# Market Study: Plastics - World






Ceresana
Market Intelligence. Consulting.

## Dear readers,

Nowadays, information is available at the push of a button, always, and in overwhelming amounts. But what is the best way to find the crucial data amongst all that information?
That is why several thousand companies use the knowledge of our employees. Based on their extensive experience, they provide decisive data for the benefit of their customers. The clearly arranged and practice-oriented studies of Ceresana offer precise analyses and well-founded forecasts - also for your markets!

### Why you should make use of our knowledge

Our time-tested understanding of the markets helps you to even better assess potential chances, new products and technologies, but also your competitors. Use this knowledge to shape an evermore effective and efficient future for your company.
We provide you with reliable forecasts regarding products and markets. Get valuable information about global trends as well as opportunities and risks. Our studies will save you time and money and help you prevent costly wrong decisions.

### We are your market experts

Ceresana is the most trusted market research company for the industrial sector. In addition to single-client studies, our clients also profit from already more than 100 multi-client market studies.
We would be pleased to assist your company in this challenging market environment!

Yours faithfully, Oliver Kutsch

## Our studies - Your benefits

- **Gain new customers**
  Our studies show who potential new customers are 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 & risks on your target markets in time

## This study is useful for:

- Manufacturers and traders of agricultural films, cling films, shrink films, multilayer films, bags and sacks, containers, lids, insulation and sheathing, coatings, sporting and household goods, hygiene products, toys, medical engineering, construction elements, consumer goods, E&E products, profiles, tubes, bottles, etc.
- Producers of polyethylene (LDPE, LLDPE, and HDPE), polypropylene (PP), polyvinyl chloride (PVC), polyethylene terephthalate (PET), polystyrene (PS), expandable polystyrene (EPS), polyurethane (PUR), polyamide (PA), acrylonitrile butadiene styrene (ABS), polycarbonate (PC), polymethyl methacrylate (PMMA), polyoxymethylene (POM), and other plastics (SAN & PBT, fluoroplastics).
- Companies operating in the areas of flexible and rigid packaging, the construction industry, transportation, the electrical and electronics industry, and consumer goods.
- Executive board, strategic planning, corporate development, market research, marketing, sales, distribution & procurement

## In this brochure you will find the following information:

- An introduction on page 3
- A summary of the table of contents on page 4
- Following this, there are example pages from the study
- Please use the form on the last page to easily order your study or a free reading sample!

Plastics are indispensable in our everyday life. For the first time, the market research institute Ceresana analyzed the whole world market for all commercially important plastics in one big study. From standard products up to high-performance engineering materials, the most important plastic types are included:

- Polyethylene - LDPE
- Polyethylene LLDPE
- Polyethylene - HDPE
- Polypropylene (PP)
- Polyvinyl Chloride (PVC)
- Polyethylene Terephthalate (PET)
- Polystyrene (PS / EPS)
- Polyurethane (PUR)
- Acrylonitrile Butadiene Styrene (ABS)
- Other Engineering Plastics.

## Asia-Pacific is Major Consumer

In 2016, the global plastics market reached a volume of over 263 million tonnes. According to the demand volume and price development for the individual types of plastics, Ceresana expects revenues to rise to about US dollar 560 billion until 2024. The data regarding quantities and revenues do not include synthetic fibers nor their use in paints and varnishes, adhesives and sealants. Synthetic resins such as epoxy, phenolic, melamine, and urea formaldehyde resin as well as silicones are not analyzed either. With a market share of over 51%, Asia-Pacific is the region with the largest plastics demand; North America, Western Europe, Eastern Europe, and South America follow. China and the USA are the major consumers of plastics worldwide. In this market report, Ceresana analyzes the development of every individual product type and application area in several regions and countries.

## Films Wrap up the World

In 2016, the plastics sales markets flexible packaging, construction products, and rigid packaging dominated: These three segments account for about 65% of the total demand for plastics. The sales markets with the highest growth rates of more than 3% per year are, however, the segments transportation and electrical and electronics.

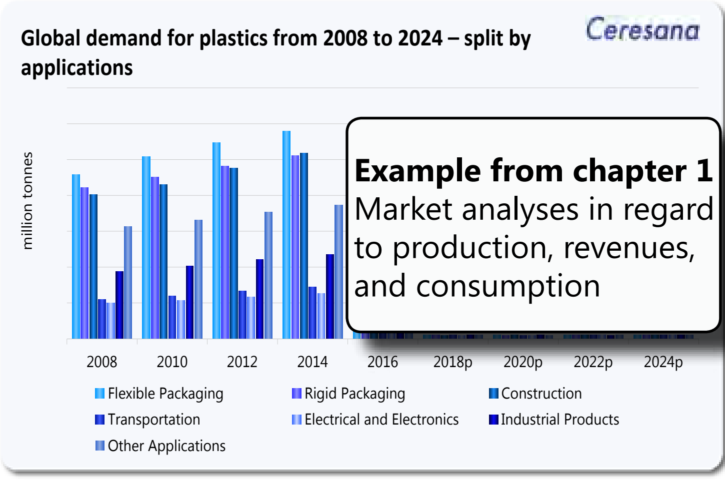
Flexible packaging such as bags and sacks as well as shrink and stretch films are mainly used for food packaging, but also as a secondary and tertiary packaging, for example for transportation. Plastic films may be used as shopping bags, trash can liners, mailing bags or as large bags for industrial and agricultural goods. Worldwide, about 60.8 million tonnes of plastics were utilized in flexible packaging in 2016.

In civil engineering and building construction, plastics are mainly used for films, cables, pipes, profiles and covers, sheets, fastening elements such as dowels and screws, glazing, coatings, and membranes. 54.8 million tonnes of plastics were utilized for building applications in 2016. The Asia-Pacific region is by far the largest consumer.

The sales market rigid packaging includes containers such as cans, cups, trays, bottles, boxes, and caps. Plastics replace the more traditional materials such as aluminum or glass. In order to minimize use of resources and transport cost, the industry manufactures increasingly lighter containers and uses more and more plastic bags as alternatives. Worldwide, about 54.0 million tonnes of plastics were processed into rigid packaging in 2016.

## PP is the Top Seller

PVC and PET might be more famous. However, the top-selling product of 2016 was polypropylene (PP): 23.4% market share. Polypropylene is a semi-crystalline thermoplastic polymer that is compatible with many processing technologies and used in a wide variety of applications. HDPE and LLDPE also belong to the types of plastics that were most frequently used. High density polyethylene (HDPE) is solid and hard. It is processed into films but also into rigid containers, pipes, and a variety of everyday household goods such as flacons, clothes pegs, and handles of dishwashing brushes. Both flexible as well as rigid products are made of linear low density polyethylene, oftentimes in blends with LDPE or HDPE. Like this, it can be used for example for thinner films. Furthermore, LLDPE is processed into multilayered packaging.



Global demand for plastics from 2008 to 2024 – split by applications
million tonnes
2008
2010
2012
2014
2016
2018p
2020p
2022p
2024p
Flexible Packaging
Rigid Packaging
Construction
Transportation
Electrical and Electronics
Industrial Products
Other Applications
Example from chapter 1
Market analyses in regard to production, revenues, and consumption

## 1.4 North America

### 1.4.3 Production

About X million tonnes were produced throughout North America in 2016. We expect output to increase to X million tonnes between 2016 and 2024; despite low growth rates, the USA will continue to dominate the North American market accounting for about X% of regional production.


Graph: Production of plastics in North America from 2008 to 2024

| in million tonnes | 2008 | 2010 | 2012 | 2014 | 2016 | 2018p | 2020p | 2022p | 2024p | 2016-2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Canada | X | X | X | X | X | X | X | X | X | X% p.a. |
| Mexico | X | X | X | X | X | X | X | X | X | X% p.a. |
| USA | X | X | X | X | X | X | X | X | X | X% p.a. |
| **Total** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X% p.a.** |

Table: Production of plastics in North America from 2008 to 2024 – split by major countries

**Chapter 1:** Extensive data for 7 regions and the world from 2008 to 2024:
- Demand
- Revenues
- Production

#### 2.1.1.1 Demand and Revenues – Germany

In 2016, the most important sales market for plastics was the segment construction. The second largest sales market, flexible packaging, ranked far behind, followed by rigid packaging. Within the next eight years, we expect demand for plastics in the segment E&E to develop the most dynamically by approx. X% p.a. Rigid packaging will see least dynamic development. Yet, this sector will continue to account for the third largest share of the German market for plastics. Plastics revenues amounted to approx. EUR X billion in 2016. Market value is projected to increase at an average rate of X% p.a. until 2024.

| in million tonnes | 2008 | 2010 | 2012 | 2014 | 2016 | 2018p | 2020p | 2022p | 2024p | 2016-2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Flexible Packaging | X | X | X | X | X | X | X | X | X | X% p.a. |
| Rigid Packaging | X | X | X | X | X | X | X | X | X | X% p.a. |
| Construction | X | X | X | X | X | X | X | X | X | X% p.a. |
| Transportation | X | X | X | X | X | X | X | X | X | X% p.a. |
| Electrical & Electronics | X | X | X | X | X | X | X | X | X | X% p.a. |
| Industrial Products | X | X | X | X | X | X | X | X | X | X% p.a. |
| Others Applications | X | X | X | X | X | X | X | X | X | X% p.a. |
| **Total** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X% p.a.** |

Table: Demand for plastics in Germany from 2008 to 2024 - split by applications

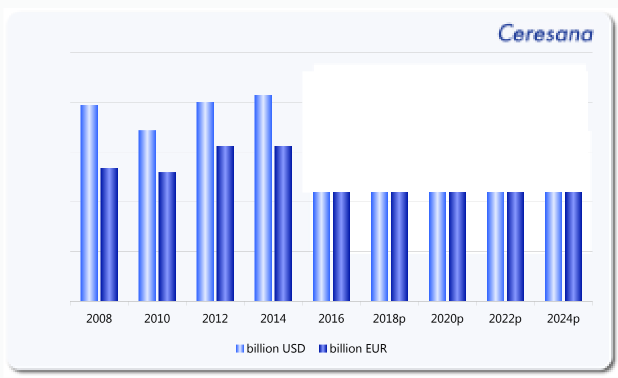
The German packaging industry developed quite positively in 2016. The good economic situation due to rising employment figures and the low oil prices stimulated the demand and affected its development decisively. In 2017, we also expect another increase of growth in this branch despite the presumably rising raw material costs. Especially plastic packaging plays an increasingly important role. Regarding processing volume, paper and cardboard packaging holds the highest share of all materials, yet, plastic packaging generated the higher revenue. Additionally, production of packaging made of plastics increased in the past years. Due to the growth of the end-consumer market, the greater diversity of properties (e.g. stand-up pouches) compared to rigid packaging, as well as the efforts to improve sustainability, the share of flexible packaging on plastic packaging will also rise in the years to come. The trend towards smaller and lighter packaging also exists in Germany and especially in the food packaging industry due to, among others, low cost. Thus, the market for flexible food packaging will continue to grow. We expect flexible packaging to be in higher demand in the future due to the cost saving potential and a

| in million tonnes | 2008 | 2010 | 2012 |
|---|---|---|---|
| LDPE | X | X | X |
| LLDPE | X | X | X |
| HDPE | X | X | X |
| PP | X | X | X |
| PVC | X | X | X |
| PS | X | X | X |
| EPS | X | X | X |
| PET | X | X | X |
| ABS | X | X | X |
| PUR | X | X | X |
| Other EP | X | X | X |
| **Total** | **X** | **X** | **X** |

Table: Demand for plastics in Germany from 2008 to 2024 – split by types of plastics

**Chapter 2:** Specific analyses and forecasts for 25 countries:
- Demand per product type (LDPE, LLDPE, HDPE, PP, PVC, PS, EPS, PET, ABS PUR, other engineering plastics)
- Production per product type (LDPE, LLDPE, HDPE, PP, PVC, PS, EPS, PET, ABS PUR, other engineering plastics)
- Demand volume per application areas
- Import, export & revenues

The German construction industry is expected to show a positive development for the next eight years, compared to the rest of Europe. The segment residential construction in particular is providing growth impulses. Reasons for the construction of new residential units are among others the high number of immigrants coming to Germany, a very low level of mortgage interests, as well as a stable labor market and rising incomes for private households. An indicator for the positive development of the construction industry is the rising number of construction permits in the past years. These have been increasing constantly. Completion of new residential constructions and renovations were also rising slightly in 2016. Almost 290.000 new residential units were completed that year. In 2016, the construction industry profited from the constant mild climate and the good order situation. We expect the demand for further buildings to continue to increase in the next years due to the immigration of refugees. Other than residential construction, commercial construction accounted for slight decreases in revenues in 2016.




Graph: Revenues generated with plastics in Germany from 2008 to 2024, in billion USD and billion EUR

### 3.1.3 Applications - Construction

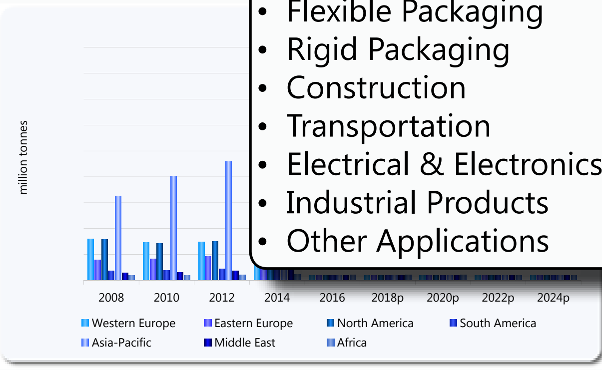
The application construction includes all products made of plastics that are used in civil engineering and building construction. In addition to residential construction, plastics are utilized in office buildings, sports facilities, and department stores. Examples for the use of individual plastics in the construction industry are: films, cables, tubes, profiles and coverings, sheets and pipes, dowels, screws, glazing, mounting elements, coatings, and membranes.

In 2016, X million tonnes of plastics were utilized worldwide for the application area construction. Thus, consumption in this segment rose by X% p.a. since 2008. We forecast global demand for plastics in thi[s]

X million tonnes in 2024.

**Chapter 3**: Detailed data & influential factors for the use in:

- Flexible Packaging
- Rigid Packaging
- Construction
- Transportation
- Electrical & Electronics
- Industrial Products
- Other Applications




Graph: Global demand for plastics in the segment construction from 2008 to 2024 – split by regions

### 4.3.6 Asia-Pacific - HDPE

Asia-Pacific processed X million tonnes of HDPE in 2016; compared to 2008, this corresponds to an average annual increase of X%. China was the largest regional sales market. India ranked second with a volume of X million tonnes, followed by South Korea. The largest growth market of the next eight years is China that will see market volume rise by X% p.a. until 2024. We expect total demand in Asia-Pacific to increase by, on average, X% p.a. to approx. X million tonnes in 2024.

| in million tonnes | 2008 | 2010 | 2012 | 2014 | 2016 | 2018p | 2020p | 2022p | 2024p | 2016-2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| China | X | | | | | | | | | |
| India | X | | | | | | | | | |
| Japan | X | | | | | | | | | |
| Malaysia | X | | | | | | | | | |
| South Korea | X | | | | | | | | | |
| Taiwan | X | | | | | | | | | |
| Thailand | X | | | | | | | | | |
| Others | X | | | | | | | | | |
| **Total** | **X** | | | | | | | | | |

Table: Demand for HDPE

**Chapter 4**: Demand per region & country split by product types:

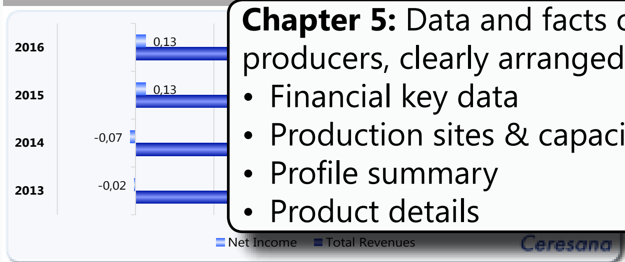
- Polyethylene (LDPE, LLDPE & HDPE)
- Polypropylene (PP)
- Polyvinyl Chloride (PVC)
- Polystyrene (PS)
- Expandable Polystyrene (EPS)
- Polyethylene Terephthalate (PET)
- Acrylonitrile Butadiene Styrene (ABS)
- Polyurethane (PUR)
- Other Engineering Plastics

**Trinseo S.A.**

**1000 Chesterbrook Boulevard**
**Berwyn, PA 19312**
**USA**

Tel.: +1 855 874 67 36
Web: www.trinseo.com

**Financial Key Data (in billion USD)**




**Chapter 5:** Data and facts on 85 producers, clearly arranged by:

- Financial key data
- Production sites & capacities
- Profile summary
- Product details

**General Information about the Company**

| | |
|---|---|
| **Divisions, Product Range** | The company operates in the following business units:<br>• Performance Materials<br>  ○ Latex<br>  ○ Synthetic Rubber<br>  ○ Performance Plastics<br>• Basic Plastics & Feedstocks<br>  ○ Basic Plastics<br>  ○ Feedstocks |
| **Production Sites** | Trinseo operates 59 manufacturing plants at 15 sites worldwide. |
| **Profile Summary** | Trinseo S.A., formerly known as Styron LLC, was formed in June 2010. Up to this point, the company had been part of Dow Chemical and was created by combining four of its business segments in anticipation of forming an independent company. Bain Capital Everest Manager Holding SCA (Luxembourg) acquired Dow's assets and established Styron LLC. The company was renamed in February 2015 to Trinseo S.A.<br>The company employs nearly 2,200 people. Trinseo is listed on the New York Stock Exchange. Majority shareholder is Bain Capital which holds a controlling interest of about 76%. Public investors own the remaining shares.<br>In 2017, the company commenced the production of ABS resins in Zhangjiagang, China. In January 2017, Trinseo Holding B.V. announced, a wholly owned subsidiary of Trinseo, that it sold its 50 percent share in their Sumika Styron Polycarbonate (SSPC) joint venture to Sumitomo Chemical. Today, SSPC operates as a wholly owned subsidiary of Sumitomo Chemical and is renamed to Sumika Polycarbonate Limited.<br>In October 2016, Trinseo announced that it will expand the capacity of its Solution-Styrene Butadiene Rubber (S-SBR) complex in Schkopau, Germany. The additional capacity is scheduled to be online in 2018.<br>The majority of Trinseo facilities' quality and environmental management systems are certified according to ISO 9001 and ISO 14001 standard. |

**Specific Information about Plastics**

| | |
|---|---|
| **Product Details** | Trinseo manufactures polystyrene (STYRON), ABS (MAGNUM), SAN (TYR-IL), and polycarbonate (CALIBRE) resins. Under the brand name STYRON, the company and the joint venture Americas Styrenics (equally owned by Trinseo and Chevron Phillips Chemical Company) produces polystyrene universal resins, polystyrene resins with a high-impact strength as well as polystyrene of low flammability.<br>Trinseo produces ABS resins, which are available under the Magnum ABS brand name. The product range consists of a variety of injection molding and extrusion grades, which are mainly targeted at the building & construction, automotive, consumer electronics, and sheet & profile extrusion industries. |

## Thank you for your confidence!

For 15 years, more than 10,000 small, medium-sized, and multinational enterprises from over 60 countries have been benefiting from our studies.

Our studies are especially useful for:

- Producers, processors, traders, suppliers, as well as engineering companies
- Associations, institutes, consultants, investors
- Executive board, finance, business development, strategic planning, market research, marketing, sales, distribution & procurement, etc.

## Gain the knowledge for your corporate success now!

Ceresana
Mainaustr. 34, 78464 Constance, Germany
Tel: +49 7531 94293 - 0 Fax: - 27
E-Mail: info@ceresana.com

MADE IN GERMANY

The list includes a selection of our current market studies. By clicking on the respective topic, you will receive further details:

Ceresana
Market Research Since 2002

Mobility

Automotive Coatings - World
Automotive Plastics - Europe
Automotive Plastics - World
Hybrid & Electric Cars - Europe

Bio-Economy

Biobased Packaging - World
Bioplastics - World
Polylactic Acid (PLA) - World
Starch Based Plastics - World

Chemicals

Biocides - World
Carbon Black - World
Chelating Agents - World
Fillers - Europe
Fillers - World
Flame Retardants - World
Pigments - World
Plastic Additives - World
Plasticizers - World
Solvents - World
Stabilizers - World
Surfactants - World
Titanium Dioxide (TiO2) - World

Industry

Adhesives - Europe
Adhesives - World
Insulation Material - Europe
Insulation Material - World
Paints & Coatings - Europe
Paints & Coatings - World
Plastic Extrusion - Europe
Plastic Injection - Europe
Plastic Pipes - Europe
Plastic Pipes - World
Plastic Windows - World
Printing Inks - Europe
Printing Inks - World
Windows & Doors - Europe

Plastics

Composites (CFRP & GFRP) - World
Engineering Plastics - World
Expandable Polystyrene (EPS) - World
Masterbatches - World
Plastics - Europe
Plastics - World
Polyethylene (HDPE) - World
Polyethylene (LDPE) - World
Polyethylene (LLDPE) - World
Polypropylene - World
Polystyrene & EPS - World
Polyvinyl Chloride (PVC) - World
Silicones - World
Synthetic Rubber - World
Thermoplastic Elastomers (TPE) - World

Packaging

Bags, Sacks & Pouches - Europe
Bags, Sacks & Pouches - World
Corrugated Board & Solid Board - Europe
Flexible Packaging - Europe
Food Packaging - Europe
Labels - Europe
Plastic Caps & Closures - Europe
Plastic Caps & Closures - World
Plastic Containers - Europe
Plastic Films - Europe
Plastic Films - World
Plastic Packaging for Cosmetics - Europe
Rigid Metal Packaging - Europe
Rigid Plastic Packaging - World

To our Store