Market Study: Solvents

(4th ed.)







Dear decision-makers,

Nowadays, information is available in overwhelming amounts. But what is the best way to find the crucial data?

Thousands of companies use our knowledge. Based on our experience, we provide decisive data for our clients.

Our extensive and practiceoriented studies offer precise market analyses and forecasts!

Why should you make use of our knowledge?

Our understanding of the markets helps you to assess potentials, products, and technologies, but also competitors. Our studies will help you save time and prevent costly wrong decisions. That way, you can create an ever more effective and efficient future for your company.

We are your experts

Ceresana has been the most trusted market research company for the industrial sector already for 15 years.

We would be pleased to assist you in this challenging market environment as well!

Oliver Kutsch, CEO



Our Market Studies

Your Strategic Planning

Your **Success**

Your competent partner for market studies:

- Experienced and neutral experts
- Quantitative and qualitative primary and secondary market research
- Reliable and objective survey, analysis, forecast, and preparation of data
- Expertise in branches, legal situation, innovations, and technologies

The basis for your strategic planning:

- Analysis of attractiveness and current situation of the market
- · Analysis of the future development of the market
- Analysis of competitors
- Analysis of customer industries
- · Analysis of supply industries

With our studies you will recognize:

- Current market trends and developments on time
- Ideal procurement and sales markets
- Relevant future markets and target groups
- · Risks and market chances on time
- Candidates for mergers and acquisitions as well as divestments

The strategic planning enables you to:

- Restructure your product portfolio
- Evaluate current and potential locations
- Plan and develop new marketable products
- Better adapt to needs and requirements of customers
- · Deal with future markets

Solvents play a major role in industrial production: They can dissolve, dilute, and, in a very fine distribution, absorb other substances without changing them chemically. Solvents (sometimes also called dissolvents) are mainly used in the paints and varnishes, print inks, and adhesives industry but also, for example, as an ingredient of pharmaceuticals, cosmetics, and detergents. Substances that cause unpleasant odors, explosive vapors, as well as health and environmental damages are controversial and increasingly targeted by the legislature. Ceresana analyzed the global market for solvents already for the fourth time.

Paint Industry Looking for Alternatives

The largest consumers of solvents are manufacturers of paints and varnishes, followed at a considerable distance by producers of printing inks. Demand on the part of the pharmaceutical industry ranked third, followed by utilization in cosmetics and adhesives. Other important applications are chemical manufacturing processes, cooling circuits, dry-cleaning, and deicers. However, a trend away from solventborne products and towards more environmentally friendly alternatives based on water is prevailing in the segment paints and varnishes. This development has an inhibiting effect on demand for solvents.

Growing Demand in Asia

The industry in Asia-Pacific accounted for about 44 % of global demand in 2017. China dominated the market, followed at a considerable distance by Japan and India. The regions North America and Western Europe ranked second and third. Ceresana expects constantly high growth rates for the region Asia-Pacific. In the segments paints and varnishes, printing inks, and adhesives, this region is the major consumer. On the contrary, Western Europe and North America account for the largest demand in the segments cosmetics and pharmaceuticals.

Promising Ethers

Alcohols are the solvent type with the by far highest demand: especially ethanol, n-butanol, isopropanol, and methanol. Asia-Pacific is the largest consumer in the segment alcohols as well, with a demand of about 2.7 million tonnes, fol-

lowed by North America. Besides alcohols, mainly ketones were utilized as solvents in 2017; but also aromatics, esters, and ethers hold significant market shares each. With an expected increase of 3.2 % per year, the group of ethers will be the fastest growing market.

The Study in Brief:

Chapter 1 is a presentation and analysis of the global solvent market – including forecasts up to 2025: For each of the seven regions, Western Europe, Easter Europe, North America, South America, Asia-Pacific, the Middle East, and Africa, demand split by solvent types as well as revenues are examined.

Chapter 2 provides detailed data on solvent demand and revenues in 16 countries. In addition, this chapter provides in-depth information on the demand for solvents in the sectors paints and varnished, printing inks, adhesives, cosmetics, and pharmaceuticals as well as in other application areas.

Chapter 3 offers a substantiated analysis of the application areas for solvents: data on demand development, split by the seven world regions. Additionally, demand per application is examined individually for the most important countries.

Chapter 4 takes a look at the several solvent groups: alcohols, ketones, esters, ethers, aromatics, non-aromatics as well as other solvents. The following solvent types have been analyzed separately: ethanol, n-butanol, isopropanol and methanol, acetone and methyl ethyl ketone as well as toluene.

Chapter 5 provides profiles of the largest solvent manufacturers, clearly arranged according to contact details, turnover, profit, product range, production sites, profile summary, and product base. Extensive profiles of 102 producers are given, including BP, Cargill, CNPC, ExxonMobil, Lukoil, ONGC, Petrobras, Shell, Sinopec, and Total.

1 Market Data

- 1.1 World
- 1.1.1 Demand
- 1.1.2 Revenues
- 1.2 Western Europe

1.3 Eastern Europe

1.4 North America

1.5 South America

1.6 Asia-Pacific

1.7 Middle East

1.8 Africa

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2 Country Profiles

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- 2.1.3 Italy
- 2.1.4 Spain
- 2.1.5 United Kingdom
- 2.1.6 Other

Western Europe

- 2.2 Eastern Europe
- 2.2.1 Poland
- 2.2.2 Russia
- 2.2.3 Turkey
- 2.2.4 Other

Eastern Europe

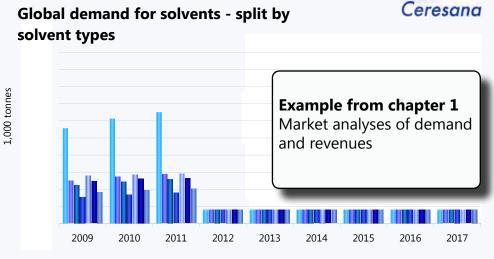
- 2.3 North America
- 2.3.1 Canada
- 2.3.2 Mexico
- 2.3.3 USA
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- 2.4.1 Brazil
- 2.4.2 Other

South America

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- 2.5.4 South Korea
- 2.5.5 Other

Asia-Pacific





■ Alcohols ■ Ketones ■ Esters ■ Ethers ■ Aromatics ■ Non-Aromatics ■ Other Solvents

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Ketone (MEK)

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- 4.5.2 Others
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- 4.7 Others

5 Company Profiles

5.1 Western Europe Austria (1 Producer)

- Belgium (2)
- Finland (1) France (3)
- Germany (4)
- Italy (1)
- Norway (1)
- Portugal (1)
- Spain (1)
- Switzerland (1)

The Netherlands (4)

United Kingdom (2)

- 5.2 Eastern Europe
- Greece (1)
- Hungary (1)
- Poland (1)
- Russia (4)

5.3 North America

Canada (3)

Mexico (1) USA (21)

5.4 South America

Brazil (2)

Columbia (1) Venezuela (1)

5.5 Asia-Pacific

Australia (1)

China (5) Hong Kong (1)

India (5)

Indonesia (1)

Japan (13)

Malaysia (1)

Philippines (1) South Korea (8)

Taiwan (2)

Thailand (2)

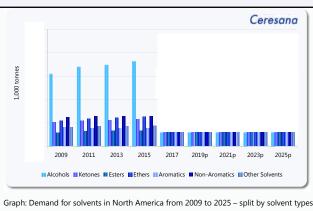
5.6 Middle East Kazakhstan (1)

Qatar (1) Saudi Arabia (1)

5.7 Africa

South Africa (1)

1.4 North America 1.4.1 **Demand** Around XXX million tonnes of solvents were processed in 2017. North America is the second largest sales market, surpassed only by Asia-Pacific. We expect demand to increase to approx. XXX million tonnes during the next eight years. Given the below average q rate, North American share of global demand **Chapter 1:** Market data for 7 world regions: Western Europe Eastern Europe North America South America Asia-Pacific Middle East Africa Graph: Demand for solvents in North America from 2009 to 2025 Canada



2009	2011	2013	2015	2017	2019p	2021p	2023p	2025p	2017- 2025
Х	Х	Х	Х	х	Х	Х	Х	Х	X% p.a.
Х	х	х	х	х	х	х	Х	х	X% p.a.
Х	Х	Х	Х	х	х	х	Х	Х	X% p.a.
Х	х	х	х	х	х	х	Х	х	X% p.a.
Х	Х	Х	Х	Х	Х	х	Х	Х	X% p.a.
Х	х	х	х	х	х	х	Х	х	X% p.a.
Х	Х	Х	Х	Х	Х	х	Х	Х	X% p.a.
х	х	х	х	х	х	х	х	х	X% p.a.
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Table: Demand for solvents in North America from 2009 to 2025 – split by solvent types

2.1.2 Germany

Demand for solvents in Germany amounted to XXX million tonnes in 2017. We expect market volume to increase at an average growth rate of XXX% p.a., amounting to approx. XXX million tonnes in 2025.

Table: Demand for solvents in North America from 2009 to 2025 - split by major countries

in 1,000 tonnes	2009	2011	2013	2015	2017	2019p	2021p	2023p	2025p	2017- 2025
Paints & Varnishes	Х	Х	Х	Х	Х	Х	х	Х	х	X% p.a.
Printing Inks	х	х	х	Х	х	х	х	х	х	X% p.a.
Adhesives	х	Х	х	Х	х	х	х	х	Х	X% p.a.
Cosmetics	х	х	х	х	х	х	х	х	х	X% p.a.
Pharma	х	Х	х	х	Х	Х	х	Х	Х	X% p.a.
Other	х	х	х	х	х	х	х	х	х	X% p.a.
Total	х	х	х	х	х	х	х	х	х	X% p.a.

Table: Demand for solvents in Germany from 2009 to 2025 – split by applications

Prime sales market for solvents in 2017 was the segment paints & varnishes. Within the next eight years, we expect demand in the segment pharmaceuticals to develop most dynamically at rates of approx. XXX% p.a.

Despite low interest rates, a low oil price, and the devaluation of the euro, Germany has only experienced a restrained upswing in the past years caused by, among others, the low global economy. However, the rather restrained demand of the global economy increased again in 2017 which had a positive impact on the export industry. In 2017, the German economy accounted for a growth which is likely to continue in 2018. The GDP growth was 2.1 % in 2017 and is supposed to increase further by 1.8 % in 2018. This economic growth is supported by a high private consumption and a stable labor market. The upswing is likely to persist until the end of 2019. In the scope of its expansive financial policy, the federal government passed an investment package of EUR 10 billion for the period 2016 to 2018

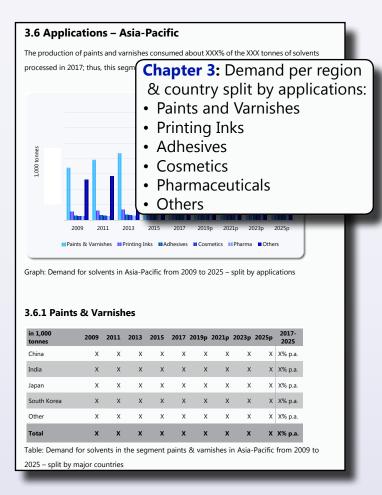
Tax reductions, rising pensions, as well as continuing migratory flows, and the related monetary transfers also provide further impulses for the German economy. Additionally, the number of employees increased in 2017, while the unemployment rate decreased. The purchase power of households is likely to rise further in 2018 and 2019, which can be explained by the growing employment figures and increasing incomes.

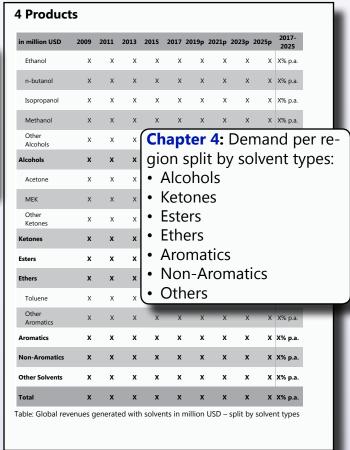
Since paints and varnishes as well as adhesives are often used in the construction industry, the developments in this sector also influence the demand for solvents.

The year 2016 was quite positive for the German automotive industry. The number of new



Table: Important manufacturers of solvents in Germany



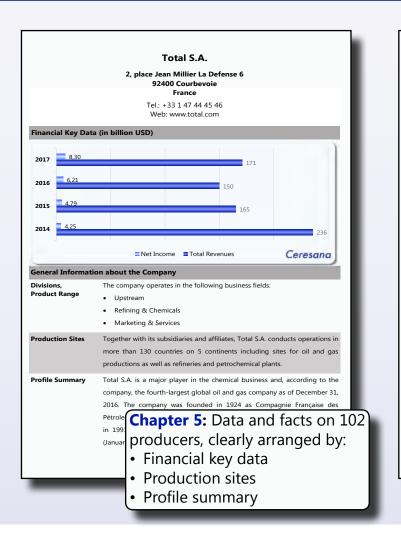


Revenues generated with solvents worldwide rose to USD XXX billion in 2017. Revenues will increase by, on average, XXX% p.a. during the upcoming eight year period and amount to approx. USD XXX billion in 2025. Alcoholic solvents were the product type with the highest revenues in 2017. USD XXX billion were generated with this product type, followed by solvents based on esters with USD XXX billion. Among alcohols, the highest revenues were generated with ethanol. In total, almost USD XXX billion were generated with ethanol. We forecast the highest increase of the next eight years for alcohols; market value will rise at an AAGR of XXX% to USD XXX billion.

4.1 Alcohols

In 2017, demand for alcohols used as solvents amounted to about XXX million tonnes. With a demand volume of XXX million tonnes, Asia-Pacific represented the largest sales market. Increases in this region will be the highest amounting to XXX% p.a. and rising to approx. XXX million tonnes in 2025. Total demand is projected to increase to XXX million tonnes in 2025. Compared to 2017, this corresponds to an average increase of XXX% per year.





December 31, 2017. The enterprise operates more than 16,000 service stations of which 9,154 are located in Europe.

Total is listed on the Euronext Paris, New York, Euronext Brussels, and London Stock Exchanges.

In 2016, Total acquired Lampiris, a Belgium based supplier of gas, green power and energy services in order to expand its gas and power distribution activities. During the same year, the company signed a new cooperation agreement with China National Petroleum Co., sharing expertise in the areas of safety and environment, human resources and social responsibility and thus strengthening the existing relationships between the two companies. Furthermore, Total commenced production at the offshore Vega Pleyade gas and condensate field in the Tierra del Fuego region in Argentina. The project will have a production capacity of 10 million cubic meters of gas per day.

Total Petrochemicals engages in the production of base chemicals (olefins and aromatics) and their derivatives like polyethylene, polypropylene, and styrenics. The division was established in 2004 and employs about 6,000 people in Europe, the USA, the Middle East, and Asia.

In March 2017, Nova Chemicals and Borealis AG signed a preliminary agreement to form a joint venture (JV) with Total Petrochemicals and Refining USA, Inc. that will develop and own a new 1,000,000 tonnes per year cracker in Port Arthur, Texas, and a new PE facility with an annual capacity of 625,000 tonnes in Bayport, Texas, USA. Start-up of the new facility is scheduled in late 2020...

Specific Information about Solvent

Through its Special Fluid division, Total S.A. produces solvents under the following brand names:

- SPIRDANE white spirits: available as very low aromatic white spirits, fast evaporation white spirits, and white spirits with aromatics
- FLUID: hydrocarbon solvents
- ISANE: isoparaffinic solvents
- Aromatic solvents includ solvents and solvents w SOLVAREX...

Chapter 5: Detailed profiles of the most important producers, such as BP, Cargill, CNPC, Exxon-Mobil, Lukoil, ONGC, Petrobras, Shell, Sinopec, and Total.

This study is useful for:

- Producers, traders, and processors of solvents
- Suppliers of raw materials and preliminary products such as naphtha, ethanol, butanol, acetic acid, etc.
- Manufacturers of paints and varnishes, printing inks, adhesives and sealants, cosmetics, pharmaceuticals, deicers, detergents, cooling agents, etc.
- Associations and institutes, investors and consultancies
- Executive board, technology and production, strategic planning, corporate development, R&D, market research, marketing, sales and distribution, procurement

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Bio-Economy

Automotive Coatings - World	Biobased Packaging - World
A C C DI C E	D' 1 (* 14/ 11

<u>Automotive Plastics - Europe</u>

<u>Bioplastics - World</u>

<u>Automotive Plastics - World</u>

<u>Polylactic Acid (PLA) - World</u>

Hybrid & Electric Cars - Europe Starch Based Plastics - World

Biocides - World Adhesives - Europe

Carbon Black - World Adhesives - World

<u>Chelating Agents - World</u> <u>Insulation Material - Europe</u>
<u>Fillers - Europe</u> <u>Insulation Material - World</u>

<u>Fillers - World</u> <u>Paints & Coatings - Europe</u>

Flame Retardants - World Paints & Coatings - World

<u>Pigments - World</u> <u>Plastic Extrusion - Europe</u>

<u>Plastic Additives - World</u> <u>Plastic Injection - Europe</u>

<u>Plastic Pipes - Europe</u>

<u>Solvents - World</u>

<u>Plastic Pipes - World</u>

<u>Stabilizers - World</u> <u>Plastic Windows - World</u>

<u>Surfactants - World</u> <u>Printing Inks - Europe</u>

<u>Titanium Dioxide (TiO2) - World</u> <u>Printing Inks - World</u>

Windows & Doors - Europe

Composites (CFRP & GFRP) - World

<u>Expandable Polystyrene (EPS) - World</u>
<u>Bags, Sacks & Pouches - Europe</u>

<u>Bags, Sacks & Pouches - World</u>

Masterbatches - World Corrugated Board & Solid Board - Europe

<u>Plastics - Europe</u>

<u>Plastics - World</u>

<u>Food Packaging - Europe</u>

<u>Polyethylene (HDPE) - World</u> <u>Labels - Europe</u>

<u>Polyethylene (LDPE) - World</u> <u>Plastic Caps & Closures - Europe</u>

Polyethylene (LLDPE) - World Plastic Caps & Closures - World

<u>Polypropylene - World</u> <u>Plastic Containers - Europe</u>

Polystyrene & EPS - World

Polyvinyl Chloride (PVC) - World

Plastic Films - Europe

Plastic Films - World

<u>Silicones - World</u> <u>Plastic Packaging for Cosmetics - Europe</u>

<u>Synthetic Rubber - World</u>
<u>Rigid Metal Packaging - Europe</u>

<u>Thermoplastic Elastomers (TPE) - World</u>
<u>Rigid Plastic Packaging - World</u>



Packagir