

THE EFFECTS OF POLYMER DEGRADATION ON FLOW PROPERTIES OF FLUIDS AND LUBRICANTS CONTAINING POLYMERS

INTRODUCTION

BY H. R. STRINGER¹

The proposal to hold a symposium on polymer degradation was two years old when I undertook its organization. I accepted the assignment for two reasons. First was the widespread enthusiastic acceptance of the symposium on non-Newtonian viscometry, presided over by T. W. Selby² in Washington, D. C. in Oct., 1960. The second stems from my part in launching the proposed ASTM Method.³

This sonic method, to which several papers will refer, is not without merit. It permits a relatively thorough shear stability evaluation of one or more fluids from a single polymer type with a small volume of fluid, in a short time. Three or four tests, each using 25 to 40 ml with total duration about 1 hr, will usually suffice. In using this method to compare fluids made with polymers of different chemical types, one may encounter practical difficulties.

The increasing use of oil-soluble polymers for modifying viscosity-temperature

characteristics of lubricants and fluids has created a need for the development of screening tests to permit reliable predictions of the stability of such materials in service. Since polymer degradation is typically associated with viscosity loss, it is appropriate that Research Division VII on Flow Properties of ASTM Committee D-2 should assume the sponsorship for this symposium.

The authors and their six papers represent a wide range of interests and aspects of the subject. Two present findings from university laboratories, three from industrial research laboratories, and one from a military organization well known for its work on corrosion preventives and hydraulic oils.

We hope that these papers will not only publicize the important work being done, but will encourage others to devote their energies toward the solution of some of the problems stated and implied in the papers.

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³ Proposed Method of Test for Shear Stability of Polymer-Containing Oils, *ASTM Standards on Petroleum Products and Lubricants* (Committee D-2), 1961.