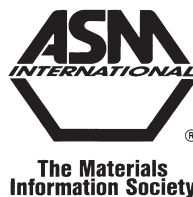


Characterization and Failure Analysis of PLASTICS



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Preface

This book is collection of *ASM Handbook* articles on how engineering plastics are characterized and understood in terms of properties and performance. It approaches the subject of characterization from a general standpoint of engineering design, materials selection, and failure analysis. These basic activities of the engineering process all require clear understanding of plastics performance and properties by various methods of physical, chemical, and mechanical characterization.

The first section introduces the fundamental elements of engineering plastics and how composition, processing, and structure influence their properties and performance. The second section contains articles on material selection and design, where the requirements of a plastic part are synthesized and analyzed in terms of function, shape, process, and materials. The next sections then cover the important physical, chemical, and mechanical properties of plastics.

The last section covers failure analysis, which is the ultimate stage of characterization in the life of a part, but really only the penultimate stage in the overall engineering process. Failure analysis, in a broad sense, is another iteration of the design process, as it can provide important information on product and process improvements. Thus, it closely ties together with the characterization of properties and performance plastics during design and materials selection.

This book would not have been possible without the original contributions from the authors of the Handbook articles. Thanks are extended to them.

Steve Lampman
May 2003

Contents

Introduction	1	Properties Considerations and Processing	75
Engineering Plastics: An Introduction	3	Process Effects on Molecular Orientation	77
Polymer Structure	3	Thermoplastic Process Effects on Properties	78
Chemical Composition and Structure	9	Thermosetting Process Effects on Properties	81
Polymer Names	10	Size, Shape, and Design Detail Factors in Process Selection	83
Properties of Polymers	11	Part Size Factors in Process Selection	83
Engineering Thermoplastics	19	Shape and Design Detail Factors in Process Selection	83
Engineering Thermosets	24	Physical, Chemical, and Thermal Analysis of Plastics	87
Effects of Composition, Processing, and Structure on Properties of Engineering Plastics	28	Physical, Chemical, and Thermal Analysis of Thermoset Resins	89
Composition	28	Chemical Composition Characterization	89
Thermal and Mechanical Properties	38	Processing Characterization	94
Viscoelasticity	41	Physical, Chemical, and Thermal Analysis of Thermoplastic Resins	105
Properties of Engineering Plastics and Commodity Plastics	41	Molecular Weight Determination from Viscosity	105
Electrical Properties	42	The Use of Cone and Plate and Parallel Plate Geometries in Melt Rheology	107
Optical Properties	43	Chromatography	110
Chemical Properties	44	Thermoanalysis	112
Processing	44	Thermal Analysis and Thermal Properties	115
Materials Selection and Design of Engineering Plastics	49	Glass Transition Temperature	115
General Design Guidelines	51	Semicrystalline Polymers	115
Defining End-Use Requirements	51	Structural and Test Effects	117
Part Geometry	51	Moisture Effect on Tg	119
Strength of Plastics	53	Thermal Analysis	121
Cost Estimating Plastics Parts	53	Differential Scanning Calorimetry	121
Structure, Properties, Processing, and Applications	53	Thermogravimetric Analysis	122
Design with Plastics	55	Thermomechanical Analysis	124
Mechanical Part Performance	55	Thermal Properties	125
Manufacturing Considerations	55	Determination of Service Temperature	128
Design-Based Material Selection	60	Service Temperature	129
Conclusions	62	Thermal Properties of Thermoplastics	131
Design and Selection of Plastics Processing Methods	64	Thermal Properties of Thermosets	138
Plastics Processing Methods	64	Low-Temperature Resin Systems	138
Injection Molding	64	Medium-Temperature Resin Systems	140
Extrusion	66	High-Temperature Resin Systems	141
Thermoforming	67	Environmental and Chemical Effects	146
Blow Molding	68	Chemical Susceptibility	146
Rotational Molding	68	Absorption and Transport	146
Compression Molding and Transfer Molding	69	Additive Effects	147
Composites Processing	70	Thermal Degradation	147
Casting	72	Thermal Oxidative Degradation	148
Design Features and Process Considerations	72	Photo-oxidative Degradation	148
Other Plastics Design and Processing Considerations	73	Environmental Corrosion	148
Materials-Selection Methodology	73	Chemical Corrosion	148
Function and Properties Factors in Process Selection	75	Degradation Detection	148
Establishing Functional Requirements	75	Effect of Environment on Performance	149
		Plasticization, Solvation and Swelling	149

Environmental Stress Cracking	149	Design and Analysis Techniques for Thin Plastic	
Polymer Degradation by Chemical Reaction	150	Components	228
Surface Embrittlement	151	Summary	235
Temperature Effects	151	Fatigue Testing and Behavior	238
Characterization of Weather Aging and Radiation Susceptibility	153	Fatigue Crack Initiation	238
Degradation Factors	153	Fatigue Crack Propagation	240
Test Methods	155	Factors Affecting Fatigue Performance of Polymers	243
Flammability Testing	159	Factography	247
Fire Resistance of Polymeric Materials	159	Fatigue Failure Mechanisms	249
Overview of the Burning Process	159	Mechanisms of Fatigue Failure	249
Flammability Test Methods	159	Thermal Fatigue Failure	250
Electrical Testing and Characterization	164	Mechanical Fatigue Failure	251
Electrical Tests	164	Friction and Wear Testing	259
Electrical Properties of Plastics and Their Characterizations	171	Friction, Wear, and Lubrication	259
Terminology	173	Friction and Wear Test Methods	260
Optical Testing and Characterization	177	Friction and Wear Test Data for Polymeric Materials	264
Transmission and Haze	177	Wear Failures of Plastics	267
Yellowness	177	Interfacial Wear	267
Refractive Index	177	Cohesive Wear	268
Birefringence	178	Elastomers	269
Surface Irregularity and Contamination	179	Thermosets	269
Surface Gloss and Color	181	Glassy Thermoplastics	270
Ad Hoc Testing	181	Semicrystalline Thermoplastics	270
Mechanical Behavior and Wear	183	Environmental and Lubricant Effects on the Wear Failures	
Mechanical Testing and Properties of Plastics: An Introduction	185	of Polymers	272
Tensile Properties	185	Summary and Case Study	272
Other Strength/Modulus Tests	188	Failure Examples	274
Creep Data Analysis	190	Wear Failures of Reinforced Polymers	276
Dynamic Mechanical Properties	191	Abrasive Wear Failure of Reinforced Polymers	276
Impact Toughness	191	Sliding (Adhesive) Wear Failure of Polymer Composites	282
Hardness Tests	194	Environmental Effects	293
Fatigue Testing	194	Thermal Stresses and Physical Aging	295
Elastomers and Fibers	194	Classification of Stress	295
Creep, Stress Relaxation, and Yielding	199	Thermal Stresses	296
Creep Failure	199	Orientation Effects	298
Stress Relaxation Failure	201	Physical Aging	299
Yield Failure	201	Use of High-Modulus Graphite Fibers in Amorphous	
Effect of Crystallinity	202	Polymers	302
The Aging of Polymers	203	Environmental Stress Cracking	305
Crazing and Fracture	204	Molecular Mechanism	305
General Polymeric Behavior	204	Environmental Criteria	307
Ductile-Brittle Transitions	204	Material Optimization	308
Crazing	205	Testing	310
Fracture	206	Moisture-Related Failure	314
Environmental Effects	206	Mechanisms of Moisture-Induced Damage	314
Initiation Criteria	206	Effect of Moisture on Mechanical Properties	319
Craze Growth	207	Organic Chemical Related Failure	323
Effect of Crazing on Toughness	207	Chemical Interactions	323
Testing for Brittle Behavior	207	Physical Interactions	324
Fracture Toughness Testing	208	Photolytic Degradation	329
Fracture Resistance Testing	211	Sunlight	329
Historical Development	211	Polymer Photochemistry	331
Fracture Test Methods for Polymers	212	Protection of Plastics from Sunlight	333
Impact Loading and Testing	216		
Material Considerations in Impact Response	217		

Microbial Degradation	336	Surface Analysis	383
Biodegradation Mechanisms	336	Scanning Electron Microscopy	383
Biodeterioration and Biodegradation Definitions	337	Chemical Characterization of Surfaces	386
Biodeterioration and Biodegradation Measurements	337	Auger Electron Spectroscopy	388
Experimental Example	338	X-Ray Photoelectron Spectroscopy	388
		Time-of-Flight Secondary Ion Mass Spectrometry	391
Failure Analysis of Plastics	341	Application Examples	391
Analysis of Structure	343	Example 1: Delamination of Polyester Insulation from	
Problem Solving	343	Brass Cable Connectors	393
Molecular Spectroscopy	343	Example 2: Printed Circuit Boards	395
Molecular Weight	346	Example 3: Paint Delamination from a Molded Cabinet	402
Methods of Thermal Analysis	347	Example 4: Delamination of a Surface-Mounted	
X-Ray Diffraction (XRD) Analysis	353	Integrated Circuit (IC) from a Solder Pad	402
Scheme for Polymer Analysis	354	Fracture and Fractography	404
Procedure for Analyzing Milligram Quantities of		Structure and Behavior	404
Polymer Sample	354	Crack Propagation	407
Characterization of Plastics in Failure Analysis	359	Fractography	407
Fourier Transform Infrared Spectroscopy	359	Case Studies	414
Differential Scanning Calorimetry	362	Fractography of Composites	417
Thermogravimetric Analysis	363	Interlaminar Fracture Features	417
Thermomechanical Analysis	364	Translaminar Fracture Features	427
Dynamic Mechanical Analysis	365	Conclusion	427
Methods for Molecular Weight Assessment	366		
Mechanical Testing	367	Reference Information	431
Considerations in the Selection and Use of Test Methods	368	Abbreviations and Symbols	433
Case Studies	368	Index	436



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