Ukraine, 17, General Naumov str., Kyiv 03164, Ukraine*

^d*State University of Economics and Technology, 5, Stepana Tilgi str., Kryvyi Rih, 50006, Ukraine*
^{*}*e-mail: inna.trus.m@gmail.com*

Abstract. Different scales are formed in cooling water systems and they cause heat transfer problems. This study has been carried out to reduce the scales. To inhibit the scale formation in cooling water systems, antiscalant RT-2024-4 was used, characterized and the ability of the reagent to mitigate the scale formation was tested. Artesian, tap water and water from the Desna River and model solutions with a hardness of 7.33 - 14.65 mg-eq/L were used as test objects. The conducted studies show that the temperature increase in the range of 80 - 90°C and the time of thermostating in the range of 2 - 5 hours have practically no effect on the stabilization and anti-scale effects. The statistical data processing method was used to analyse the experimental data. High stability of water with respect to scale formation was established. The expediency of using the scale stabilizer RT-2024-4 for mineralized and highly mineralized waters was shown.

Keywords: antiscalant, water, scaling, hardness ion.