
High-strength aramid fibers friction and methodology for its study

© S.V. Kotomin

Bauman Moscow State Technical University, Moscow, 105005, Russia
A.V. Topchiev Institute of Petrochemical Synthesis, RAS,
Moscow, 119991, Russia

The article suggests the methodology for evaluating the aramid fibers friction coefficient in the “thread-to-thread” friction regime. This is essential for manufacturing the fabric fibrous structures used in the ballistic protection items of equipment. The test pattern represents a thread moving through the stationary loop that allows calculating the friction coefficient according to the Euler formula when testing on the conventional stretching apparatus without any appurtenances. We have examined the friction of various threads and loose ropes in dry and wet states and demonstrated a significant increase in the friction coefficient when moisturizing the threads. The aramid fibers with the crystalline structure (Kevlar, Armalon) have a higher friction coefficient compared to the fibers which have an amorphous structure (Rusar). The introduced material will be useful for the specialists who address the issues of testing the aramid fibers and producing the ballistic protection items which have aramid fibers in their composition.

Keywords: friction, aramid fibers, ballistic protection

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Kotomin S.V. graduated from Dmitry Mendeleev University of Chemical Technology of Russia in 1974. Dr. Sc. (Chem.), Professor of the Chemistry Department, Bauman Moscow State Technical University, Leading Research Scientist of A.V. Topchiev Institute of Petrochemical Synthesis, RAS. Author of 120 scientific works in the field of physical chemistry and polymers and composites processing. e-mail: svk@ips.ac.ru
