# Oxidation and the Testing of Turbine Oils

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Editors

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# Foreword

This publication, *Oxidation and the Testing of Turbine Oils*, contains papers presented at the symposium of the same name held in Norfolk, Virginia , on December 5, 2005. The symposium was sponsored by ASTM Committee D2 on Petroleum Products and Lubricants and its Subcommittees D02.09 on Oxidation and D02.C0 on Turbine Oils. The symposium co-chairman were Cyril A. Migdal, Chemtura Corporation, Middlebury, Connecticut and Andrea B. Wardlow, ExxonMobil Research & Engineering, Paulsboro, New Jersey.

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# Overview

This publication is a compilation of the papers delivered at the Symposium on Oxidation and the Testing of Turbine Oils, held in Norfolk, Virginia, on December 5, 2005. The symposium was sponsored by ASTM Committee D2 on Petroleum Products and Lubricants and its Subcommittees D02.09 on Oxidation and D02.C0 on Turbine Oils.

This Symposium brought together original equipment manufacturers, end users, lubricant producers, lubricant additive suppliers, test equipment manufacturers, and standard test method developers in a forum to hear about industry trends to gain an understanding of the suffering points, evolving lubricant /antioxidant additive technologies, and changing equipment designs and operating conditions, with a focus on how these factors impact oxidation. As a standardization organization, the knowledge gained from this symposium is being used to develop new and improved oxidation tests for turbine oils to service and support each facet of the lubricant and turbine industry represented at the symposium.

Subcommittees D02.09 and D02.C0 have wrestled with the question: Are the current bench tests, ASTM D943 TOST, ASTM D4310 Sludge Tendency and ASTM D2272 RPVOT adequate predicative tools for measuring oxidative degradation? Can we do better? Based the excellent turn out for the symposium, it is clear that the answer to this question is yes, we can do better.

To put the state of the art into perspective the original ASTM D943 method issued in 1947. The longest life oil in the original D943 round robin lasted less than 4000 hrs. Turbine Oils available in the marketplace today exhibit TOST lives of greater than 10,000 hrs; far exceeding the original scope of the D943 test. Many of these long life oils challenge the scope of the other available oxidation test as well. Thus the industry is left with using tools that are eligible for retirement to distinguish the quality and durability of new and in-service turbine oils.

This publication has been assembled to provide you with knowledge about industry trends, novel oxidation tests and modifications of existing tests for further consideration. Today Subcommittee D02.09 is taking the first step toward bridging the gap between available standardized oxidation stability testing tools and the state-of-the-art lubricants, which are characterized by them. Several new test methods are under development specifically targeted to evaluate varnish formation plaguing gas turbines, particularly units operating in peak or cyclic service and to evaluate long life steam turbine oils manufactured with highly refined and synthetic base stocks.

This publication is made possible by the dedication and hard work of the authors and the support of their employers; the reviewers who volunteer to read the papers and provide feedback; and the ASTM staff who grease the wheels.

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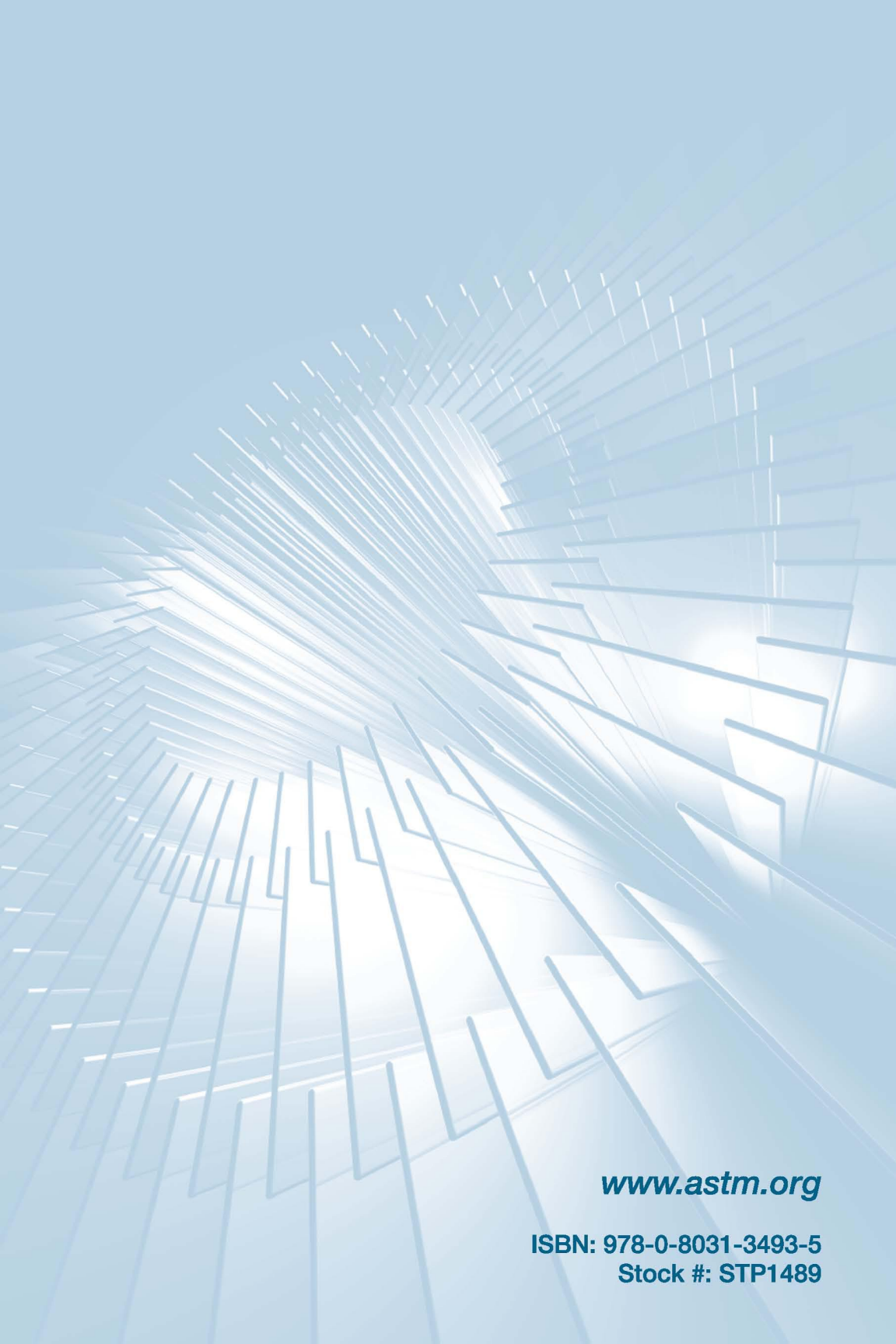

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