

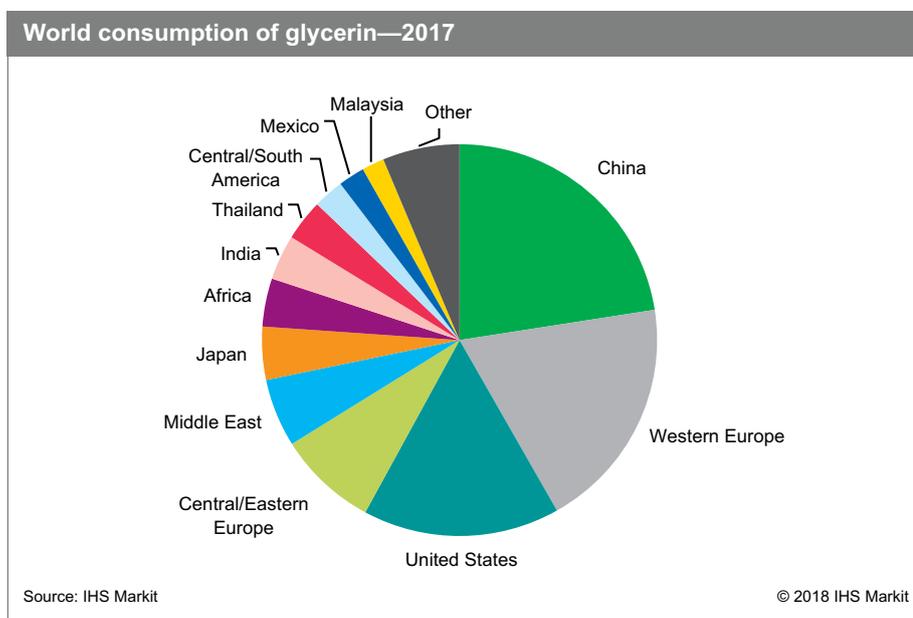
# Glycerin

15 August 2018

## Abstract

Glycerin (glycerine, glycerol, 1,2,3-propanetriol) is a polyhydric alcohol mainly derived from the production of soap and in the conversion of fats and oils to fatty acids, fatty alcohols, or fatty acid methyl esters (biodiesel). Almost all crude glycerin is further processed to refined glycerin, but only vegetable-based products can be refined into high-quality products for personal care, oral care, and food uses. As a result of the significant increases in biodiesel production, crude glycerin has become abundant and the resulting oversupply has led to an increased amount of glycerin being consumed as crude. Crude glycerin can be consumed directly in animal feeds, for freeze protection for coal, as a dust suppressant, and in grain storage, but when the market is oversupplied and prices are low, the crude product is often burned locally for energy. The abundance of crude glycerin has given rise to a new grade of glycerin that is equivalent to USP quality but does not meet USP certification requirements. This technical-grade glycerin is consumed for industrial uses, such as the production of epichlorohydrin and propylene glycol.

The following pie chart presents world consumption of refined glycerin:



Asia will continue to be the center for refined glycerin in both supply and consumption, with the region accounting for more than 40% of the world total in 2017. Regional consumption is led by China, which has experienced high growth rates as a result of the expansion of glycerin-to-epichlorohydrin production. While alkyd resins and toothpaste have traditionally been the major markets in China, rapid growth in pharmaceuticals and polyether polyol production will lead future growth through 2022.

## Contacts

**Koon-Ling Ring** · [Koon-Ling.ring@ihsmarkit.com](mailto:Koon-Ling.ring@ihsmarkit.com)  
**Maria deGuzman** · [Maria.deguzman@ihsmarkit.com](mailto:Maria.deguzman@ihsmarkit.com)

Thailand will also experience high growth rates as a result of epichlorohydrin production, while growth in India will be driven by more traditional markets (personal and oral care products). Both Indonesia and Malaysia will continue to export large amounts of refined glycerin, thanks to their abundant palm oil supplies. Japanese refined glycerin consumption is expected to remain about the same in the next several years.

By end use, traditional markets account for half of refined glycerin consumption. Personal and oral care products are the largest refined glycerin market in the world, with about 30% of the total consumption. This category includes personal care items such as cosmetics and skin care products and oral care products such as toothpaste and mouthwash. It is followed by food and beverage consumption, with over 13% of the total refined glycerin market, and pharmaceuticals, with over 10% of the total.

In general, the markets listed above are expected to increase in volume usage over the next few years, but will decrease as a percentage of the overall refined glycerin consumption total. The same is true for smaller applications such as polyether polyols and tobacco. Refined glycerin use for most of these market segments is expected to grow at about 4–5% per year.

The highest growth for refined glycerin will be in chemical production and “newer” uses, which will drive overall consumption growth. Refined glycerin consumption for epichlorohydrin production is expected to show the largest growth through the forecast period; this use is currently only in Asia and Europe.

Crude glycerin supply is now greatly dependent on biodiesel production, and is expected to fluctuate because of an increasingly uncertain market for biodiesel. Issues pertaining to industry subsidies, rebates, sustainability, and government legislation mandating biodiesel consumption are still being discussed in many regions. The outcome of these discussions will likely affect the profitability of the biodiesel market and whether it can survive with no or minimal support from governments. Additionally, demand for biodiesel is affected by prices for diesel and the cost of oils/fats feedstocks.

Although it is expected that crude glycerin volumes for further refining will increase, erratic supplies could hamper development and allow for unacceptable price fluctuations, leading to some replacement of refined glycerin by other products such as sorbitol or propylene glycol. When glycerin prices are low, it can be used preferentially in some end uses over competing products (e.g., ethylene glycol, pentaerythritol, or sorbitol). In recent years, because of the emerging market of renewable diesel (which competes with biodiesel, but the production of which does not generate glycerin), as well as the shift of focus in biofuel policies, crude glycerin supply growth may have plateaued in both European and US markets.

# Contents

<b>Executive summary</b>	<b>6</b>
<b>Summary</b>	<b>7</b>
<b>Introduction</b>	<b>14</b>
<b>Manufacturing processes</b>	<b>15</b>
Glycerin from natural sources	15
– Production of soap: saponification	15
– Production of fatty acid: hydrolysis	15
– Biodiesel production: transesterification	15
Synthetic glycerin	16
<b>Grades</b>	<b>18</b>
Crude glycerin	18
Refined glycerin	18
<b>Environmental issues</b>	<b>20</b>
<b>Supply and demand by region</b>	<b>21</b>
United States	21
– Producing companies	21
– Refined glycerin	21
– Synthetic glycerin	23
– Salient statistics	24
– Consumption	26
– Propylene glycol	28
– Personal care products	28
– Food and beverages	29
– Polyether polyols	30
– Pet food	30
– Oral care products	31
– Recreational vehicle (RV) fluids	31
– Home care	32
– Pharmaceuticals	32
– Tobacco	32
– Engine coolants/antifreeze	32
– Alkyd resins	33
– Other	33
– Price	33
– Trade	35
– Imports	35
– Exports	36
Canada	37
– Producing companies	37
– Salient statistics	37
– Consumption	38
– Trade	38
Mexico	40
– Producing companies	40
– Salient statistics	40

– Consumption	41
– Trade	41
<b>Brazil</b>	<b>42</b>
– Producing companies	42
– Salient statistics	43
– Consumption	43
<b>Other Central and South America</b>	<b>44</b>
– Producing companies	44
– Salient statistics	44
– Consumption	45
<b>Western Europe</b>	<b>45</b>
– Producing companies	45
– Natural glycerin	45
– Synthetic glycerin	49
– Salient statistics	50
– Production	51
– Consumption	53
– Traditional applications	53
– New applications	54
– Epichlorohydrin	54
– Propylene glycol (1,2-propanediol)	55
– Syngas	56
– Fermentation to 1,3-propanediol	56
– Price	56
– Trade	58
– Imports	58
– Exports	58
<b>Central and Eastern Europe</b>	<b>59</b>
– Producing companies	59
– Salient statistics	61
– Production	61
– Consumption	62
– Trade	62
– Imports	62
– Exports	63
<b>Middle East</b>	<b>64</b>
– Producing companies	64
– Salient statistics	66
– Production	67
– Consumption	67
– Trade	67
– Imports	67
– Exports	68
<b>Africa</b>	<b>69</b>
– Producing companies	69
– Salient statistics	70
– Production	71
– Consumption	71

– Trade	71
– Imports	71
– Exports	72
Asia	73
– China	74
– Producing companies	74
– Salient statistics	77
– Consumption	77
– Epichlorohydrin	78
– Alkyd resins	79
– Toothpaste	79
– Pharmaceuticals	79
– Personal care products	79
– Food and beverages	79
– Polyether polyols	79
– Tobacco	80
– Other	80
– Price	80
– Trade	81
– Imports	81
– Exports	82
– India	82
– Producing companies	82
– Salient statistics	83
– Consumption	84
– Trade	84
– Indonesia	85
– Producing companies	85
– Salient statistics	87
– Production	88
– Consumption	88
– Oral care products	88
– Personal care products	88
– Alkyd resins	88
– Polyether polyols	89
– Trade	89
– Japan	90
– Producing companies	90
– Salient statistics	92
– Consumption	93
– Pharmaceuticals/personal and oral care products	94
– Food and beverages	95
– Alkyd resins	95
– Polyether polyols	95
– Tobacco	96
– Cellophane	96
– Other	96
– Price	96

– Trade	97
– Malaysia	98
– Producing companies	98
– Salient statistics	100
– Consumption	100
– Trade	100
– Philippines	102
– Producing companies	102
– Consumption	102
– Trade	102
– South Korea	103
– Producing companies	103
– Salient statistics	104
– Consumption	104
– Trade	104
– Taiwan	106
– Producing companies	106
– Consumption	106
– Trade	106
– Thailand	107
– Producing companies	107
– Consumption	108
– Trade	108
– Other Asia	110
– Pakistan	110
– Singapore	110
– Vietnam	110
– Miscellaneous	110
Oceania	111
– Producing companies	111
– Consumption	111
– Trade	111
<b>Additional resources</b>	<b>113</b>
<b>Revisions</b>	<b>114</b>

## 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 Ltd. 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 © 2018, IHS Markit™. All rights reserved and all intellectual property rights are retained by IHS Markit.

