

Catalysts, Petroleum and Chemical Process

April 2025

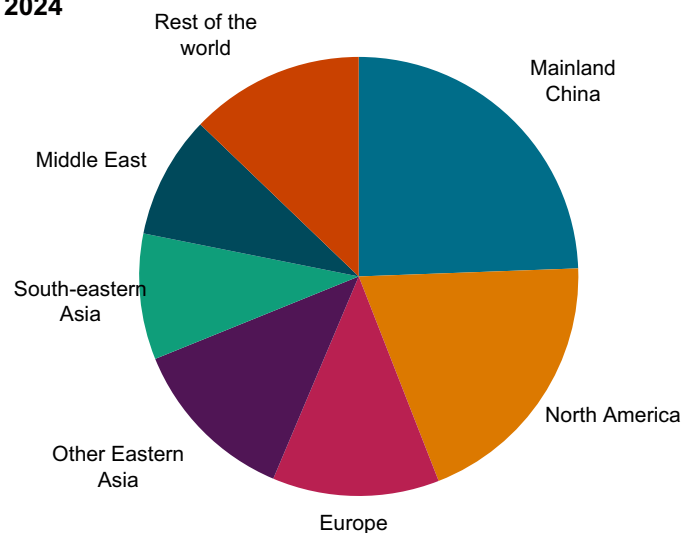
Abstract

Petroleum refining, which is the source of the largest share of industrial products, consists almost entirely of catalytic processes. The consumption patterns for petroleum refining catalysts vary significantly across regions due to the differences in refinery configurations. The growth of refinery capacity in Mainland China, the largest consumer of refining catalysts, is expected to slow over the next five years. Additionally, the increasing penetration of electric vehicles is anticipated to lead to a decline in refinery capacity in many regions through 2030.

In contrast, the market for chemical processing catalysts is projected to grow at a rate comparable to global GDP growth. This growth is primarily driven by the demand for polymers, which continues to support the need for effective catalysts in various chemical processes.

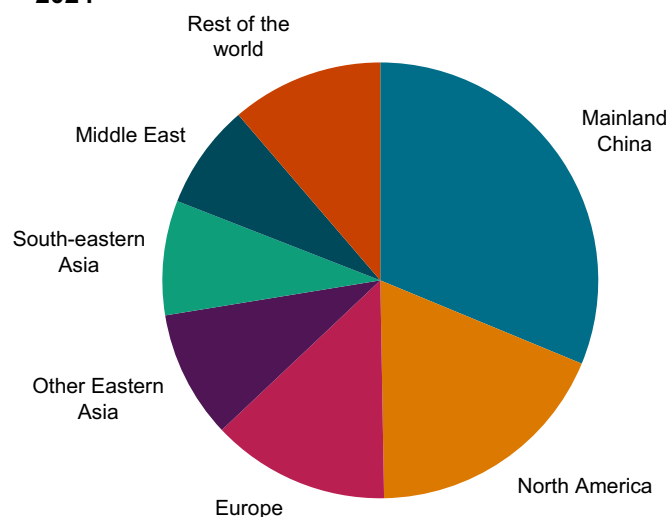
The following pie charts show world consumption of petroleum refining and chemical processing catalysts on a value basis:

World consumption of petroleum refining catalysts — 2024



Data compiled Feb. 5, 2025.
Source: S&P Global Commodity Insights.
© 2025 S&P Global.

World consumption of chemical processing catalysts — 2024



Data compiled Feb. 5, 2025.
Source: S&P Global Commodity Insights.
© 2025 S&P Global.

The largest segments of the refinery catalyst market are catalytic cracking and hydrotreating. While refinery catalyst production has traditionally been an expanding business, recent years have seen slow growth or even declines in certain regions due to trends related to energy transition and the adoption of electric vehicles. In addition, worldwide, environmental regulations now mandate the production of cleaner fuels with zero or reduced sulfur content, further driving the need for advanced catalysts to meet regulatory requirements.

In the chemical processing catalyst market, polymerization is the leading sector, both in terms of value and volume. Major polymerization market segments include polyethylene, polypropylene, polyethylene terephthalate (PET), polyurethane, polyvinyl chloride (PVC) and polystyrene.

The catalyst market is also driven by technology advances in the petroleum refining and chemical manufacturing industries.

From 2025 to 2030, global catalyst consumption is expected to increase at moderate rates. Mainland China and North America will remain the largest consumption markets, while Southern Asia and Africa are anticipated to be the fastest-growing regions.

For more detailed information, see the table of contents, shown below.

S&P Global's Specialty Chemicals Update Program – Catalysts, Petroleum and Chemical Process is the comprehensive and trusted guide for anyone seeking information on this industry. This latest report details global and regional information, including



Industry structure,
operating characteristics
and regulatory
environment



Products, functions
and markets



Cost structure/
profitability



Technology changes
and emerging
substitution practices



Quantitative market
analysis and forecasts

Key benefits

S&P Global's Specialty Chemicals Update Program – *Catalysts, Petroleum and Chemical Process* has been compiled using primary interviews with key suppliers and organizations, and leading representatives from the industry in combination with S&P Global's unparalleled access to upstream and downstream market intelligence and expert insights into industry dynamics, trade and economics.

This report can help you

- Identify the competitive environment and key players
- Assess key issues facing both suppliers and their end-use customers
- Understand industry integration strategies
- Keep abreast of industry structure changes, regulatory requirements and other factors affecting profitability
- Identify new business opportunities and threats
- Follow important commercial developments
- Recognize trends and driving forces influencing specialty chemical markets

Table of contents

Executive summary	8
Summary	9
Refining catalysts	9
Chemical processing catalysts	11
Future trends	14
Abbreviations	16
Overview of the process catalyst industry	17
Introduction	17
Industry structure	18
Operating characteristics	22
Research and development	23
Manufacturing	24
Marketing	25
Cost structure and profitability	25
Government regulations	26
North America	26
Europe	27
REACH regulation	27
CLP regulation	28
Fuel quality regulation	28
Food contact regulation	28
EU waste management law	28
India	28
Mainland China	30
Other Eastern Asia	32
South-eastern Asia	33
Oceania	34
Critical factors for success	35
Future trends and opportunities	36
Company profiles	37
Albemarle Corporation	37
Axens	38
BASF	39
Clariant	40
W. R. Grace & Co.	41
Honeywell UOP	42
INEOS Polyolefin Catalyst	43
JGC Catalysts and Chemicals Ltd.	44
Johnson Matthey	44
LyondellBasell	45
Nippon Shokubai Co., Ltd.	47
Shell Catalysts & Technologies	48

Sinopec Catalyst Company	49
Mergers and acquisitions	50
Process catalysts products and functions	52
Catalysts by product type	52
Heterogeneous catalysts	52
Fixed-bed and fluidized-bed catalysts	52
Zeolites and other oxides	52
Supported transition metal catalysts	54
Ion-exchange resins	58
Powder catalysts	58
Heterogeneous polyolefin catalysts	58
Slurry process catalysts	59
Homogeneous catalysts	60
Transition metal salts and complexes	60
Organometallic compounds	61
Antimony-based catalysts	61
Organic molecules	61
Initiators	62
Free radical initiators	62
Organolithium initiators	63
Catalysts by reaction type	63
Petroleum refining catalysts	63
Catalytic cracking	65
Catalytic hydroprocessing	67
Catalytic hydrocracking	68
Alkylation	69
Catalytic reforming	70
Isomerization	71
Oligomerization/polymer gasoline (polygas)	71
Chemical process catalysts	72
Polymerization catalysts	72
Coordination polymerization catalysts	72
Polybutadiene elastomer catalysts	75
Anionic polymerization catalysts	75
Initiators for radical polymerization	76
Polyethylene terephthalate catalysts	76
Polyurethane catalysts	77
Catalysts for monomers and chemical intermediates	77
Alkylation	77
Carbonylation and hydroformylation	78
Dehydration	78
Dehydrogenation	79
Hydrogenation	79
Oxidation and ammoxidation	79
Steam reforming and syngas	80
Other reaction catalysts	81
Process catalyst markets	83

North America	83
Petroleum refining catalysts	83
Consumption and markets	83
Market participants	86
Prices	87
Future trends and strategic issues	87
Chemical processing catalysts	88
Consumption and markets	88
Market participants	94
Prices	97
Future trends and strategic issues	97
Latin America and the Caribbean	98
Petroleum refining catalysts	98
Consumption and markets	98
Market participants	102
Chemical processing catalysts	102
Consumption and markets	102
Market participants	105
Western Europe	106
Petroleum refining catalysts	106
Consumption and markets	106
Market participants	109
Prices	110
Chemical processing catalysts	111
Consumption and markets	111
Market participants	117
Prices	121
Central and Eastern Europe	122
Petroleum refining catalysts	122
Consumption and markets	122
Market participants	125
Chemical processing catalysts	125
Consumption and markets	125
Market participants	129
Eurasia	130
Petroleum refining catalysts	130
Consumption and markets	130
Market participants	133
Chemical processing catalysts	133
Consumption and markets	133
Market participants	138
Middle East	139
Petroleum refining catalysts	140
Consumption and markets	140
Market participants	142
Chemical processing catalysts	143
Consumption and markets	143

Market participants	149
Africa	149
Petroleum refining catalysts	150
Consumption and markets	150
Market participants	153
Chemical processing catalysts	153
Consumption and markets	153
Market participants	157
Southern Asia	157
Petroleum refining catalysts	157
Consumption and markets	157
Market participants	160
Chemical processing catalysts	161
Consumption and markets	161
Market participants	165
Mainland China	166
Petroleum refining catalysts	166
Consumption and markets	166
Market participants	173
Prices	174
Future trends and strategic issues	175
Chemical processing catalysts	176
Consumption and markets	176
Technology and manufacturing	182
Market participants	183
Prices	186
Future trends and strategic issues	187
Other Eastern Asia	189
Petroleum refining catalysts	189
Consumption and markets	189
Japan	189
South Korea	192
Taiwan	194
Market participants	195
Prices	196
Chemical processing catalysts	197
Consumption and markets	197
Japan	197
South Korea	203
Taiwan	208
Market participants	213
Prices	216
South-eastern Asia	217
Petroleum refining catalysts	217
Consumption and markets	217
Market participants	221
Future trends and strategic issues	221

Chemical processing catalysts	221
Consumption and markets	221
Market participants	226
Future trends and strategic issues	227
Trade	227
Oceania	229
Petroleum refining catalysts	229
Consumption and markets	229
Market participants	232
Chemical processing catalysts	232
Consumption and markets	232
Market participants	236
Appendix — Geographic regions	237
Revisions	238

CONTACTS

Americas: +1 800 597 1344

Asia-Pacific: +60 4 296 1125

Europe, Middle East, Africa: +44 (0) 203 367 0681

www.spglobal.com/commodityinsights

www.spglobal.com/en/enterprise/about/contact-us.html

© 2025 by S&P Global Inc. All rights reserved.

S&P Global, the S&P Global logo, S&P Global Commodity Insights, and Platts are trademarks of S&P Global Inc. Permission for any commercial use of these trademarks must be obtained in writing from S&P Global Inc.

You may view or otherwise use the information, prices, indices, assessments and other related information, graphs, tables and images ("Data") in this publication only for your personal use or, if you or your company has a license for the Data from S&P Global Commodity Insights and you are an authorized user, for your company's internal business use only. You may not publish, reproduce, extract, distribute, retransmit, resell, create any derivative work from and/or otherwise provide access to the Data or any portion thereof to any person (either within or outside your company, including as part of or via any internal electronic system or intranet), firm or entity, including any subsidiary, parent, or other entity that is affiliated with your company, without S&P Global Commodity Insights' prior written consent or as otherwise authorized under license from S&P Global Commodity Insights. Any use or distribution of the Data beyond the express uses authorized in this paragraph above is subject to the payment of additional fees to S&P Global Commodity Insights.

S&P Global Commodity Insights, its affiliates and all of their third-party licensors disclaim any and all warranties, express or implied, including, but not limited to, any warranties of merchantability or fitness for a particular purpose or use as to the Data, or the results obtained by its use or as to the performance thereof. Data in this publication includes independent and verifiable data collected from actual market participants. Any user of the Data should not rely on any information and/or assessment contained therein in making any investment, trading, risk management or other decision. S&P Global Commodity Insights, its affiliates and their third-party licensors do not guarantee the adequacy, accuracy, timeliness and/or completeness of the Data or any component thereof or any communications (whether written, oral, electronic or in other format), and shall not be subject to any damages or liability, including but not limited to any indirect, special, incidental, punitive or consequential damages (including but not limited to, loss of profits, trading losses and loss of goodwill).

ICE index data and NYMEX futures data used herein are provided under S&P Global Commodity Insights' commercial licensing agreements with ICE and with NYMEX. You acknowledge that the ICE index data and NYMEX futures data herein are confidential and are proprietary trade secrets and data of ICE and NYMEX or its licensors/suppliers, and you shall use best efforts to prevent the unauthorized publication, disclosure or copying of the ICE index data and/or NYMEX futures data.

Permission is granted for those registered with the Copyright Clearance Center (CCC) to copy material herein for internal reference or personal use only, provided that appropriate payment is made to the CCC, 222 Rosewood Drive, Danvers, MA 01923, phone +1-978-750-8400. Reproduction in any other form, or for any other purpose, is forbidden without the express prior permission of S&P Global Inc. For article reprints contact: The YGS Group, phone +1-717-505-9701 x105 (800-501-9571 from the U.S.).

For all other queries or requests pursuant to this notice, please contact S&P Global Inc. via email at ci.support@spglobal.com