

THE REACTIONS PARAMETERS OF LIME

 STP 472

AMERICAN SOCIETY FOR TESTING AND MATERIALS

THE REACTION PARAMETERS OF LIME

A symposium
presented at the
Seventy-second Annual Meeting
AMERICAN SOCIETY FOR
TESTING AND MATERIALS
Atlantic City, N. J., 22-27 June 1969

ASTM SPECIAL TECHNICAL PUBLICATION 472

List price \$15.25



AMERICAN SOCIETY FOR TESTING AND MATERIALS
1916 Race Street, Philadelphia, Pa. 19103

© BY AMERICAN SOCIETY FOR TESTING AND MATERIALS 1970
Library of Congress Catalog Card Number: 75-108623
ISBN 0-8031-0057-4

Printed in Lutherville-Timonium, Md.
June 1970

Foreword

The Symposium on The Reaction Parameters of Lime was presented during the Seventy-second Annual Meeting of the American Society for Testing and Materials held in Atlantic City, N. J., 22-27 June 1969. The symposium was sponsored by Committee C-7 on Lime. V. S. Tadsen, Chas. Pfizer & Co., Inc., presided as symposium chairman.

Contents

| | |
|--|-----|
| Introduction | 1 |
| Characterization of the Properties of Commercial Lime by Surface Area Measurements and Scanning Electron Microscopy—J. L. EADES AND P. A. SANDBERG | 3 |
| Discussion | 24 |
| Phase Equilibria and Thermodynamic Properties of Lime-Iron Oxide Melts Containing up to 30 Percent SiO_2 : 1450 and 1550 C Sections—M. TIMUCIN AND A. E. MORRIS | 25 |
| Discussion | 31 |
| X-Ray and Electron Microscope Studies of Calcined and Sulfated Limestones—G. H. MCCLELLAN, S. R. HUNTER, AND R. M. SCHEIB | 32 |
| Influence of Lime in Mortar on the Expansion of Brick Masonry—T. RITCHIE | 67 |
| Discussion | 81 |
| Testing of Building Mortars Using the New British Standard Methods—R. GILLARD AND H. N. LEE | 82 |
| Discussion | 114 |
| Effects of Calcination Conditions on the Properties of Lime—R. C. MULLINS AND J. D. HATFIELD | 117 |
| Discussion | 130 |
| Observations on the Solution of Calcium Oxide in Slag Systems—GERHARD DERGE AND J. R. SHEGOG | 132 |
| Discussion | 141 |
| Characterization of Lime: A Comparison and Scaling Down of the Coarse Grain Titration Test and the ASTM Slaking Rate Test—W. J. SCHLITT AND G. W. HEALY | 143 |
| Discussion | 157 |
| Crucible Test of Lime Reactivity in Slags—R. W. LINES AND R. O. RUSSELL | 161 |
| Discussion | 170 |
| Present Status and Technical Advances of Steelworks Lime for Basic Oxygen Furnaces in Germany—KARL-HEINZ OBST, JÜRGEN STRADTMANN, WOLFGANG ULLRICH, AND GERT KÖNIG | 173 |
| Discussion | 190 |
| Curing of Cement-Lime Mortars—J. I. DAVISON | 193 |
| The Textural Evolution of Limestone Calcines—G. H. MCCLELLAN AND J. L. EADES | 209 |

