

PROGRESS IN THE RHEOLOGY OF LUBRICATING GREASES IN UKRAINE

I.A. Lyubinin, B.G. Froysheter, N.V. Rodionova

UkrNDINP "MASMA"

bfroysht@yahoo.com

Aspects of the current state the rheology of the lubricating greases in Ukraine are reviewed. G.V. Vinogradov and his school formulated the generalized rheological characteristics of lubricating greases based upon comprehensive studies of their structure. The Ukrainian scientists Yu.F. Deinega, Yu.L. Ishchuk, G. B. Froysheter, K.K.Trilisky and their successors continued the fundamental research in the field of grease rheology. Theoretical and experimental results confirmed that lubricating greases are reproduced systems and their flow curves were described by the modified three-constant rheological Bulkley-Hershel equation [1]. A methodology has been proposed to calculate model constants for non-isothermal conditions. The properties of a wall layer were assessed on the basis of the concept of the activation nature of the viscous flow of a disperse system.

Rheological data allowed developing the generalized theory of heat- and mass transfer for the non-isothermal laminar flow of lubricating greases taking into accounts the energy dissipation and wall effect. The proposed model was used to design the automatic on-stream device for measuring the rheological properties of greases [2].

References

1. Rheological and Thermophysical Properties of Greases by G.B. Froishteter, K.K. Trilisky, Yu.L. Ishchuck, and P.M. Stupak, Edited by G.V. Vinogradov, Gordon & Breach Science Publishers Ltd, 1988.-300
2. Lubricating Grease Manufacturing Technology, By Yu.L. Ishchuk , New Age International, 2006 - 248 pages