

Manual 17
Paint and Coating Testing Manual
15th Edition of the Gardner-Sward Handbook

Table of Contents

Preface

Introduction

Part 1: Regulations

Regulation of Volatile Organic Compound Emissions from Paints and Coatings — *J. John Brezinski and Ronald K. Litton*

Part 2: Naturally Occurring Materials

Bituminous Coatings — *Ben J. Carlozzo*

Cellulose Esters of Organic Acids — *Jos S. de Wit and Deep Bhattacharya*

Drying Oils — *Joseph V. Koleske*

Driers and Metallic Soaps — *Marvin J. Schnall*

Part 3: Synthetic Materials

Acrylic Polymers as Coatings Binders — *John M. Friel and Edwin Nungesser*

Alkyds and Polyesters — *Dan Nelson*

Amino Resins (Reaction Products of Melamine, Urea, etc., with Formaldehyde and Alcohols) — *William Jacobs*

Ceramic Coatings — *Richard A. Eppler*

Epoxy Resins in Coatings — *Michael J. Watkins*

Phenolics — *John D. Fisher*

Polyamides — *Robert W. Kight*

Polyurethane Coatings — *Han X. Xiao and Joseph V. Koleske*

Silicone Coatings — *D. J. Petraitis*

Vinyl Polymers for Coatings — *Joseph V. Koleske*

Miscellaneous Materials and Coatings — *Joseph V. Koleske*

Part 4: Plasticizers

Plasticizers — *Peter Tan and Leonard G. Krauskopf*

Part 5: Solvents

Solvents — *Stephen A. Yuhas, Jr. and Rey G. Montemayor*

Part 6: Pigments

White Pigments — *Juergen H. Braun*

Black Pigments — *Frank R. Spinelli*

Colored Organic Pigments — *Paul Merchak*

Inorganic Colored Pigments — *Peter A. Lewis*

Ceramic Pigments — *Richard A. Eppler*

Extender Pigments — *Richard A. Eppler*

Metallic Pigments — *Russell L. Ferguson*

Effect Pigments — *Paul J. Nowak*

Measurement of Gonioapparent Colors — *Allan B. J. Rodrigues*

Protective Coatings and Inorganic Anti-Corrosion Pigments — *Lucien Veleva*

Oil Absorption of Pigments — *Charles W. Glancy*

Part 7: Additives

Bactericides, Fungicides, and Algicides — *Janet H. Woodward*

Surfactants — *Elvira Stesikova and Heinz Plaumann*

Coalescing Aids — *Kevin W. McCreight*

Thickeners and Rheology Modifiers — *Gregory D. Shay*

Part 8: Physical Characteristics of Liquid Paints and Coatings

Density and Specific Gravity — *Raymond D. Brockhaus and Ben J. Carlozzo*

Characterizing Particle Size and Size Distribution — *George D. Mills*

Rheology and Viscometry — *Richard R. Eley*

Surface Energetics — *Gordon P. Bierwagen, Andrew Huovinen, and Bobbi Jo Merten*

Solubility Parameters — *Charles M. Hansen*

Part 9: Films for Testing

Cure: The Process and Its Measurement — *Thomas J. Miranda*

Film Preparation for Coating Tests — *Robert D. Athey, Jr.*

Measurement of Film Thickness — *John Fletcher and Joseph Walker*

Drying Time — *Thomas J. Sliva*

Part 10: Optical Properties

Color and Light — *Robert T. Marcus*

Gloss — *Gabriele Kigle-Böckler and Harry K. Hammond III*

Hiding Power — *Leonard Schaeffer*

Mass Color and Tinting Strength of Pigments — *Joseph V. Koleske*

Part 11: Physical and Mechanical Properties

Adhesion — *Gordon L. Nelson*

Abrasion Resistance — *Daniel K. Slawson*

Dynamic Mechanical and Tensile Properties — *Loren W. Hill*

Flexibility and Toughness — *John Fletcher and Joseph Walker*

Understanding Osmotic Activity in Paint Films and Determining Cause by Systematic Analysis of Blister Fluids and Blistered Coatings — *George Mills*

Stress Phenomena in Organic Coatings — *Dan Y. Perera*

Friction and Slip Resistance — *Joseph V. Koleske*

Part 12: Environmental Resistance

Prevention of Metal Corrosion with Protective Overlayers — *William H. Smyrl*

Types of Metal Corrosion and Means of Corrosion Protective by Overlayers — *Kenneth B. Tator and Cynthia L. O'Malley*

Accelerated Weathering — *Valerie S. Sherbondy*

Chemical Resistance — *Latoska N. Price*

Water-Resistance Testing of Coatings — *John Fletcher and Joseph Walker*

Part 13: Specific Product Testing

Aerospace and Aircraft Coatings — *Charles R. Hegedus, Stephen J. Spadafora, Anthony T. Eng, David F. Pulley, and Donald J. Hirst*

Architectural Coatings — *Neal Rogers*

Artists' Paints — *Benjamin Gavett*

Can Coatings — *Joseph V. Koleske*

Testing of Industrial Maintenance Coatings — *Dwight G. Weldon*

Pipeline Coatings — *Alfred Siegmund*

Sealants — *Saul Spindel*

Pavement Marking Materials — *James R. Swisher*

Water-Repellent Coatings — *Victoria Scarborough and Thomas J. Sliva*

Part 14: Analysis of Paint and Paint Defects

Analysis of Paint — *Darlene Brezinski*

The Analysis of Coatings Failures — *George D. Mills*

Part 15: Instrumental Analysis

Atomic Absorption, Emission, and Inductively Coupled Plasma Spectroscopy — *Dwight G. Weldon*

Chromatography — *Rolando C. Domingo and updated by Rey G. Montemayor*

Electron Microscopy Overview with Coating Applications — *David R. Rothbard and John G. Sheehan*

Infrared Spectroscopy — *Dwight G. Weldon*

Methods for Polymer Molecular Weight Measurement — *Thomas M. Schmitt*

Ultraviolet/Visible Spectroscopy — *George D. Mills*

X-Ray Analysis — *A. Monroe Snider, Jr.*

Part 16: Specifications

Paint and Coating Specifications and Standards — *Joseph V. Koleske*

Part 17: New Coating Technology

Radiation Curing of Coatings — *Joseph V. Koleske*

Powder Coating — *Joseph V. Koleske*

Appendix

Index