

CONTENTS

1. Isocyanates and Polyols for Flexible Polyurethane Foams	
1.1 Basic Reactions	1
1.2 Secondary Reactions	3
1.3 Isocyanate Polymerisation Reactions	4
1.4 Cross-linking by Hydrogen Bonding	6
1.5 Isocyanates	6
1.6 Polyols	27
2. Additives for Flexible Polyurethanes	
2.1 Catalysts	47
2.2 Chain-extending, Cross-linking and Curing Agents	58
2.3 Blowing Agents	63
2.4 Surfactants	68
2.5 Fillers and Fibrous Reinforcement	72
2.6 Flame Retardants	84
3. Flexible Slabstock Foams	
3.1 Introduction	93
3.2 Polyether-based Slabstock Foam	104
3.3 Polyester-based Slabstock Foam	128
3.4 High Resilience Slabstock Foam	133
3.5 Machinery for the Production of Flexible Slabstock Foam	139
4. Moulded Flexible Foams	
4.1 Introduction	150
4.2 Water-blown Low Density Foams for Seating	151
4.3 Water-blown Microcellular Foams	179
4.4 Non-water-blown Moulded Foams	181
4.5 Moulding Processes and Machinery	206
5. Environmental Aspects of the Production and Use of Flexible Polyurethane Foams	
5.1 Introduction	226
5.2 Hazards Involved in Handling Isocyanates for Flexible Foams	228
5.3 Monitoring Diisocyanates in the Air of the Workplace	241
5.4 Controlling the Emission of Diisocyanates into the Atmosphere	249
5.5 The Fire Hazard in Flexible Foam Production	251
5.6 Hazards in the Use of Flexible Polyurethane Foam	257
5.7 The Recycling of Polyurethane Flexible Foam	285

Appendix 1: The Physical Testing of Flexible Polyurethane Foams	291
Appendix 2: Abbreviations	302
References	305
Index	329