Bibliography on Snow and Ice Friction

Samuel C. Colbeck

May 1993
Abstract
This is a bibliography compiled for use by anyone interested in friction on snow or ice surfaces. The items are separated into snow and ice categories because the physical processes and the problems on these two surfaces are somewhat different. There is some repetition between the lists because some references are appropriate for both subjects. The references were selected because they were of direct interest to the subject of friction and not just because knowledge of friction was important in the study. That is, the references selected provide information about friction and do not just use such information.


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Prepared for
OFFICE OF THE CHIEF OF ENGINEERS

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PREFACE

This report was prepared by Dr. Samuel C. Colbeck, Geophysicist with the Snow and Ice Branch, Research Division, U.S. Army Cold Regions Research and Engineering Laboratory (CRREL). It was funded by DA Project 4A762784AT42, Design, Construction, and Operations Technology for Cold Regions; Task FS, Fire Support, Work Unit 003, Radiational Effects on Snow Signatures.

The contents of this bibliography were taken from the Bibliography on Cold Regions Science and Technology and the Arctic Science and Technology Information System.

The contents of this report are not to be used for advertising or promotional purposes. Citation of brand names does not constitute an official endorsement or approval of the use of such commercial products.
These lists were compiled for use by anyone interested in friction on snow or ice surfaces. They are separated into two categories because the physical processes and the problems are somewhat different on these two surfaces. For example, skiers can use the snow list without having to go through a larger, combined list. There is some repetition between the lists because some references are appropriate for both subjects.

In selecting these references I eliminated many that were not of direct interest to the subject of friction although knowledge of friction was important in the study. That is, I tried to select references that provided information about friction and not just references that used such information. I did not examine all of the references directly but sometimes used key words and the title as a guide. I made no judgment about the value of the reference but tried to include all references that could provide information about friction.

**ICE FRICTION**


Chemical and Meteorological Engineering (1943) Ice tires. Chemical and Meteorological Engineering, 50(3): 150.


Ericksson, R. (1949) Friction of runners on snow and ice (in Swedish). Organization of Forestry and the Royal Properties Work Study Division (Föreningen Skogsarbetens och Kungliga Domänestyrelsens Arbets-studieavdelning), Meddelande, no. 34/35, p. 1–63; 12 references. (Also SIPRE Translation, TL44 [1955]. Contact USA Cold Regions Research and Engineering Laboratory. AD 070494.)


* See also Erusalimskii, A.V.


Le Strade (1940) Gripping action of pneumatic tires on road surfaces and the coefficients of friction between tire and road (in Italian). Le Strade, 22: 93–95; 5 references.


* See also Tushima, K.


University of Minnesota (1955) Friction on snow and ice. Institute of Technology, Mechanical Engineering Department. (Also USA Snow, Ice and Permafrost Research Establishment. Technical Report 17, 286 p.)


SNOW FRICTION


Bucher, E. and A. Roch (1946) Resistances due to friction and compaction that tend to retard snow in rapid motion (in German). Report of the Swiss Institute for Snow and Avalanche Research (Eidgenössische Institut für Schnee- und Lawinenforschung), 9 p.


Sapp, T. (1968) Ice and snow tire traction. In *Proceedi-


University of Minnesota (1955) Friction on snow and ice. Institute of Technology, Mechanical Engineering Department. (Also SIPRE Report, TR17. Contact USA Cold Regions Research and Engineering Laboratory. 286 p.)


* See also Tsushima, K.


The following items were received too late to be incorporated in the body of the bibliography.

**ICE FRICTION**


SNOW FRICITION


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