

**STUDIES ON TRANSITION TEMPERATURE, FRICTION
AND SCUFFING IN BOUNDARY LUBRICATION**

by

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Submitted

**IN FULFILMENT OF THE REQUIREMENTS OF
THE DEGREE OF DOCTOR OF PHILOSOPHY**

to the

INDIAN INSTITUTE OF TECHNOLOGY, DELHI
NOVEMBER 1977

CERTIFICATE

This is to certify that the thesis entitled 'Studies on Transition Temperature, Friction and Scuffing in Boundary Lubrication' being submitted by Mohanlal V. Khemchandani to the Indian Institute of Technology, Delhi, for the award of Doctor of Philosophy is a record of bonafide research work he has done during September 1974 to September 1977 under my guidance and supervision. He has fulfilled the requirements for the submission of this thesis, which to my knowledge, has reached the required standard.

The results obtained in this thesis have not been submitted to any other university or institute for the award of any degree or diploma.



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ACKNOWLEDGEMENTS

The author expresses his deep sense of gratitude to his supervisor, Dr.J.P.Sharma for his friendly and affectionate encouragement, expert guidance and helpful criticism throughout the period of research. The author's debt to him in fact extends far beyond this work.

Sincere gratitude is expressed to Professor A.K.De, Director, Indian Institute of Technology, Bombay for granting me leave for completion of this work at I.I.T. Delhi.

Thanks are due to Dr.B.C.Nakra, Head, Department of Mechanical Engineering for making available research facilities, to the staff of Industrial Tribology Laboratory, in particular, Dr.S.Biswas, Mr.K.LAwasthi, Mr.O.P.Gandhi, Mr. G.G.Saxena, Dr.U.S.Tewari, Mr.R.P.Mahna, Mr.Ramchander, Mr. G.N.Agarwal and Mr.Jodha Singh who have helped in many ways for successful completion of this work.

The author gratefully acknowledges the valuable help of many friends with whom useful discussions took place. Notable amongst them are Dr.David Tabor, Cavendish Laboratory (U.K.), Mr.Alan Beerbower, Esso Research and Engineering Co. Linden, Mr.P.C.Nautiyal, I.I.P. Dehradun, Dr.V.Ramamurthy and Dr.Neeraj Shrivastava, Department of Physics, Dr.L.D. Ahuja and Dr.Padma Vasudevan, Department of Chemistry, Mr. Arun Prakash and Dr.K.N.Gupta, Department of Mechanical

Engineering, I.I.T. Delhi.

Finally, the author wishes to express his thanks to his wife, without whose encouragement and moral support the task would have never been completed.

Khemchandani
(MOHANLAL V. KHEMCHANDANI)

ABSTRACT

The thesis describes the theoretical and experimental investigation of the frictional characteristics of boundary lubrication and the effect of temperature on the stability of adsorbed lubricant layer. The scuffing temperature, that is, the temperature at which the reversibility of friction is completely absent, is identified on the basis of percentage reversibility of friction.

A simple formulation has been developed for prediction of 'Coefficient of Friction' and 'Zone of Influence' for boundary lubricated systems. The effectiveness of boundary lubricants is related to the forces which hold them on solid surfaces as a continuous film. The domain of these attractive forces is represented by zone of influence.

The friction analysis is basically an extension of junction growth model. An attempt is made to correlate the factor k , introduced by Bowden and Tabor, with the properties of interacting surfaces, operational parameters and physico-chemical nature of lubricant, so as to get better understanding of lubricant film failure.

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