Market Study: Chelating Agents

3rd edition






Ceresana
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Yours faithfully, Oliver Kutsch

Our studies - Your benefits

- **Gain new customers**
  Our studies show who are potential new customers and where you can find them
- **Locate new procurement markets**
  Recognize better or alternative sources of supply
- **Improve your understanding of your competitors**
  Who exactly are your competitors - and what are their strengths and weaknesses
- **Obtain a more detailed picture of your segment**
  Learn which time is the best for entering or leaving a market
- **Have a look at the future**
  Find out if new investments and technologies are worthwhile and how to gain access to future markets. We also show possible market scenarios
- **Recognize opportunities and risks**
  Identify opportunities and risks on your target markets in time

This study is particularly useful for:

- Producers, manufacturers and converters of STPP, phosphonates, EDTA, NTA, DTPA, citric acid, GLDA, MGDA, EDDS, IDS, GA, PDTA, HEDTA, glucoheptonates
- Companies operating in the fields of: Household cleaners and detergents, industrial cleaners and detergents (all-purpose laundry detergents, mild detergents, fabric softeners, detergent additives, multi-purpose and surface cleaners, scouring agents, sanitary cleaners, dishwashing detergents, bleaching agents, care products for wood, leather and metals)
- Pulp and paper industry, textile and leather industry, food and beverage industry, photo industry
- Executive board, strategic planning, business development, R&D, technology, market research, marketing, sales and distribution, procurement

In this brochure you find information on the Market Study „Chelating Agents“:

Chelating Agents, also called complexing agents, are substances that combine with metal ions to produce stable, water-soluble structures called chelates. Thereby, their physico-chemical behavior changes, such as their reaction properties and solubility. Chelating agents are used above all in detergents and cleaners to lower water hardness, but also for industrial applications, food processing and medicine. Ceresana expects worldwide demand for chelating agents to rise to more than 4.34 million tonnes by 2022.

Product Substitution vs. Market Growth

Demand for chelating agents will only rise slightly on the saturated markets in Western Europe and North America. They are characterized by product substitution. Environmental concerns are having a significant impact on the use of the controversial sodium tripolyphosphate (STPP) in the European Union as well as in Canada and the USA. Many manufacturers are voluntarily refraining from applying STPP. Governmental prohibitions are becoming more and more efficient as well. In Europe, demand for STPP in household washing powders already fell significantly until 2015. By 2017, this trend is expected to lead to a clear volume decline of STPP for dishwashing detergents as well.

Growth Market for Environmentally Friendly Chelating Agents

Chelating agents analyzed in this market study are among others STPP, phosphates, EDTA, NTA, and DTPA. Apart from those conventional chelating agents, above all environmentally friendly chelating agents are featuring strong growth dynamics. Biodegradability is most important in order to prevent long-term consequences for humans and the environment. Alternatives such as citric acid, GLDA, MGDA, EDDS, IDS, gluconic acid, and glucoheptonates constitute a large proportion of the sales volume of other products that are expected to rise globally by 2.4% p.a.

Main Application Washing Powder

In 2014, the most important sales market for chelating agents were washing powders. This application constituted about 60% of total demand. Even though the majority of chelating agents is used for household detergents and cleaners, there is also a variety of industrial sales markets. Those are, among others, the pulp and paper industry, textiles and leather, the food industry, as well as medicine and cosmetics. The pulp industry was the largest consumer in 2014 with a volume of about 150,000 tonnes. Chelating agents are used for manufacturing bleached chemical pulp and for de-inking recycled cellulose pulp.

The Study in Brief

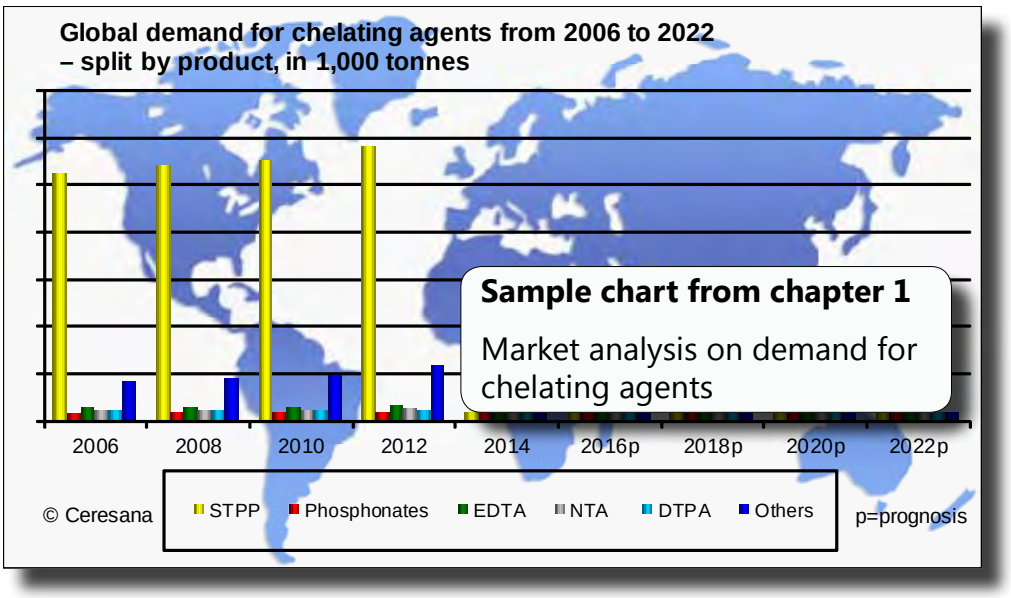
Chapter 1 provides a presentation and analysis of the global market for chelating agents, including forecasts up to 2022. Demand development is discussed for the regions Western and Eastern Europe, North and South America, Asia-Pacific, the Middle East, and Africa.

Chapter 2 examines the market for chelating agents of the 16 major countries in more detail. Demand volume of the individual applications is described in detail.

Chapter 3 discusses the applications of chelating agents. The demand development is examined for the applications washing powder, dishwashing detergents, household cleaners, other detergents and cleaners, industrial and institutional (I&I) cleaners, and industrial products.

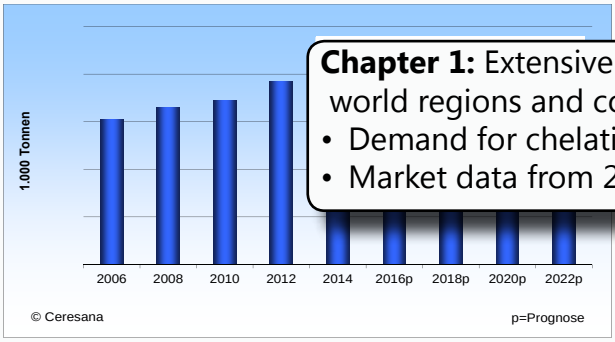
In Chapter 4, demand for individual types of chelating agents is analyzed. Individually covered are sodium tripolyphosphate (STPP), phosphonates (ATMP, EDTMP, DTPMP, HEDP, PBTC, and HDTMP), ethylene diamine tetra acetic acid (EDTA), nitrilotriacetic acid (NTA), diethylene triamine pentaacetic acid (DTPA), and other products (citric acid, GLDA, MGDA, EDDS, IDS, GA, PDTA, HEDTA, glucoheptonates).

Chapter 5 provides profiles of the largest producers of chelating agents, clearly arranged according to contact details, turnover, profit, product range, production sites, and profile summary. More detailed profiles are given for 99 manufacturers, including Akcros Chemicals, Akzo Nobel, BASF, Chelest, Dow, DuPont, Hebei Smart Chemicals, Innophos, Jungbunzlauer, Kemira, Lanxess, Prayon, Protex, Tata Chemicals, and Zschimmer & Schwarz.



1.6 Asia-Pacific

In 2014, Asia-Pacific processed about X million tonnes. Since 2006, market volume rose at a rate of X% p.a. In 2014, this region was the largest consumer of chelating agents worldwide. For the period 2014 to 2022, we forecast overall demand for chelating agents to increase by about X% p.a. to about x million tonnes. In 2014, China recorded a market volume of X million tonnes and thus accounted for more than half of total regional demand.



Graph: Demand for chelating agents in Asia-Pacific from 2006 to 2022

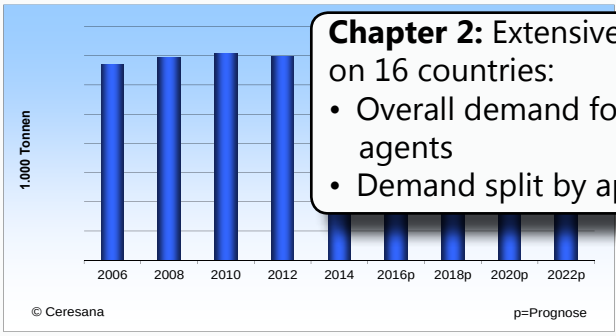
In 1,000 tonnes	2006	2008	2010	2012	2014	2016p	2018p	2020p	2022p	2014-2022
China	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
India	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Japan	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
South Korea	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Others	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Total	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XX% p.a.**

Table: Demand for chelating agents in Asia-Pacific from 2006 to 2022 – split by major countries

Chapter 1: Extensive market data on world regions and countries:
- Demand for chelating agents
- Market data from 2006 to 2022

2.4.1 Brazil

In 2004, Brazil processed X tonnes of chelating agents. Compared to 2006, this corresponds to an average increase of X% per year. We expect that Brazil will continue to increase its demand by an annual rate of X% to almost X tonnes by 2022.



Graph: Demand for chelating agents in Brazil from 2006 to 2022

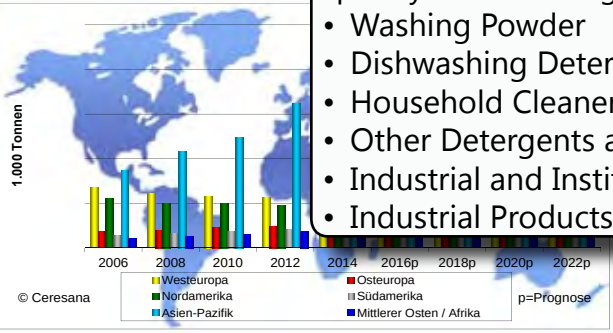
In 1,000 tonnes	2006	2008	2010	2012	2014	2016p	2018p	2020p	2022p	2014-2022
Washing Powder	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Dishwashing Detergent	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Household Cleaners	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Other Detergents and Cleaners	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Industrial & Institutional Cleaners	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Industry	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Total	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XX% p.a.**

Table: Demand for chelating agents in Brazil between 2006 and 2022 divided by applications

Chapter 2: Extensive market data on 16 countries:
- Overall demand for chelating agents
- Demand split by applications

3.1.5 Industrial and Institutional Cleaners

While the application household cleaners was discussed in chapters 3.1.1 to 3.1.4., this chapter analyzes the demand for cleaning agents in the area of industrial and institutional cleaners. A large proportion of products used in the area of industrial and institutional cleaners varies significantly from chelating agents used in household products. A basic difference besides dosage is the use of multifunctional products. They are very often applied in household cleaning. In the area of industrial and institutional cleaners, individual products such as pre-cleaners, rinsing agents and main cleaning agents are used and combined according to demand a



Graph: Global demand for chelating agents in industrial and institutional cleaners from 2006 to 2022 – split by regions

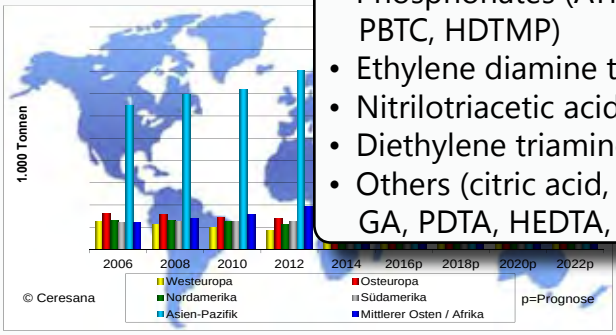
The demand for chelating agents for industrial and institutional cleaners in 2014 amounted to approx. X tonnes. Compared to 2006, this translates into a growth rate of X% p.a. By 2022, we forecast a worldwide growth in the processing volume of chelating agents. That year, approx. X tonnes will be processed. This corresponds to an average increase of X% p.a. when compared to 2014.

Chapter 3: Demand per region and country, split by the following applications:

- Washing Powder
- Dishwashing Detergents
- Household Cleaners
- Other Detergents and Cleaners
- Industrial and Institutional (I&I) Cleaners
- Industrial Products

4.1 Sodium Tripolyphosphate (STPP)

Over the past eight years, global demand for STPP rose by an average of X% per year. Out of the X million tonnes of STPP used w were used in Asia-Pacific. STPP is used in ho gents. There are considerable regional diffe dishwashing detergents in some countries.



in 1,000 tonnes	2006	2008	2010	2012	2014	2016p	2018p	2020p	2022p	2014-2022
Western Europe	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Eastern Europe	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
North America	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
South America	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Asia-Pacific	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Middle East / Africa	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX% p.a.
Total	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XXX**	**XX% p.a.**

Table: Global demand for STPP from 2006 to 2022 – split by regions

Chapter 4: Chelating agents - Demand split by types of products:

- Sodium tripolyphosphate (STPP)
- Phosphonates (ATMP, EDTMP, DTPMP, HEDP, PBTC, HDTMP)
- Ethylene diamine tetra acetic acid (EDTA)
- Nitrilotriacetic acid (NTA)
- Diethylene triamine pentaacetic acid (DTPA)
- Others (citric acid, GLDA, MGDA, EDDS, IDS, GA, PDTA, HEDTA, glucoheptonates)

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