Industrial Organic Chemicals. 3rd Edition

Description:
An essential introduction to the organic chemicals industry in the context of globalization, advances in technology, and environmental concerns.

Providing 95 percent of the 500 billion pounds of organic chemicals produced in the world, the petroleum and natural gas industries are responsible for products that ensure our present quality of life. Products as diverse as gasoline, plastics, detergents, fibers, pesticides, tires, lipstick, shampoo, and sunscreens are based on seven raw materials derived from petroleum and natural gas. In an updated and expanded Third Edition, Industrial Organic Chemicals examines why each of these chemical building blocks—ethylene, propylene, C4 olefins (butenes and butadiene), benzene toluene, the xylenes, and methane—is preferred over another in the context of an environmental issue or manufacturing process, as well as their individual chemistry, derivatives, method of manufacture, uses, and economic significance.

The new edition details the seismic shifts in the world's chemistry industry away from the United States, Western Europe and Japan, transforming the Middle East and Asia-Pacific region, especially China, into major players. The book also details:

- The impact of globalization on the patterns of worldwide transportation of chemicals, including methods of shipping chemicals
- The technological advances in the area of polymerization and catalysis, including catalyst design and single-site catalysts
- Chemicals for electronics, with much new material on conducting polymers, photovoltaic cells, and related materials
- The discovery of vast reserves of shale gas and shale oil, altering long-term predictions of resource depletion in the United States and other countries
- Commercial and market aspects of the chemical industry, with coverage of emerging new companies such as INEOS, Formosa Plastics, LyondellBasell, and SABIC

With expanded coverage on the vital role of green chemistry, renewables, chemicals and fuels on issues of sustainability and climate change, Industrial Organic Chemicals offers an unparalleled examination of what is at the heart of this multi-billion dollar industry, how globalization has transformed it, and its ever growing role in preserving the Earth and its resources.

Contents:
Preface xxiii
Preface to the First Edition xxv
Preface to the Second Edition xxvii
Acknowledgments xxix
Bryan Godel Reuben 1934–2012 xxxi
List of Acronyms and Abbreviations xxxiii
Introduction: How to Use Industrial Organic Chemicals, Third Edition 1
I.1 Why This Book Was Written and How It Is Structured 2
I.2 North American Industry Classification System 5
I.3 Units and Nomenclature 5
I.4 General Bibliography 6
4.14 Metathesis 128
4.15 Function of the Refinery and the Potential Petroleum Shortage 133
4.16 Separation of Natural Gas 136
4.17 Oil from Tar Sands 137

5. Chemicals and Polymers from Ethylene 139
5.1 Ethylene Polymers 141
5.2 Ethylene Copolymers 151
5.3 Oligomerization 154
5.4 Vinyl Chloride 160
5.5 Acetaldehyde 165
5.6 Vinyl Acetate 167
5.7 Ethylene Oxide 169
5.8 Styrene 177
5.9 Ethanol 181
5.10 Major Chemicals from Ethylene A Summary 182
5.11 Lesser Volume Chemicals from Ethylene 185

6. Chemicals and Polymers from Propylene 211
6.1 On-Purpose Propylene Production Technologies and Propane Dehydrogenation 214
6.2 Main Polymers and Chemicals from Propylene 217
6.3 Oligomerization 221
6.4 Acrylic Acid 222
6.5 Acrylonitrile 227
6.6 Cumene/Phenol and Cumene Hydroperoxide 231
6.7 Acetone and Isopropanol 233
6.8 Propylene Oxide 242
6.9 n-Butyraldehyde and Isobutyraldehyde 255
6.10 Major Chemicals from Propylene A Perspective 261
6.11 Lesser Volume Chemicals from Propylene 263

7. Chemicals from the C4 Stream 273
7.1 Chemicals and Polymers from Butadiene 277
7.2 Chemicals and Polymers from Isobutene 296
7.3 Chemicals and Polymers from 1– and 2–Butenes 302
7.4 Chemicals from n–Butane 303
8. Chemicals from the C5 Stream 309
8.1 Separation of the C5 Stream 311
8.2 Isoprene 312
8.3 Cyclopentadiene and Dicyclopentadiene 319
8.4 Pentene–1 and Piperylene 321
9. Chemicals from Benzene 323
9.1 Phenol 326
9.2 Cyclohexane 344
9.3 Aniline 354
9.4 Alkylbenzenes 361
9.5 Maleic Anhydride 362
9.6 Chlorinated Benzenes 363
9.7 Dihydroxybenzenes 364
9.8 Anthraquinone 370
9.8.1 Hydrogen Peroxide 371
10. Chemicals from Toluene 375
10.1 Hydrodealkylation, Disproportionation, and Transalkylation 375
10.2 Solvents 378
10.3 Dinitrotoluene and Toluene Diisocyanate 378
10.4 Lesser Volume Chemicals from Toluene 380
11. Chemicals from Xylenes 383
11.1 o–Xylene and Phthalic Anhydride 386
11.2 m–Xylene and Isophthalic Acid 395
11.3 p–Xylene and Terephthalic Acid/Dimethyl Terephthalate 397
12. Chemicals from Methane 407
12.1 Hydrocyanic Acid 408
12.2 Halogenated Methanes 411
12.3 Acetylene 417
12.4 Synthesis Gas 424
12.5 Chemicals from Synthesis Gas 429
12.6 Carbon Monoxide Chemistry 454
12.7 Gas-to-Liquid Fuels 459
13. Chemicals from Alkanes 463
13.1 Functionalization of Methane 464
13.2 Functionalization of C2–C4 Alkanes 468
13.3 Carbon Black 472
14. Chemicals from Coal 475
14.1 Chemicals from Coke Oven Distillate 477
14.2 The Fischer–Tropsch Reaction 480
14.3 Coal Hydrogenation 484
14.4 Substitute Natural Gas 485
14.5 SNG and Synthesis Gas Technology 485
14.6 Underground Coal Gasification 488
14.7 Calcium Carbide 488
14.8 Coal and the Environment 490
15. Fats and Oils 493
15.1 Markets for Fats and Oils 495
15.2 Purification of Fats and Oils 497
15.3 Fatty Acids 499
15.4 Fatty Nitrogen Compounds 502
15.5 "Dimer" Acid 504
15.6 Aminoamides and Imidazolines 506
15.7 Azelaic, Pelargonic, and Petroselinic Acids 507
15.8 Fatty Alcohols 508
15.9 Epoxidized Oils 509
15.10 Ricinoleic Acid 510
15.11 Glycerol 512
15.12 Alcoholsis of Fats and Oils 513
15.13 Alkyl Polyglycosides 519
15.14 Non-Caloric Fat-like Substances 519
16. Carbohydrates 523
Fax Order Form
To place an order via fax simply print this form, fill in the information below and fax the completed form to 646-607-1907 (from USA) or +353-1-481-1716 (from Rest of World). If you have any questions please visit http://www.researchandmarkets.com/contact/

Order Information
Please verify that the product information is correct.

Product Name: Industrial Organic Chemicals. 3rd Edition
Web Address: http://www.researchandmarkets.com/reports/2175008/
Office Code: SCDKYPU

Product Format
Please select the product format and quantity you require:

<table>
<thead>
<tr>
<th>Quantity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Copy (Hard Back)</td>
<td>USD 157 + USD 29 Shipping/Handling</td>
</tr>
</tbody>
</table>

* Shipping/Handling is only charged once per order.

Contact Information
Please enter all the information below in BLOCK CAPITALS

Title: Mr ☐ Mrs ☐ Dr ☐ Miss ☐ Ms ☐ Prof ☐
First Name: __________________________ Last Name: __________________________
Email Address: * __________________________
Job Title: __________________________
Organisation: __________________________
Address: __________________________
City: __________________________
Postal / Zip Code: __________________________
Country: __________________________
Phone Number: __________________________
Fax Number: __________________________

* Please refrain from using free email accounts when ordering (e.g. Yahoo, Hotmail, AOL)
Payment Information

Please indicate the payment method you would like to use by selecting the appropriate box.

☐ Pay by credit card: You will receive an email with a link to a secure webpage to enter your credit card details.

☐ Pay by check: Please post the check, accompanied by this form, to:

Research and Markets,
Guinness Center,
Taylors Lane,
Dublin 8,
Ireland.

☐ Pay by wire transfer: Please transfer funds to:

Account number 833 130 83
Sort code 98-53-30
Swift code ULSBIE2D
IBAN number IE78ULSB98533083313083
Bank Address Ulster Bank,
27-35 Main Street,
Blackrock,
Co. Dublin,
Ireland.

If you have a Marketing Code please enter it below:

Marketing Code: ____________________________

Please note that by ordering from Research and Markets you are agreeing to our Terms and Conditions at http://www.researchandmarkets.com/info/terms.asp