

## MARKETS AND PROFITABILITY

# Quarterly Business Analysis

December 2018



This Report was prepared by Nexant, Inc. ("Nexant"). Except where specifically stated otherwise in this Report, the information contained herein is prepared on the basis of information that is publicly available, and contains no confidential third party technical information to the best knowledge of Nexant. Aforesaid information has not been independently verified or otherwise examined to determine its accuracy, completeness or financial feasibility. Neither Nexant, Subscriber nor any person acting on behalf of either assumes any liabilities with respect to the use of or for damages resulting from the use of any information contained in this Report. Nexant does not represent or warrant that any assumed conditions will come to pass.

The Report is submitted on the understanding that the Subscriber will maintain the contents confidential except for the Subscriber's internal use. The Report should not be reproduced, distributed or used without first obtaining prior written consent by Nexant. Each Subscriber agrees to use reasonable effort to protect the confidential nature of the Report.

Copyright © by Nexant Inc. 2018. All rights reserved.



## Contents

<b>1</b>	<b>Executive Summary .....</b>	<b>1</b>
1.1	Asia Pacific.....	1
1.2	United States.....	3
1.3	Western Europe .....	5
<b>2</b>	<b>Crude Oil, Refining and Petrochemical Feedstocks.....</b>	<b>13</b>
2.1	Crude Oil and Refining.....	13
2.2	United States NGLs .....	21
<b>3</b>	<b>Olefins .....</b>	<b>24</b>
3.1	Ethylene .....	24
3.1.1	Asia Pacific.....	24
3.1.2	United States.....	24
3.1.3	Western Europe .....	26
3.2	Propylene .....	49
3.2.1	Asia Pacific.....	49
3.2.2	United States.....	49
3.2.3	Western Europe .....	50
3.3	Butadiene .....	67
3.3.1	Asia Pacific.....	67
3.3.2	United States.....	67
3.3.3	Western Europe .....	68
3.4	Olefins Capacity Round-Up.....	77
3.4.1	North America .....	77
3.4.2	South America.....	77
3.4.3	Western Europe .....	77
3.4.4	Central and Eastern Europe.....	77
3.4.5	Middle East and Africa .....	78
3.4.6	Asia Pacific.....	78
<b>4</b>	<b>Polyolefins .....</b>	<b>79</b>
4.1	Low Density Polyethylene .....	79
4.1.1	Asia Pacific.....	79
4.1.2	United States.....	79
4.1.3	Western Europe .....	80
4.2	Linear Low Density Polyethylene .....	89
4.2.1	Asia Pacific.....	89
4.2.2	United States.....	89
4.2.3	Western Europe .....	90
4.3	High Density Polyethylene .....	99
4.3.1	Asia Pacific.....	99
4.3.2	United States.....	99
4.3.3	Western Europe .....	100



4.4	Polypropylene.....	109
4.4.1	Asia Pacific.....	109
4.4.2	United States.....	110
4.4.3	Western Europe .....	110
4.5	Polyolefins Capacity Round-Up .....	119
4.5.1	North America .....	119
4.5.2	South America.....	119
4.5.3	Western Europe .....	119
4.5.4	Central and Eastern Europe.....	119
4.5.5	Middle East and Africa .....	119
4.5.6	Asia Pacific.....	119
<b>5</b>	<b>Vinyls.....</b>	<b>120</b>
5.1	Chlor-Alkali, Ethylene Dichloride and Vinyl Chloride Monomer .....	120
5.1.1	Asia Pacific.....	120
5.1.2	United States.....	120
5.1.3	Western Europe .....	121
5.2	Polyvinyl Chloride.....	144
5.2.1	Asia Pacific.....	144
5.2.2	United States.....	144
5.2.3	Western Europe .....	144
5.3	Vinyls Capacity Round-Up .....	152
5.3.1	North America .....	152
5.3.2	South America.....	152
5.3.3	Western Europe .....	152
5.3.4	Central and Eastern Europe.....	152
5.3.5	Middle East and Africa .....	152
5.3.6	Asia Pacific.....	152
<b>6</b>	<b>Aromatics.....</b>	<b>153</b>
6.1	Benzene, Toluene and Xylenes .....	153
6.1.1	Asia Pacific.....	153
6.1.2	United States.....	154
6.1.3	Western Europe .....	155
6.2	Cyclohexane.....	195
6.2.1	United States.....	195
6.2.2	Western Europe .....	195
6.3	Aromatics Capacity Round-Up.....	201
6.3.1	North America .....	201
6.3.2	South America.....	201
6.3.3	Western Europe .....	201
6.3.4	Central and Eastern Europe.....	201
6.3.5	Middle East and Africa .....	201
6.3.6	Asia Pacific.....	201
<b>7</b>	<b>Styrenics .....</b>	<b>202</b>



7.1	Styrene .....	202
7.1.1	Asia Pacific.....	202
7.1.2	United States.....	203
7.1.3	Western Europe .....	204
7.2	Polystyrene.....	212
7.2.1	Asia Pacific.....	212
7.2.2	United States.....	213
7.2.3	Western Europe .....	213
7.3	Styrenics Capacity Round-Up .....	221
7.3.1	North America .....	221
7.3.2	South America.....	221
7.3.3	Western Europe .....	221
7.3.4	Central and Eastern Europe.....	221
7.3.5	Middle East and Africa .....	221
7.3.6	Asia Pacific.....	221
<b>8</b>	<b>Butadiene Derivatives.....</b>	<b>222</b>
8.1	Styrene Butadiene Rubber .....	222
8.1.1	Asia Pacific.....	222
8.1.2	United States.....	222
8.1.3	Western Europe .....	223
8.2	Acrylonitrile Butadiene Styrene .....	231
8.2.1	Asia Pacific.....	231
8.2.2	United States.....	232
8.2.3	Western Europe .....	232
8.3	Butadiene Rubber .....	240
8.3.1	Asia Pacific.....	240
8.3.2	United States.....	240
8.3.3	Western Europe .....	241
8.4	Butadiene and Derivatives Capacity Round-Up.....	249
8.4.1	North America .....	249
8.4.2	South America.....	249
8.4.3	Western Europe .....	249
8.4.4	Central and Eastern Europe.....	249
8.4.5	Middle East and Africa .....	249
8.4.6	Asia Pacific.....	249
<b>9</b>	<b>Polyester and Intermediates .....</b>	<b>250</b>
9.1	Mono Ethylene Glycol and Ethylene Oxide.....	250
9.1.1	Asia Pacific.....	250
9.1.2	United States.....	250
9.1.3	Western Europe .....	250
9.2	<i>para</i> -Xylene (PX).....	263
9.2.1	Asia Pacific.....	263
9.2.2	United States.....	263



9.2.3	Western Europe .....	263
9.3	Purified Terephthalic Acid (PTA).....	274
9.3.1	Asia Pacific.....	274
9.3.2	United States.....	274
9.3.3	Western Europe .....	274
9.4	Polyethylene Terephthalate (PET) .....	283
9.4.1	Asia Pacific.....	283
9.4.2	United States.....	283
9.4.3	Western Europe .....	283
9.5	Polyester and Intermediates Capacity Round-Up.....	292
9.5.1	North America .....	292
9.5.2	South America.....	292
9.5.3	Western Europe .....	292
9.5.4	Central and Eastern Europe.....	292
9.5.5	Middle East and Africa .....	292
9.5.6	Asia Pacific.....	292
<b>10</b>	<b>Propylene Derivatives.....</b>	<b>293</b>
10.1	Acrylonitrile.....	293
10.1.1	Asia Pacific.....	293
10.1.2	United States.....	293
10.1.3	Western Europe .....	294
10.2	Cumene, Phenol and Acetone .....	302
10.2.1	Asia Pacific.....	302
10.2.2	United States.....	303
10.2.3	Western Europe .....	303
10.3	Bisphenol-A and Polycarbonate.....	315
10.3.1	Asia Pacific.....	315
10.3.2	United States.....	316
10.3.3	Western Europe .....	317
10.4	Propylene Oxide.....	338
10.4.1	Asia Pacific.....	338
10.4.2	United States.....	338
10.4.3	Western Europe .....	339
10.5	Oxo Alcohols: Butanols and 2-Ethylhexanol .....	352
10.5.1	Asia Pacific.....	352
10.5.2	United States.....	352
10.5.3	Western Europe .....	353
10.6	Propylene Derivatives Capacity Round-Up.....	367
10.6.1	North America .....	367
10.6.2	South America.....	367
10.6.3	Western Europe .....	367
10.6.4	Central and Eastern Europe.....	367
10.6.5	Middle East and Africa .....	367
10.6.6	Asia Pacific.....	367



<b>11</b>	<b>Isocyanates</b>	<b>368</b>
11.1	Methylene Diphenyl Diisocyanate and Toluene Diisocyanate	368
11.1.1	Asia Pacific	368
11.1.2	United States	369
11.1.3	Western Europe	369
11.2	Isocyanates Capacity Round-Up	384
11.2.1	North America	384
11.2.2	South America	384
11.2.3	Western Europe	384
11.2.4	Central and Eastern Europe	384
11.2.5	Middle East and Africa	384
11.2.6	Asia	384
<b>12</b>	<b>Linear Alpha Olefins</b>	<b>385</b>
12.1	On Purpose Linear Alpha Olefins (Butene-1, Hexene-1 and Octene-1)	385
12.1.1	Asia Pacific	385
12.1.2	United States	385
12.1.3	Western Europe	386
12.2	Full Range Linear Alpha Olefins	396
<b>13</b>	<b>Methanol and Derivatives</b>	<b>398</b>
13.1	Methanol	398
13.1.1	Asia Pacific	398
13.1.2	United States	398
13.1.3	Western Europe	399
13.2	Methyl Tertiary Butyl Ether	407
13.2.1	Asia Pacific	407
13.2.2	United States	407
13.2.3	Western Europe	407
13.3	Methanol Capacity Round-Up	415
13.3.1	North America	415
13.3.2	South America	415
13.3.3	Western Europe	415
13.3.4	Central and Eastern Europe	415
13.3.5	Middle East and Africa	415
13.3.6	Asia Pacific	415
<b>14</b>	<b>Ammonia and Urea</b>	<b>416</b>
14.1	Ammonia	416
14.1.1	Asia Pacific	416
14.1.2	United States	416
14.1.3	Western Europe	417
14.2	Urea	425
14.2.1	Asia Pacific	425
14.2.2	United States	425
14.2.3	Western Europe	426



14.3	Ammonia and Urea Capacity Round-Up.....	433
14.3.1	North America .....	433
14.3.2	South America.....	433
14.3.3	Western Europe .....	433
14.3.4	Central and Eastern Europe.....	433
14.3.5	Middle East and Africa .....	433
14.3.6	Asia .....	433

## Appendices

<b>A</b>	<b>Cost of Production Models .....</b>	<b>435</b>
----------	--	------------

### Figures

Figure 1	United States Cash Margin Index.....	8
Figure 2	United States Cash Margin Index.....	8
Figure 3	United States Cash Margin Index.....	8
Figure 4	United States Cash Margin Index.....	9
Figure 5	United States Average Return on Replacement Capital .....	9
Figure 6	Western Europe Cash Margin Index .....	11
Figure 7	Western Europe Cash Margin Index .....	11
Figure 8	Western Europe Cash Margin Index .....	11
Figure 9	Western Europe Cash Margin Index .....	12
Figure 10	Western Europe Return on Capital .....	12
Figure 11	Global Benchmark Crude Oil Pricing.....	15
Figure 12	Singapore Variable Cost Refining Margin .....	16
Figure 13	United States Gulf Coast Variable Cost Refining Margins .....	16
Figure 14	Western Europe Variable Cost Refinery Margins.....	16
Figure 15	South-East Asia Petrochemical Feedstock Prices .....	20
Figure 16	North-West Europe Petrochemical Feedstock Prices .....	20
Figure 17	United States Gulf Coast Petrochemical Feedstock Prices .....	21
Figure 18	United States Ethane Extraction Cash Margin.....	23
Figure 19	United States Ethane Extraction Margins.....	23
Figure 20	Ethylene Cost Competitiveness Summary .....	28
Figure 21	Ethylene Prices.....	28
Figure 22	Asia Ethylene Cash Cost Margins – Standard Naphtha Cracker.....	33
Figure 23	China Ethylene Cost Price and Margins.....	33
Figure 24	China Ethylene Cash Cost Margins .....	34
Figure 25	China Ethylene Return on Investment.....	34
Figure 26	China Ethylene Cost Price and Margins.....	34
Figure 27	United States Gulf Coast Ethylene Prices.....	36
Figure 28	United States Ethane Cracker Cash Cost Margins .....	36
Figure 29	United States Ethylene Cost, Price and Margin .....	36
Figure 30	United States Ethane/Propane Mix Feed Cracker Cash Cost Margins .....	38
Figure 31	United States Ethylene Cost, Price and Margin .....	38
Figure 32	United States Naphtha Cracker Cash Cost Margins .....	40



Figure 33	United States Ethylene Cost, Price and Margin .....	40
Figure 34	United States Ethylene Production Costs .....	42
Figure 35	United States Ethylene Profitability .....	42
Figure 36	Western Europe Naphtha Cracker Variable Cost Margins.....	45
Figure 37	Western Europe Naphtha Cracker Cash Cost Margins .....	45
Figure 38	Western Europe Ethylene Cost, Price and Margins.....	45
Figure 39	Western Europe European Ethylene Prices.....	46
Figure 40	Western Europe Ethylene Production Costs .....	48
Figure 41	Western Europe Ethylene Cash Margins .....	48
Figure 42	Propylene Cost Competitiveness Summary.....	52
Figure 43	Propylene Prices .....	52
Figure 44	Asia Propylene Cash Cost Margins, Propane Dehydrogenation .....	57
Figure 45	China Propylene Cost Price and Margins .....	57
Figure 46	China Propylene Cash Cost Margins .....	58
Figure 47	China Propylene Return on Investment .....	58
Figure 48	China Propylene Cost Price and Margins .....	58
Figure 49	United States Propylene Price Comparison .....	61
Figure 50	United States Propylene Cash Cost Margins .....	61
Figure 51	United States Propylene Leader Cost Price and Margin.....	61
Figure 52	United States Propylene Margins .....	62
Figure 53	United States Propylene Leader Cost Price and Margin.....	62
Figure 54	Western Europe Propylene Margins .....	65
Figure 55	Western Europe Propylene Cost, Price and Margin .....	65
Figure 56	Western Europe Propylene Cash Cost Margins .....	66
Figure 57	Western Europe Propylene Cost, Price and Margins.....	66
Figure 58	Butadiene Cost Competitiveness Summary.....	69
Figure 59	Butadiene Prices .....	69
Figure 60	Asia Butadiene Cash Cost Margins, Mixed C4 Extraction .....	72
Figure 61	China Butadiene Cost Price and Margins .....	72
Figure 62	United States Butadiene Margins.....	74
Figure 63	United States Butadiene Cost, Price and Margin.....	74
Figure 64	Western Europe Butadiene Extraction Margins .....	76
Figure 65	Western Europe Butadiene Cost Price and Margins.....	76
Figure 66	LDPE Cost Competitiveness Summary.....	81
Figure 67	LDPE Prices .....	81
Figure 68	Asia LDPE Variable Cost Margins.....	84
Figure 69	Asia LDPE Cash Cost Margins .....	84
Figure 70	China LDPE Cost Price and Margins .....	84
Figure 71	United States LDPE Variable Cost Margins .....	86
Figure 72	United States LDPE Cash Cost Margins.....	86
Figure 73	United States LDPE Leader Cost, Price and Margin .....	86
Figure 74	Western Europe LDPE Variable Cost Margins.....	88
Figure 75	Western Europe LDPE Cash Cost Margins .....	88
Figure 76	Western Europe LDPE Cost, Price and Margins.....	88





Figure 77	LLDPE Cost Competitiveness Summary.....	91
Figure 78	LLDPE Prices .....	91
Figure 79	Asia LLDPE Variable Cost Margins.....	94
Figure 80	Asia LLDPE Cash Cost Margins .....	94
Figure 81	China LLDPE Cost Price and Margins .....	94
Figure 82	United States LLDPE (Butene-1) Variable Cost Margins.....	96
Figure 83	United States LLDPE (Butene-1) Cash Cost Margins.....	96
Figure 84	United States LLDPE (Butene-1) Leader Cost, Price and Margins.....	96
Figure 85	Western Europe LLDPE Variable Cost Margins.....	98
Figure 86	Western Europe LLDPE Cash Cost Margins .....	98
Figure 87	Western Europe LLDPE Cost, Price and Margins .....	98
Figure 88	HDPE Cost Competitiveness Summary .....	101
Figure 89	HDPE Prices.....	101
Figure 90	Asia HDPE Variable Cost Margins .....	104
Figure 91	Asia HDPE Cash Cost Margins .....	104
Figure 92	China HDPE Cost Price and Margins.....	104
Figure 93	United States HDPE Margins (Injection Moulding) Variable Cost Margins.....	106
Figure 94	United States HDPE Margins (Injection Moulding) Cash Cost Margins.....	106
Figure 95	United States HDPE (Injection Moulding) Leader Cost Price and Margin .....	106
Figure 96	Western Europe HDPE Variable Cost Margins .....	108
Figure 97	Western Europe HDPE Cash Cost Margins.....	108
Figure 98	Western Europe HDPE Cost, Price and Margins.....	108
Figure 99	Polypropylene Cost Competitiveness Summary .....	111
Figure 100	Polypropylene Prices.....	111
Figure 101	Asia Polypropylene Variable Cost Margins .....	114
Figure 102	Asia Polypropylene Cash Cost Margins .....	114
Figure 103	China Polypropylene Cost Price and Margins.....	114
Figure 104	United States Polypropylene Variable Cost Margins .....	116
Figure 105	United States Polypropylene Cash Cost Margins .....	116
Figure 106	United States Polypropylene Leader Cost, Price and Margin .....	116
Figure 107	Western Europe Polypropylene Variable Cost Margins .....	118
Figure 108	Western Europe Polypropylene Cash Cost Margins .....	118
Figure 109	Western Europe Polypropylene Cost, Price and Margins .....	118
Figure 110	VCM Cost Competitiveness Summary .....	122
Figure 111	VCM Prices.....	122
Figure 112	EDC Prices .....	123
Figure 113	Asia Ethylene Dichloride Variable Cost Margin.....	126
Figure 114	Asia Ethylene Dichloride Cash Cost Margins.....	126
Figure 115	China Ethylene Dichloride Cost Price and Margins .....	126
Figure 116	Asia Vinyl Chloride Monomer Variable Cost Margins .....	130
Figure 117	Asia Vinyl Chloride Monomer Cash Cost Margins .....	130
Figure 118	China Vinyl Chloride Monomer Cost Price and Margins .....	131
Figure 119	South-East Asia Vinyl Chloride Monomer Cost Price and Margins.....	131
Figure 120	United States Chlor-Alkali Cash Cost Margins.....	133



Figure 121	United States Chlor-Alkali Leader Cost, Price, and Margin .....	133
Figure 122	United States EDC Variable Cost Margins .....	135
Figure 123	United States EDC Cash Cost Margins .....	135
Figure 124	United States` EDC Leader Cost, Price, and Margin .....	135
Figure 125	United States Vinyl Chloride Variable Cost Margins .....	137
Figure 126	United States Vinyl Chloride Cash Cost Margins .....	137
Figure 127	United States Vinyl Chloride Leader Costs, Price, and Margin .....	137
Figure 128	Western Europe ECU Cash Cost Margins .....	139
Figure 129	Western Europe ECU Cost and Margin .....	139
Figure 130	Western Europe Ethylene Dichloride Variable Cost Margins .....	141
Figure 131	Western Europe Ethylene Dichloride Cash Cost Margins .....	141
Figure 132	Western Europe Ethylene Dichloride Cost, Price and Margin .....	141
Figure 133	Western Europe Vinyl Chloride Monomer Variable Cost Margins .....	143
Figure 134	Western Europe Vinyl Chloride Monomer Cash Cost Margins .....	143
Figure 135	Western Europe Vinyl Chloride Monomer Cost, Price and Margins .....	143
Figure 136	PVC Cost Competitiveness Summary .....	145
Figure 137	PVC Prices .....	145
Figure 138	South-East Asia PVC Variable Cost Margins .....	147
Figure 139	South-East Asia PVC Cash Cost Margins .....	147
Figure 140	South-East Asia PVC Cost Price and Margins .....	147
Figure 141	United States PVC Pipe-Grade Variable Cost Margins .....	149
Figure 142	United States PVC Pipe-Grade Cash Cost Margins .....	149
Figure 143	United States PVC Pipe Grade Leader Cost, Price and Margin .....	149
Figure 144	Western Europe PVC Variable Cost Margins .....	151
Figure 145	Western Europe PVC Cash Cost Margins .....	151
Figure 146	Western Europe PVC Cost, Price and Margin .....	151
Figure 147	Benzene Cost Competitiveness Summary .....	157
Figure 148	Benzene Prices .....	157
Figure 149	Mixed Xylenes Cost Competitiveness Summary .....	158
Figure 150	Mixed Xylenes Prices .....	158
Figure 151	Asia Reformer Cash Cost Margins .....	161
Figure 152	China Reformer Cost, Price and Margin .....	161
Figure 153	Asia Benzene Cash Cost Margins .....	164
Figure 154	China Benzene Cost, Price and Margin .....	164
Figure 155	China Mixed Xylenes Margins .....	169
Figure 156	South-East Asia Mixed Xylenes Margins .....	169
Figure 157	China Mixed Xylenes, Price and Margin .....	170
Figure 158	China Mixed Xylenes, Price and Margin .....	170
Figure 159	United States Toluene Recovery for Chemicals versus Blending Into Gasoline) .....	171
Figure 160	United States Aromatics Prices .....	171
Figure 161	United States Reformer Margins .....	173
Figure 162	United States Reformate Cost, Price and Margin .....	173
Figure 163	United States Benzene Extraction Margins .....	176
Figure 164	United States Benzene – Toluene Conversion Cash Cost Margins .....	176



Figure 165	United States Benzene Cost Price and Margins .....	177
Figure 166	United States Benzene Cost, Price and Margin .....	177
Figure 167	United States Benzene Production Costs .....	179
Figure 168	United States Mixed Xylenes – Reformate Extraction Cash Cost Margins.....	182
Figure 169	United States Mixed Xylenes – Toluene Conversion Cash Cost Margins .....	182
Figure 170	United States Mixed Xylenes Cost Price and Margin.....	183
Figure 171	United States Mixed Xylenes Cost Price and Margin.....	183
Figure 172	United States Xylenes Production Costs.....	185
Figure 173	Western Europe Aromatics Prices .....	186
Figure 174	Western Europe Spot Price Differentials to Premium Unleaded Gasoline .....	186
Figure 175	Western Europe Reformer Cash Cost Margins.....	188
Figure 176	Western Europe Reformer Margins.....	188
Figure 177	Western Europe Benzene Cash Cost Margins.....	191
Figure 178	Western Europe Benzene Cost Price and Margin.....	191
Figure 179	Western Europe Benzene Cost Price and Margin.....	191
Figure 180	Western Europe Mixed Xylenes Cash Cost Margins .....	194
Figure 181	Western Europe Mixed Xylenes Cost, Price and Margins .....	194
Figure 182	Western Europe Mixed Xylenes Cash Cost Margins .....	194
Figure 183	Cyclohexane Prices .....	196
Figure 184	United States Cyclohexane Margins .....	198
Figure 185	United States Cyclohexane Leader Cost, Price and Margin .....	198
Figure 186	Western Europe Cyclohexane Margins .....	200
Figure 187	Western Europe Cyclohexane Leader Cost Price and Margin.....	200
Figure 188	Styrene Cost Competitiveness Summary.....	205
Figure 189	Styrene Prices .....	205
Figure 190	South-East Asia Styrene Variable Cost Margins.....	207
Figure 191	South-East Asia Styrene Cash Cost Margins.....	207
Figure 192	South-East Asia Styrene Cost, Price and Margin.....	207
Figure 193	United States Styrene Variable Cost Margins .....	209
Figure 194	United States Styrene Cash Cost Margins .....	209
Figure 195	United States Styrene Leader Cost, Price and Margin .....	209
Figure 196	Western Europe Styrene Variable Cost Margins.....	211
Figure 197	Western Europe Styrene Cash Cost Margins .....	211
Figure 198	Western Europe Styrene Cost, Price and Margin .....	211
Figure 199	Polystyrene Cost Competitiveness Summary .....	214
Figure 200	Polystyrene Prices .....	214
Figure 201	South-East Asia Polystyrene Variable Cost Margins .....	216
Figure 202	South-East Asia Polystyrene Cash Cost Margins .....	216
Figure 203	South-East Asia Styrene Cost, Price and Margin.....	216
Figure 204	United States Polystyrene Variable Cost Margins .....	218
Figure 205	United States Polystyrene Cash Cost Margins .....	218
Figure 206	United States Polystyrene Leader Margins .....	218
Figure 207	Western Europe Polystyrene Variable Cost Margins .....	220
Figure 208	Western Europe Polystyrene Cash Cost Margins .....	220



Figure 209	Western Europe Polystyrene Cost, Price and Margin .....	220
Figure 210	Styrene Butadiene Rubber Cost Competitiveness Summary .....	224
Figure 211	Styrene Butadiene Rubber Prices .....	224
Figure 212	South-East Asia Styrene Butadiene Rubber Margins .....	226
Figure 213	South-East Asia Styrene Butadiene Rubber Cost, Price and Margin .....	226
Figure 214	United States Styrene Butadiene Rubber Margins .....	228
Figure 215	United States Styrene Butadiene Rubber Cost Price and Margin.....	228
Figure 216	Western Europe Styrene Butadiene Rubber Margins .....	230
Figure 217	Western Europe Styrene Butadiene Rubber Leader Cost Price and Margin .....	230
Figure 218	Acrylonitrile Butadiene Styrene Cost Competitiveness Summary .....	233
Figure 219	Acrylonitrile Butadiene Styrene Prices .....	233
Figure 220	South-East Asia Acrylonitrile Butadiene Styrene Margins .....	235
Figure 221	South-East Asia Acrylonitrile Butadiene Styrene Cost, Price and Margin .....	235
Figure 222	United States Acrylonitrile Butadiene Styrene Margins.....	237
Figure 223	United States Acrylonitrile Butadiene Styrene Leader Cost Price and Margin .....	237
Figure 224	Western Europe Acrylonitrile Butadiene Styrene Margins .....	239
Figure 225	Western Europe Acrylonitrile Butadiene Styrene Leader Cost Price and Margin .....	239
Figure 226	Butadiene Rubber Cost Competitiveness Summary .....	242
Figure 227	Butadiene Rubber Prices.....	242
Figure 228	South-East Asia Butadiene Rubber Margins.....	244
Figure 229	South-East Asia Butadiene Rubber Cost, Price and Margin .....	244
Figure 230	United States Butadiene Rubber Margins .....	246
Figure 231	United States Butadiene Rubber Leader Cost Price and Margin .....	246
Figure 232	Western Europe Butadiene Rubber Margins.....	248
Figure 233	Western Europe Butadiene Rubber Cost Price and Margin.....	248
Figure 234	Mono Ethylene Glycol Cost Competitiveness Summary .....	251
Figure 235	Mono Ethylene Glycol Prices.....	251
Figure 236	Asia Mono Ethylene Glycol Variable Cost Margins .....	255
Figure 237	Asia Mono Ethylene Glycol Cash cost Margins.....	255
Figure 238	China Mono Ethylene Glycol Cost, Price and Margin .....	256
Figure 239	China Mono Ethylene Glycol Cost, Price and Margin .....	256
Figure 240	United States Mono Ethylene Glycol Variable Cost Margins .....	258
Figure 241	United States Mono Ethylene Glycol Cash Cost Margins .....	258
Figure 242	United States Mono Ethylene Glycol Leader Cost, Price and Margin.....	258
Figure 243	Western Europe Ethylene Oxide Variable Cost Margins .....	260
Figure 244	Western Europe Ethylene Oxide Cash Cost Margins .....	260
Figure 245	Western Europe Ethylene Oxide Cost Price and Margin .....	260
Figure 246	Western Europe Ethylene Glycol Variable Cost Margins.....	262
Figure 247	Western Europe Ethylene Glycol Cash Cost Margins.....	262
Figure 248	Western Ethylene Glycol Cost Price and Margin .....	262
Figure 249	<i>para</i> -Xylene Cost Competitiveness Summary.....	264
Figure 250	<i>para</i> -Xylene Prices .....	264
Figure 251	China <i>para</i> -Xylene Cash Cost Margins .....	267
Figure 252	South-East Asia <i>para</i> -Xylene Cash Cost Margins.....	267



Figure 253	China <i>para</i> -Xylene Cost, Price and Margin .....	267
Figure 254	United States <i>para</i> -Xylene Extraction and Isomerisation Margins .....	269
Figure 255	United States <i>para</i> -Xylene Cash Cost Margins .....	269
Figure 256	United States <i>para</i> -Xylene Return on Investment .....	270
Figure 257	United States <i>para</i> -Xylene Leader Cost, Price and Margin .....	270
Figure 258	Western Europe <i>para</i> -Xylene Margins (Leader).....	272
Figure 259	Western Europe <i>para</i> -Xylene Cost Price and Margin .....	272
Figure 260	Western Europe <i>para</i> -Xylene Cash Cost Margins .....	273
Figure 261	Western Europe <i>para</i> -Xylene Return on Investment .....	273
Figure 262	PTA Cost Competitiveness Summary .....	275
Figure 263	PTA Prices.....	275
Figure 264	Asia PTA Variable Cost Margins .....	278
Figure 265	Asia PTA Cash Cost Margins .....	278
Figure 266	China PTA Cost, Price and Margin .....	278
Figure 267	United States PTA Fibre Grade Variable Cost Margins .....	280
Figure 268	United States PTA Fibre Grade Cash Cost Margins .....	280
Figure 269	United States PTA Fibre Grade Cost, Price and Margin .....	280
Figure 270	Western Europe PTA Margins.....	282
Figure 271	Western Europe PTA Cost, Price and Margins .....	282
Figure 272	PET Cost Competitiveness Summary .....	284
Figure 273	PET Bottle Grade Prices .....	284
Figure 274	Asia PET Bottle Grade Variable Cost Margins.....	287
Figure 275	Asia PET Bottle Grade Cash Cost Margins.....	287
Figure 276	China PET Bottle Grade Cost, Price and Margins .....	287
Figure 277	United States PET Bottle Grade Variable Cost Margins .....	289
Figure 278	United States PET Bottle Grade Cash Cost Margins .....	289
Figure 279	United States PET Bottle Grade Leader Cost, Price and Margin.....	289
Figure 280	Western Europe PET Bottle Grade Margins .....	291
Figure 281	Western Europe PET Bottle Grade Leader Cost, Price and Margin .....	291
Figure 282	Acrylonitrile Cost Competitiveness Summary .....	295
Figure 283	Acrylonitrile Prices .....	295
Figure 284	China Acrylonitrile Margins.....	297
Figure 285	China Acrylonitrile Cost, Price and Margin .....	297
Figure 286	United States Acrylonitrile Margins .....	299
Figure 287	United States Acrylonitrile Leader Cost, Price and Margin .....	299
Figure 288	United States Acrylonitrile Leader Margins .....	299
Figure 289	Western Europe Acrylonitrile Margins .....	301
Figure 290	Western Europe Acrylonitrile Cost Price and Margin .....	301
Figure 291	Phenol Cost Competitiveness Summary.....	305
Figure 292	Phenol Prices .....	305
Figure 293	Asia Integrated Cumene Phenol Variable Cost Margins.....	308
Figure 294	Asia Integrated Cumene Phenol Cash Cost Margins.....	308
Figure 295	China Phenol Cost, Price and Margin .....	308
Figure 296	United States Cumene Cash Cost Margins.....	310





Figure 297	United States Cumene Leader Cost, Price and Margin .....	310
Figure 298	United States Phenol Variable Cost Margins .....	312
Figure 299	United States Phenol Cash Cost Margins .....	312
Figure 300	United States Phenol Cost, Price, and Margin .....	312
Figure 301	Western Europe Integrated Cumene/Phenol Margins .....	314
Figure 302	Western Europe Phenol Cost Price and Margin .....	314
Figure 303	Bisphenol A Cost Competitiveness Summary .....	318
Figure 304	Bisphenol A Prices .....	318
Figure 305	South-East Asia Bisphenol A Variable Cost Margins .....	320
Figure 306	South-East Asia Bisphenol A Cash Cost Margins .....	320
Figure 307	South-East Asia Bisphenol A Leader Cost Price and Margin .....	320
Figure 308	United States Bisphenol-A Margins .....	322
Figure 309	United States Bisphenol-A Leader Cost, Price, and Margin .....	322
Figure 310	Western Europe Bisphenol A Margins .....	324
Figure 311	Western Europe Bisphenol A Leader Cost Price and Margin .....	324
Figure 312	Polycarbonate Cost Competitiveness Summary .....	325
Figure 313	Polycarbonate Prices .....	325
Figure 314	South-East Asia Polycarbonate Variable Cost Margins .....	328
Figure 315	South-East Asia Polycarbonate Cash Cost Margins .....	328
Figure 316	South-East Asia Polycarbonate Interfacial Cost Price and Margin .....	329
Figure 317	South-East Asia Polycarbonate Melt Phase Cost Price and Margin .....	329
Figure 318	United States Polycarbonate Variable Margins .....	332
Figure 319	United States Polycarbonate Cash Margins .....	332
Figure 320	United States Polycarbonate Cost, Price Margin - Interfacial .....	333
Figure 321	United States Polycarbonate Margins – Melt Phase Non-Phosgene .....	333
Figure 322	Western Europe Polycarbonate Variable Cost Margins .....	336
Figure 323	Western Europe Polycarbonate Cash Cost Margins .....	336
Figure 324	Western Europe Polycarbonate Interfacial Cost Price and Margin .....	337
Figure 325	Western Europe Polycarbonate Melt Phase Cost Price and Margin .....	337
Figure 326	Propylene Oxide Cost Competitiveness Summary .....	340
Figure 327	Propylene Oxide Prices .....	340
Figure 328	South-East Asia Propylene Oxide Variable Cost Margins .....	343
Figure 329	South-East Asia Propylene Oxide Cash Cost Margins .....	343
Figure 330	South-East Asia Propylene Oxide Cost Price and Margin .....	344
Figure 331	South-East Asia Propylene Oxide Cost Price and Margin .....	344
Figure 332	United States Propylene Oxide Margins .....	347
Figure 333	United States Propylene Oxide Cost Price and Margin .....	347
Figure 334	United States Propylene Oxide Cost Price and Margin .....	347
Figure 335	Western Europe Propylene Oxide Variable Cost Margins .....	350
Figure 336	Western Europe Propylene Oxide Cash Cost Margins .....	350
Figure 337	Western Europe Propylene Oxide Cost Price and Margin .....	351
Figure 338	Western Europe Propylene Oxide Cost Price and Margin .....	351
Figure 339	Oxo Alcohols Cost Competitiveness Summary .....	353
Figure 340	<i>n</i> -Butanol Prices .....	354



Figure 341	2EH Prices.....	354
Figure 342	South-East Asia Butanol Margins.....	356
Figure 343	South-East Asia Butanol Cost, Price and Margin.....	356
Figure 344	South-East Asia 2-Ethylhexanol Margins.....	358
Figure 345	South-East Asia 2-Ethylhexanol Cost, Price and Margin.....	358
Figure 346	United States Butanol Margins.....	360
Figure 347	United States Butanol Cost, Price and Margin.....	360
Figure 348	United States 2-Ethylhexanol Margins.....	362
Figure 349	United States 2-Ethylhexanol Cost, Price and Margin.....	362
Figure 350	Western Europe Butanol Margins.....	364
Figure 351	Western Europe Butanol Cost, Price and Margin.....	364
Figure 352	Western Europe 2-Ethylhexanol Margins.....	366
Figure 353	Western Europe 2-Ethylhexanol Cost, Price and Margin.....	366
Figure 354	Isocyanates Cost Competitiveness Summary.....	370
Figure 355	MDI Prices.....	371
Figure 356	TDI Prices.....	371
Figure 357	South-East Asia MDI and Intermediates Costs.....	373
Figure 358	South-East Asia MDI Margins.....	373
Figure 359	South-East Asia TDI and Intermediates Costs.....	375
Figure 360	South-East Asia TDI Margins.....	375
Figure 361	United States MDI and Intermediates Costs.....	377
Figure 362	United States MDI Margins.....	377
Figure 363	United States TDI and Intermediates Costs.....	379
Figure 364	United States TDI Margins.....	379
Figure 365	Western Europe MDI and Intermediates Costs.....	381
Figure 366	Western Europe MDI Margins.....	381
Figure 367	Western Europe TDI and Intermediates Costs.....	383
Figure 368	Western Europe TDI Margins.....	383
Figure 369	Butene-1 Regional Cost Competitiveness Summary.....	387
Figure 370	Hexene-1 Regional Cost Competitiveness Summary.....	387
Figure 371	Octene-1 Regional Cost Competitiveness Summary.....	388
Figure 372	Asia Pacific LAO Prices.....	388
Figure 373	United States LAO Prices.....	389
Figure 374	Western Europe LAO Prices.....	389
Figure 375	Asia Pacific LAO Margins.....	391
Figure 376	Asia Pacific Cost, Price and Margins.....	391
Figure 377	United States LAO Margins.....	393
Figure 378	United States Cost, Price and Margins.....	393
Figure 379	Western Europe LAO Margins.....	395
Figure 380	Western Europe Cost, Price and Margins.....	395
Figure 381	Full Range LAO Cost, Price and Margins.....	397
Figure 382	Methanol Cost Competitiveness Summary.....	400
Figure 383	Methanol Prices.....	400
Figure 384	China Methanol Margins.....	402



Figure 385	China Methanol Cost, Price and Margin.....	402
Figure 386	United States Methanol Margins .....	404
Figure 387	United States Methanol Cost, Price, and Margin .....	404
Figure 388	Western Europe Methanol Margins .....	406
Figure 389	Western Europe Methanol Cost, Price and Margin .....	406
Figure 390	MTBE Cost Competitiveness Summary .....	408
Figure 391	MTBE Prices.....	408
Figure 392	China MTBE Margins .....	410
Figure 393	China MTBE Cost, Price and Margin .....	410
Figure 394	United States MTBE Margins .....	412
Figure 395	United States MTBE Cost, Price, and Margin .....	412
Figure 396	Western Europe MTBE Margins.....	414
Figure 397	Western Europe MTBE Cost, Price and Margin.....	414
Figure 398	Ammonia Cost Competitiveness Summary.....	418
Figure 399	Ammonia Prices .....	418
Figure 400	China Ammonia Margins .....	420
Figure 401	China Ammonia Cost, Price and Margin .....	420
Figure 402	United States Ammonia Margins .....	422
Figure 403	United States Ammonia Cost, Price, and Margin .....	422
Figure 404	Western Europe Ammonia Margins .....	424
Figure 405	Western Europe Ammonia Cost, Price and Margin .....	424
Figure 406	Urea Cost Competitiveness Summary .....	426
Figure 407	Urea Prices.....	426
Figure 408	China Urea Margins.....	428
Figure 409	China Urea Cost, Price and Margin.....	428
Figure 410	United States Urea Margins .....	430
Figure 411	United States Urea Cost, Price, and Margin .....	430
Figure 412	Western Europe Urea Margins.....	432
Figure 413	Western Europe Urea Cost, Price and Margin .....	432

## Tables

Table 1	United States Petrochemical Profitability Summary.....	7
Table 2	Western Europe Petrochemical Profitability Summary .....	10
Table 3	Monthly Crude Oil Pricing.....	14
Table 4	Singapore Refinery Costs, Revenue and Margins .....	17
Table 5	United States Gulf Coast Refinery Costs, Revenue, and Margins.....	18
Table 6	Western Europe Refinery Costs, Revenue and Margins .....	19
Table 7	United States Gulf Coast Petrochemical Feedstock Spot Prices .....	21
Table 8	United States Ethane Recovery Leader Costs, Revenues, and Margins .....	22
Table 9	China Ethylene Costs, Revenues and Margins.....	29
Table 10	China Ethylene Costs, Revenues and Margins.....	30
Table 11	China Ethylene Costs, Revenues and Margins.....	31
Table 12	South-East Asia Ethylene Costs, Revenues and Margins .....	32
Table 13	United States Ethylene Leader Costs, Revenues and Margins (Ethane Cracker).....	35





Table 14	United States Ethylene Leader Costs, Revenues and Margins (Ethane/Propane Mixed Feed Cracker) .....	37
Table 15	United States Ethylene Leader Costs, Revenues and Margins (Standard Naphtha Cracker) .....	39
Table 16	United States Ethylene Production Costs (Cracker Feedstock Competitiveness) .....	41
Table 17	Western Europe Ethylene Leader Costs, Revenues and Margins Standard Naphtha Cracker with Butadiene and Benzene Extraction .....	43
Table 18	Western Europe Ethylene Leader Costs, Revenues and Margins Basic Naphtha Cracker (Standard Severity) .....	44
Table 19	Western Europe Ethylene Costs .....	47
Table 20	China Propylene Costs, Revenues and Margins .....	53
Table 21	China Propylene Costs, Revenues and Margins .....	54
Table 22	China Propylene Costs, Revenues and Margins .....	55
Table 23	South-East Asia Propylene Costs, Revenues and Margins .....	56
Table 24	United States Polymer Grade Propylene Leader Cost, Revenues, and Margins Refinery Propylene Splitter .....	59
Table 25	United States Polymer Grade Propylene Leader Cost, Revenues, and Margins Propane Dehydrogenation.....	60
Table 26	Western Europe Propylene Costs, Revenue and Margins Propane Dehydrogenation .....	63
Table 27	Western Europe Propylene Costs, Revenues and Margins Refinery Propylene Splitter.....	64
Table 28	China Butadiene Costs, Revenues and Margins Mixed C4 Extraction .....	70
Table 29	South-East Asia Butadiene Costs, Revenues and Margins .....	71
Table 30	United States Butadiene Costs, Revenues, and Margins Leader Plants .....	73
Table 31	Western Europe Butadiene Costs, Revenues and Margins.....	75
Table 32	China LDPE Costs, Revenue and Margins .....	82
Table 33	South-East Asia LDPE Costs, Revenue and Margins.....	83
Table 34	United States Low Density Polyethylene Leader Costs, Revenues, and Margins.....	85
Table 35	Western Europe Low Density Polyethylene Leader Costs, Revenues and Margins .....	87
Table 36	China LLDPE Costs, Revenue and Margins .....	92
Table 37	South-East Asia LLDPE Costs, Revenue and Margins.....	93
Table 38	United States Linear Low Density Leader Polyethylene Costs, Revenues, and Margins Butene-1 Grade .....	95
Table 39	Western Europe Linear Low Density Polyethylene Leader Costs, Revenues and Margins.....	97
Table 40	China HDPE Costs, Revenue and Margins.....	102
Table 41	South-East Asia HDPE Costs, Revenue and Margins .....	103
Table 42	United States High Density Polyethylene Leader Costs Revenues and Margins Injection Moulding Grade.....	105
Table 43	Western Europe High Density Polyethylene Leader Costs, Revenues and Margins.....	107
Table 44	China Polypropylene Costs, Revenue and Margins.....	112
Table 45	South-East Asia Polypropylene Costs, Revenue and Margins .....	113
Table 46	United States Polypropylene Leader Costs, Revenue, and Margins .....	115
Table 47	Western Europe Polypropylene Leader Costs, Revenues and Margins .....	117
Table 48	China Ethylene Dichloride Costs, Revenues and Margins.....	124



Table 49	South-East Asia Ethylene Dichloride Costs, Revenues and Margins .....	125
Table 50	China Vinyl Chloride Monomer Costs, Revenues and Margins .....	127
Table 51	China Vinyl Chloride Monomer Costs, Revenues and Margins .....	128
Table 52	South-East Asia Vinyl Chloride Monomer Costs, Revenues and Margins.....	129
Table 53	United States Chlor-Alkali Leader Costs Revenues and Margins.....	132
Table 54	United States Export Ethylene Dichloride Leader Costs, Revenues, and Margins.....	134
Table 55	United States Vinyl Chloride Monomer Leader Costs, Revenues, and Margins.....	136
Table 56	Western Europe Chlor-Alkali Leader Costs.....	138
Table 57	Western Europe Ethylene Dichloride Leader Costs, Revenues and Margins.....	140
Table 58	Western Europe Vinyl Chloride Monomer Leader Costs, Revenues and Margins Contract Economics .....	142
Table 59	China Polyvinyl Chloride Costs, Revenues and Margins .....	146
Table 60	United States Polyvinyl Chloride Leader Costs, Revenues, and Margins .....	148
Table 61	Western Europe Polyvinyl Chloride Leader Costs, Revenues and Margins .....	150
Table 62	China Reformer Costs, Revenues and Margins.....	159
Table 63	South-East Asia Reformer Costs, Revenues and Margins .....	160
Table 64	China Benzene Pygas Extraction Costs, Revenues and Margins .....	162
Table 65	South-East Asia Benzene Costs, Revenues and Margins .....	163
Table 66	China Mixed Xylenes Costs, Revenues and Margins Reformate Extraction .....	165
Table 67	China Mixed Xylenes Costs, Revenues and Margins .....	166
Table 68	South-East Asia Mixed Xylenes Costs, Revenues and Margins.....	167
Table 69	South-East Asia Mixed Xylenes Costs, Revenues and Margins.....	168
Table 70	United States Reformate Costs, Revenues, and Margins.....	172
Table 71	United States Benzene Costs, Revenues, and Margins Toluene Hydrodealkylation .....	174
Table 72	United States Benzene Costs, Revenues, and Margins Toluene Disproportionation.....	175
Table 73	United States Benzene Production Costs .....	178
Table 74	United States Mixed Xylenes Costs, Revenues and Margins Reformate Extraction .....	180
Table 75	United States Mixed Xylenes Costs, Revenues and Margins Toluene Disproportionation (TDP).....	181
Table 76	United States Mixed Xylenes Production Costs .....	184
Table 77	Western Europe Reformer Leader Costs, Revenues and Margins.....	187
Table 78	Western Europe Benzene Costs, Revenues and Margins Extraction from Pygas .....	189
Table 79	Western Europe Benzene Costs, Revenues and Margins Toluene Hydrodealkylation .....	190
Table 80	Western Europe Mixed Xylenes Costs, Revenues and Margins Toluene Disproportionation .....	192
Table 81	Western Europe Mixed Xylenes Costs, Revenues and Margins Reformate Extraction.....	193
Table 82	United States Cyclohexane Leader Costs, Revenues, and Margins .....	197
Table 83	Western Europe Cyclohexane Leader Costs, Revenues and Margins .....	199
Table 84	South-East Asia Styrene Costs, Revenues and Margins.....	206
Table 85	United States Styrene Leader Costs, Revenues, and Margins.....	208
Table 86	Western Europe Styrene Leader Costs, Revenues and Margins .....	210
Table 87	South-East Asia Polystyrene Costs, Revenues and Margins .....	215
Table 88	United States Polystyrene Leader Costs, Revenues, and Margins .....	217



Table 89	Western Europe Polystyrene Leader Costs, Revenues and Margins .....	219
Table 90	South-East Asia Styrene Butadiene Rubber Costs, Revenues and Margins.....	225
Table 91	United States Styrene Butadiene Rubber Costs, Revenues and Margins Typical Plants.....	227
Table 92	Western Europe Styrene Butadiene Rubber Costs, Revenues and Margins .....	229
Table 93	South-East Asia Acrylonitrile Butadiene Styrene Costs, Revenues and Margins .....	234
Table 94	United States ABS Costs, Revenues and Margins Leader Plants .....	236
Table 95	Western Europe Acrylonitrile Butadiene Styrene Costs, Revenues and Margins.....	238
Table 96	Butadiene Rubber Costs, Revenues and Margins – South-East Asia .....	243
Table 97	United States Butadiene Rubber Costs, Revenues and Margins Leader Plants .....	245
Table 98	Western Europe Butadiene Rubber Costs, Revenues and Margins Typical Plants .....	247
Table 99	China Mono Ethylene Glycol Costs, Revenues and Margins Ethylene Oxidation and Hydration .....	252
Table 100	China Mono Ethylene Glycol Costs, Revenues and Margins From Coal Via DMO .....	253
Table 101	South-East Asia Mono Ethylene Glycol Costs, Revenues and Margins Ethylene Oxidation and Hydration .....	254
Table 102	United States Mono Ethylene Glycol Leader Costs, Revenues, and Margins .....	257
Table 103	Western Europe Ethylene Oxide Leader Costs, Revenues and Margins .....	259
Table 104	Western Europe Ethylene Glycol Leader Costs, Revenues and Margins .....	261
Table 105	China <i>para</i> -Xylene Costs, Revenues and Margins .....	265
Table 106	South-East Asia <i>para</i> -Xylene Costs, Revenues and Margins .....	266
Table 107	United States <i>para</i> -Xylene Leader Costs, Revenues, and Margins.....	268
Table 108	Western Europe <i>para</i> -Xylene Leader Costs, Revenues and Margins .....	271
Table 109	China PTA Costs, Revenues and Margins .....	276
Table 110	South-East Asia PTA Costs, Revenues and Margins .....	277
Table 111	United States PTA Leader Costs, Revenues, and Margins .....	279
Table 112	Western Europe PTA Costs, Revenues and Margins .....	281
Table 113	China PET Bottle Grade Costs, Revenues and Margins .....	285
Table 114	South-East Asia PET Bottle Grade Costs, Revenues and Margins .....	286
Table 115	United States PET Bottle Grade Leader Costs, Revenues, and Margins .....	288
Table 116	Western Europe PET Bottle Grade Leader Costs, Revenues and Margins .....	290
Table 117	China Acrylonitrile Costs, Revenues and Margins .....	296
Table 118	United States Acrylonitrile Leader Costs, Revenues, and Margins.....	298
Table 119	Western Europe Acrylonitrile Leader Costs, Revenues and Margins .....	300
Table 120	China Cumene/Phenol Costs, Revenues and Margins .....	306
Table 121	South-East Asia Cumene/Phenol Costs, Revenues and Margins .....	307
Table 122	United States Cumene Leader Costs, Revenues, and Margins.....	309
Table 123	United States Phenol Leader Costs, Revenues, and Margins Cumene Oxidation .....	311
Table 124	Western Europe Cumene/Phenol Leader Costs, Revenues and Margins .....	313
Table 125	South-East Asia Bisphenol A Costs, Revenues and Margins .....	319
Table 126	United States Bisphenol A (BPA) Leader Costs, Revenues, and Margins .....	321
Table 127	Western Europe Bisphenol A Costs, Revenues and Margins .....	323
Table 128	South-East Asia Polycarbonate Costs, Revenues and Margins Interfacial Process .....	326
Table 129	South-East Asia Polycarbonate Costs, Revenues and Margins Melt Phase Non Phosgene Process .....	327



Table 130	United States Polycarbonate Leader Costs, Revenues, and Margins Interfacial .....	330
Table 131	United States Polycarbonate Leader Costs, Revenues, and Margins Melt Phase Non-Phosgene.....	331
Table 132	Western Europe Polycarbonate Costs, Revenues and Margins Interfacial .....	334
Table 133	Western Europe Polycarbonate Phosgene Costs, Revenues and Margins Melt Phase Non.....	335
Table 134	South-East Asia Propylene Oxide Costs, Revenues and Margins Hydrogen Peroxide (HPPO) Process.....	341
Table 135	South-East Asia Propylene Oxide Costs, Revenues and Margins Styrene (POSM) Process.....	342
Table 136	United States Propylene Oxide Costs, Revenues and Margins Chlorohydrin (CHPO) Process.....	345
Table 137	United States Propylene Oxide Costs, Revenues and Margins Styrene (POSM) Process.....	346
Table 138	Western Europe Propylene Oxide Costs, Revenues and Margins Hydrogen Peroxide (HPPO) Process.....	348
Table 139	Western Europe Propylene Oxide Costs, Revenues and Margins Styrene (POSM) Process.....	349
Table 140	South-East Asia Butanol Costs, Revenues and Margins .....	355
Table 141	South-East Asia 2-Ethylhexanol Costs, Revenues and Margins .....	357
Table 142	United States Butanol Costs, Revenues and Margins .....	359
Table 143	United States 2-Ethylhexanol Costs, Revenues and Margins.....	361
Table 144	Western Europe Butanol Costs, Revenues and Margins.....	363
Table 145	Western Europe 2-Ethylhexanol Costs, Revenues and Margins .....	365
Table 146	South-East Asia MDI and Intermediates Costs, Revenues and Margins.....	372
Table 147	South-East Asia TDI and Intermediates Costs, Revenues and Margins .....	374
Table 148	United States MDI and Intermediates Costs, Revenues and Margins.....	376
Table 149	United States TDI and Intermediates Costs, Revenues and Margins.....	378
Table 150	Western Europe MDI and Intermediates Costs, Revenues and Margins .....	380
Table 151	Western Europe TDI and Intermediates Costs, Revenues and Margins .....	382
Table 152	Asia Pacific LAO Cost, Revenues and Margins .....	390
Table 153	United States Cost, Revenues and Margins .....	392
Table 154	Western Europe Cost, Revenues and Margins .....	394
Table 155	Full Range LAO Production Costs .....	396
Table 156	China Methanol Costs, Revenues and Margins.....	401
Table 157	United States Methanol Costs, Revenues, and Margins Natural Gas Reforming.....	403
Table 158	Western Europe Methanol Costs, Revenues and Margins .....	405
Table 159	China MTBE Costs, Revenues and Margins.....	409
Table 160	United States MTBE Costs, Revenues, and Margins isobutylene ex Steam Cracker Raffinate-1 .....	411
Table 161	Western Europe MTBE Costs, Revenues and Margins .....	413
Table 162	China Ammonia Costs, Revenues and Margins .....	419
Table 163	United States Ammonia Costs, Revenues, and Margins Natural Gas Reforming .....	421
Table 164	Western Europe Ammonia Costs, Revenues and Margins.....	423
Table 165	China Urea Costs, Revenues and Margins .....	427
Table 166	United States Urea Costs, Revenues, and Margins Integrated Ammonia.....	429



Table 167 Western Europe Urea Costs, Revenues and Margins ..... 431