

EROSION BY CAVITATION OR IMPINGEMENT

A symposium
presented at the
Sixty-ninth Annual Meeting
AMERICAN SOCIETY FOR
TESTING AND MATERIALS
Atlantic City, N. J., June 26–July 1, 1966

ASTM SPECIAL TECHNICAL PUBLICATION NO. 408

List price \$20.00; 30 per cent discount to members



© BY AMERICAN SOCIETY FOR TESTING AND MATERIALS 1967 Library of Congress Catalog Card Number: 67-12411

NOTE

The Society is not responsible, as a body, for the statements and opinions advanced in this publication.

Foreword

The papers in the Symposium on Erosion by Cavitation or Impringement were presented at the Sixty-ninth Annual Meeting of ASTM held at Atlantic City, N. J., June 26-July 1, 1966.

The symposium consists of ten papers and eight discussions, and focuses mainly on the damage mechanism and the material response to it. The symposium was sponsored by Committee G-2 on Erosion by Cavitation or Impingement under the chairmanship of F. J. Heymann, Westinghouse Electric Corp.

Related ASTM Publications

Erosion and Cavitation, STP 307 (1961), \$4.00

Contents

Introduction	1
A Test Rig for Studying Impingement and Cavitation Damage—	
J. F. RIPKEN	3
Discussion	18
The Concept of Erosion Strength—a. THIRUVENGADAM	22
Discussion	36
Material Destruction Due to Liquid Impact—G. HOFF, G. LANGBEIN,	
AND H. RIEGER	42
On the Time Dependence of the Rate of Erosion Due to Impingement	
or Cavitation—F. J. HEYMANN	70
Discussion	100
Water Jet Impact Damage in a Cobalt-Chromium-Tungsten Alloy-	
D. J. BECKWITH AND J. B. MARRIOTT	111
Erosion of Steam Turbine Blade Shield Materials—ALLEN SMITH, R. P.	
KENT, AND R. L. ARMSTRONG	125
Discussion	152
Experience With a 20-kc Cavitation Erosion Test—J. M. HOBBS	159
Discussion	180
Accelerated Cavitation Damage of Steels and Superalloys in Sodium	
and Mercury—s. G. YOUNG AND J. R. JOHNSTON	186
Discussion	213
Scale-Effect Investigation of Cavitation Erosion Using the Energy	
Parameter—K. K. SHALNEV, J. J. VARGA, AND G. SEBESTYÉN	220
Discussion	236
Correlation of Cavitation Damage with Other Material and Fluid	200
Properties—R. GARCIA, F. G. HAMMITH, AND R. E. NYSTROM	239
Discussion	280

THIS PUBLICATION is one of many issued by the American Society for Testing and Materials in connection with its work of promoting knowledge of the properties of materials and developing standard specifications and tests for materials. Much of the data result from the voluntary contributions of many of the country's leading technical authorities from industry, scientific agencies, and government.

Over the years the Society has published many technical symposiums, reports, and special books. These may consist of a series of technical papers, reports by the ASTM technical committees, or compilations of data developed in special Society groups with many organizations cooperating. A list of ASTM publications and information on the work of the Society will be furnished on request.

