

Polycarbonate Resins

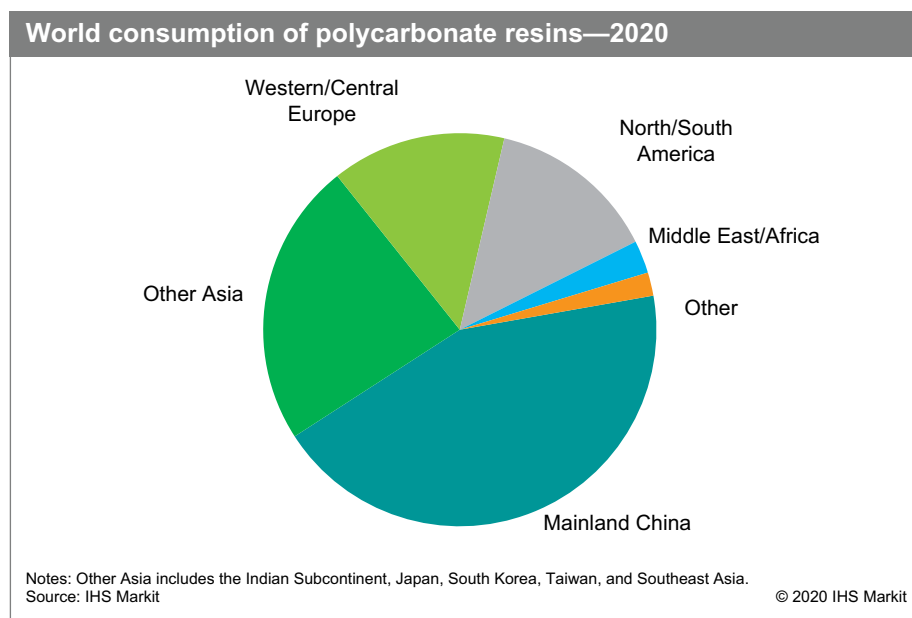
30 November 2020

Abstract

Polycarbonate (PC) is a lightweight, high-performance resin that possesses a unique balance of toughness, dimensional stability, optical clarity, high heat resistance, and excellent electrical resistance. These attributes allow polycarbonate to be used in a wide variety of common products including digital media, electronic equipment, vehicles, construction, greenhouses, exterior lighting fixtures, sports safety equipment, and medical devices. End uses such as automotive lighting, taillight assemblies, and electronics and electrical components take advantage of the impact resistance and high-heat properties provided by polycarbonate. With its outstanding toughness and transparency, polycarbonate can meet specifications for glazing in the construction (stadium roofs, firearm-resistant windows, etc.), transportation, and automotive industries. Polycarbonate's use in the production of optical discs is based on its excellent dimensional stability and optical properties. Polycarbonate is also a lighter, safer alternative to glass in optical applications, such as corrective lenses.

In 2020, total polycarbonate consumption sits at over 4.1 million metric tons and is forecast to grow strongly over the next five years. Global polycarbonate capacity is approximately 6.15 million metric tons in 2020, and substantial additional capacity is forecast to come onstream in the next five years. Covestro and SABIC Plastics are the two largest polycarbonate producers worldwide and together contribute over 44% of global capacity.

The following pie chart shows world consumption of polycarbonate resins:



Contacts

Maria deGuzman • Maria.deguzman@ihsmarkit.com

Prior to 2011, optical media was the largest consumer of polycarbonate resins. Worldwide demand for these end uses, including audio CDs, CD-ROMs, CD-Rs (recordable CDs), CD-RWs (rewritable CDs), MDs (minidiscs), MO (magneto-optical discs), and DVDs (digital versatile discs) exploded in the late 1990s. Later, demand for DVDs evolved to replace CD-Rs, followed by demand for Blu-ray disks replacing DVDs in more recent years. However, the continual shift to digital and cloud storage technology has led to a steady decline in consumption of polycarbonate resins for optical media. This declining trend is expected to continue during 2020–25. This will be only segment not to see demand growth over the next five years.

The electronics/electrical sector is now the current leading market for polycarbonate resins, accounting for one-quarter of global polycarbonate consumption. Polycarbonate consumption in the electronics/electrical market is widely influenced by consumer demand for communication and entertainment devices, including mobile phones, tablets, personal computers, laptops, flat-screen televisions, cameras, network equipment, and printers. During the forecast period, brand owners will focus on the developing markets where there is demand from the large group of emerging middle-class consumers, such as mainland China, India, Southeast Asia, and Brazil. Devices that will help overcome poor infrastructure in the developing world, such as mobile phones, will see the most dramatic growth.

Global polycarbonate demand is also driven by the sheet/film, appliances/housewares, and automotive industries; together, these markets account for almost half of global polycarbonate consumption in 2020. Polycarbonate demand for automotive (nonwindow) is anticipated to be the fastest-growing market during the forecast period. End uses in this automotive segment include lighting systems, headlamp lenses, reflectors, housings and mountings, exterior panels, wheel covers, and bumpers.

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

IHS Markit's Chemical Economics Handbook – Polycarbonate Resins is the comprehensive and trusted guide for anyone seeking information on this industry. This latest report details global and regional information, including



Global summary;
regional coverage



Producers with
annual capacities
and plant sites



Production figures
and trends



Consumption and
forecasts by end use
application



Manufacturing
processes and
environmental issues



Trade – imports
and exports

Key Benefits

IHS Markit's Chemical Economics Handbook – Polycarbonate Resins has been compiled using primary interviews with key suppliers, organizations and leading representatives from the industry in combination with IHS Markit's unparalleled access to upstream and downstream market intelligence, expert insights into industry dynamics, trade and economics.

This report can help you:

- Identify trends and driving forces influencing chemical markets
- Forecast and plan for future demand
- Understand the impact of competing materials
- Identify and evaluate potential customers and competitors
- Evaluate producers

- Track changing prices and trade movements
- Analyze the impact of feedstocks, regulations, and other factors on chemical profitability

Contents

Executive summary	7
Summary	9
Overview	9
Producers	12
Capacity	12
Consumption	14
Price	18
Trade	18
Key trends, challenges, and opportunities	19
Introduction	22
Industry structure and dynamics	22
– Covestro	22
– SABIC Innovative Plastics (SABIC IP)	23
– Mitsubishi Companies	24
– Teijin Corporation	25
– Trinseo	26
Materials and properties	26
Manufacturing processes	28
Phosgenation processes	28
– Interfacial polycondensation	28
– Solution phosgenation	30
– Conventional melt process	30
Nonphosgenation melt processes	30
Environmental issues	32
Raw materials	32
Recycling	32
Supply and demand by region	33
North America	33
– Overview	33
– United States	34
– Producing companies	34
– Salient statistics	36
– Consumption	37
– Automotive	38
– Sheet and film	40
– Appliances/housewares	42
– Electronics/electrical	43
– Medical/ophthalmic	44
– Consumer/sports and recreation	45
– Optical media	46

– Packaging	46
– Other	47
– Blends	47
– Trade	49
– Canada	49
– Consumption	49
– Trade	51
– Mexico	51
– Consumption	51
– Trade	52
South America	52
– Producing companies	52
– Salient statistics	53
– Consumption	53
– Trade	55
Western Europe	55
– Producing companies	55
– Corporate activities	58
– Distributors	60
– Sheet producer associations	61
– Sheet and film producers	61
– Salient statistics	62
– Production	63
– Consumption	63
– Sheet and film	65
– Automotive (nonwindow)	65
– Automotive (window)	66
– Electrical/electronic	67
– Appliances/housewares	68
– Optical media	68
– Consumer, sports, and recreation	68
– Packaging	69
– Medical/health care	69
– Trade	70
Central and Eastern Europe	70
– Salient statistics	70
– Consumption	71
– Trade	72
CIS and Baltic States	72
– Producing companies	72
– Salient statistics	72
– Consumption	73
– Trade	75

Middle East	75
– Producing companies	75
– Salient statistics	75
– Consumption	76
– Trade	78
Africa	78
– Consumption	78
– Trade	79
Indian Subcontinent	79
– Producing companies	79
– Salient statistics	79
– Consumption	80
– Trade	82
Northeast Asia	82
– Overview	82
– Capacity	82
– Salient statistics	82
– Consumption	83
– Trade	85
– Mainland China	85
– Producing companies	85
– Salient statistics	87
– Consumption	88
– Trade	90
– Japan	91
– Producing companies	91
– Salient statistics	92
– Consumption	93
– Electronics/electrical	93
– Sheet/film	94
– Automotive/transportation	94
– Optical media	94
– Medical/ophthalmic	95
– Appliances/housewares	95
– Other	95
– Trade	95
– South Korea	96
– Producing companies	96
– Salient statistics	96
– Consumption	97
– Trade	98
– Taiwan	99
– Producing companies	99

– Salient statistics	99
– Consumption	100
– Trade	100
Southeast Asia	101
– Producing companies	101
– Salient statistics	102
– Consumption	103
– Trade	104
Additional resources	106
Revisions	108

IHS Markit Customer Care

CustomerCare@ihsmarkit.com

Americas: +1 800 IHS CARE (+1 800 447 2273)

Europe, Middle East, and Africa: +44 (0) 1344 328 300

Asia and the Pacific Rim: +604 291 3600

Disclaimer

The information contained in this report is confidential. Any unauthorized use, disclosure, reproduction, or dissemination, in full or in part, in any media or by any means, without the prior written permission of IHS Markit or any of its affiliates ("IHS Markit") is strictly prohibited. IHS Markit owns all IHS Markit logos and trade names contained in this report that are subject to license. Opinions, statements, estimates, and projections in this report (including other media) are solely those of the individual author(s) at the time of writing and do not necessarily reflect the opinions of IHS Markit. Neither IHS Markit nor the author(s) has any obligation to update this report in the event that any content, opinion, statement, estimate, or projection (collectively, "information") changes or subsequently becomes inaccurate. IHS Markit makes no warranty, expressed or implied, as to the accuracy, completeness, or timeliness of any information in this report, and shall not in any way be liable to any recipient for any inaccuracies or omissions. Without limiting the foregoing, IHS Markit shall have no liability whatsoever to any recipient, whether in contract, in tort (including negligence), under warranty, under statute or otherwise, in respect of any loss or damage suffered by any recipient as a result of or in connection with any information provided, or any course of action determined, by it or any third party, whether or not based on any information provided. The inclusion of a link to an external website by IHS Markit should not be understood to be an endorsement of that website or the site's owners (or their products/services). IHS Markit is not responsible for either the content or output of external websites. Copyright © 2020, IHS Markit®. All rights reserved and all intellectual property rights are retained by IHS Markit.

