

CONTENTS

Introduction: Significance and Prospects of the Stabilization of Polymers and Articles Made from them	1
Chapter I. Mechanisms of the Thermooxidative Destruction and Stabilization of Polymers	
1. Oxidation in the Gas and Liquid Phases	4
2. Oxidation in the Solid Phase	8
3. Oxidation in Polypropylene	10
4. Autoinhibition of the Oxidation of Polymers	17
5. Critical Concentration of Antioxidants	20
6. Initiation of Oxidation by Antioxidants	24
7. Theory of Synergism	29
8. Free Radicals as Stabilizers	33
9. Boric Stabilizers	36
Bibliography	37
Chapter II. Stable Radicals of Inhibitors of Oxidative Processes	
1. Phenoxy Radicals	42
2. Stable Radicals of Naphthols	49
3. Stable Radicals of Aromatic Amines	51
4. Formation of Stable Radicals of Inhibitions During Oxidation Processes	52
Bibliography	54
Chapter III. Synthesis of Stabilizers for Polymer Materials	
I. Photostabilizers	56
II. Antioxidants	65
Bibliography	84
Chapter IV. Aging and Stabilization of Polyolefins	
I. Oxidative Destruction of Polyolefins	95
II. Stabilization of Polyolefins Against Oxidative Destruction	103
III. Destruction of Polyolefins Under the Action of Light	123
IV. Increasing the Light Stability of Polyolefins	127
Bibliography	132

Chapter V. Aging and Stabilization of Polyformaldehyde	
1. Thermal and Thermooxidative Destruction	137
2. Stabilization of Polyformaldehyde	146
3. Bonding of Formaldehyde by Polyamides	147
4. Inhibition of the Process of Oxidation of Polyformaldehyde Phenols, Phosphites and Sulfur-Containing Compounds	152
5. Inhibition of the Oxidation of Polyformaldehyde by Radical – Types Inhibitors	155
6. Consumption of Nitrogen Oxide stable Radicals in the Thermal Oxidation of Polyformaldehyde	157
Bibliography	159
Chapter VI. Aging and Stabilization of Polyvinyl Chloride and Copolymers of Vinyl Chloride	
I. Factors Determining the Mechanism and Rate of De-composition of Polyvinyl Chloride	161
II. General Principles of the Stabilization of Polyvinyl Chloride	176
III. Methods of Evaluating the Effectiveness of the of the Action of Polyvinyl Chloride Stabilizers	192
IV. Stabilizers of Polyvinyl Chloride and Vinyl Chloride Copolymers	199
Bibliography	216
Chapter VII. Aging and Stabilization of Polyamides	
I. Thermal Aging of Polyamides	227
II. Thermal Oxidation of Polyamides	238
III. Stabilization of Polyamides Against Thermal Oxidation	247
IV. Photoaging of Polyamides	251
V. Photostabilization of Polyamides	261
Bibliography	265
Chapter VIII. Aging of Certain Condensation Polymers	
I. Epoxide Resins	269
II. Phenol-Formaldehyde Resins	277
III. Polyarylates	279
IV. Polycarbonate	285
Bibliography	290
Chapter IX. Aging of Polymers with Inorganic Principal Chains of the Molecules, Framed Organic Groups	
Bibliography	311

Chapter X. Aging and Stabilization of Raw and Cured Rubbers	312
I. Thermal Oxidation of raw Rubbers in the Presence of Inhibitors	313
II. Thermal Oxidation of Cured Rubbers	322
III. Light Aging	323
IV. Aging of Raw Rubbers at High Temperatures	324
V. Corrosion Cracking of Cured Rubbers	330
VI. Aging of Polymers Under the Action of Ionizing Radiations	331
VII. Influence of Mechanical Stresses on the Aging of Cured Rubbers	335
Bibliography	342
Chapter XI. Mechanochemical Processes in Highly Elastic Polymers	247
I. Cleavage of the Macromolecule	348
II. Mechanochemical Phenomena in the Case of Repeated Deformation of Highly Elastic Polymers	350
III. Mechanochemical Phenomena in the Reprocessing of Highly Elastic Polymers	358
Bibliography	363