Market Study: Polyethylene - LDPE

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Ceresana Research

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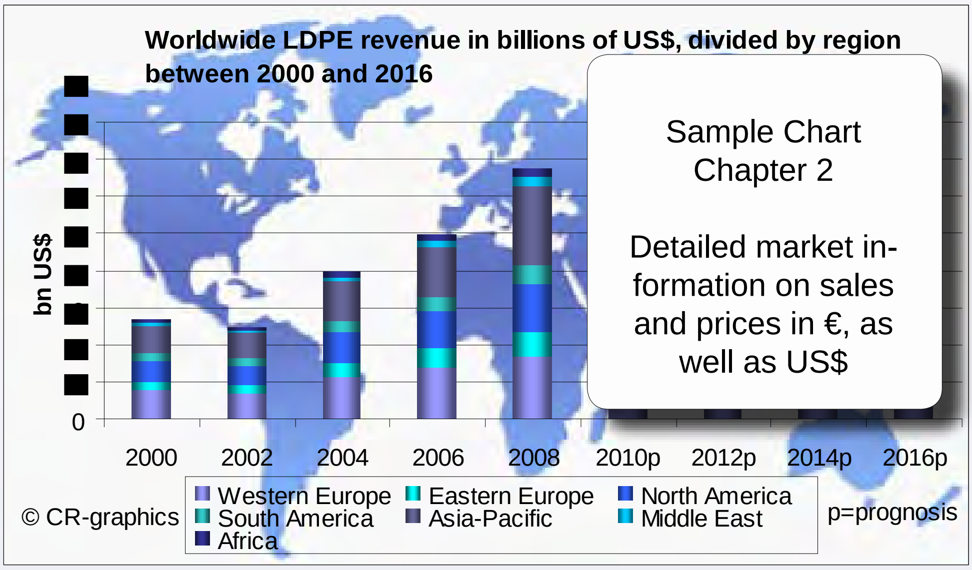

LDPE (low density polyethylene), is a plastic manufactured through a high pressure method. The primary markets for this plastic include films, carrying bags, and sacks. Roughly 67% of global LDPE demand falls into these categories. Some examples of these applications include agricultural, multi-layer, and shrink films, as well as reinforcements for levees. LDPE, which is soft, ductile, and flexible, is additionally utilized for strong, elastic goods, such as screw caps, lids, and coatings.

LDPE has been manufactured since 1939, and because it can be easily processed into films and exhibits particularly excellent rheological characteristics, it is still favored in many world regions – even though it has competition from newer polyethylene grades like HDPE and LLDPE. However, the trend of substituting LDPE with other polymers is declining again throughout industrialized nations. Opportunities for LDPE in Western Europe, the US, and Japan can be seen, for example, in coatings and packaging for medical products. These applications will recover relatively quickly from the economic crisis.

In 2009, LDPE prices have fallen by as much as 30% in certain regions: Western Europe and North America are additionally seeing considerable decreases in demand. Consequently, global revenue has fallen to 15.9 billion € (22.2 billion US$). However, we expect to see growth again starting in 2011. The Asian Pacific will be the most important LDPE market and will be able to increase its share of global consumption to more than 39%. The Middle East is characterized by its continued expansion of LDPE production: capacity increases of around 3.5 million tons are planned to take place by 2014. As a result, Saudi Arabia, Qatar, and Iran will become the world's largest exporter of LDPE.

Ceresana Research offers manufacturers, processors, and sellers of LDPE new opportunities: our market study shows which countries and applications are the most promising.

In brief

- The first chapter of the multi-client study concisely presents the most important information regarding the various types of LDPE. Advantages and application possibilities, legal situations and certifications, as well as disposal and recycling are described here.
- Chapter 2 examines data from the LDPE market for the world and 7 different regions – including prognoses until 2016. Demand, production, and capacities are prepared quantitatively. Revenue and prices are additionally provided in both € and US$ values. Furthermore, the study provides an insight into market dynamics, innovations, as well as global and regional trends.
- Chapter 3 provides detailed analyses for 67 countries: valuable data and influencing factors concerning consumption, revenue, production, and capacities, as well as imports and exports.
- LDPE consumption, divided by application area, is closely examined in chapter 4. Demand in the individual markets is extensively described for the entire world, the 7 world regions, and also for the 12 countries with the highest revenues.
- The second section of the world's most comprehensive report on LDPE offers 87 profiles of current and future manufacturers from 40 countries as a useful reference work: extensive information regarding individual product portfolios, as well as current and future capacities at each plant location.
- Company profiles are clearly arranged and structured according to contact information, employee and revenue figures, production facilities, corporate integration, ownership structure, and recent company news.
- Some of the 80 manufacturers include, among others: Borealis, Braskem, DuPont, ExxonMobil Chemical, INEOS Group, LyondellBasell Industries, National Petrochemical Company, PetroChina, Polimeri Europa, Repsol, SABIC, Sinopec, Dow Chemical, Total, Westlake Chemical.

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Vol. I

1 Basics

1.1 Background and Chemistry

Outline of this Section:
- Definition of polyethylene grades
- Brief History

Polyethylene or **Polyethene** (**PE**) is a milky, tra
thermoplastic polymer. It is the most commonly man
is primarily used in consumer goods like plastic bags
Union of Pure and Applied Chemistry Nomenclatu
Number 9002-88-4. PE is a polyolefin or a saturated
in a catalytic process through the polymerization of
specifically, it is a combination of ethene homopolym
small proportions of olefinic comonomers.

The simplified chain structural formula of the primary

This thermoplastic material is composed of carbon and hydrogen atoms joined together by the formation of high molecular weight products. Methane gas is converted into ethylene, then into polyethylene following the application of heat and pressure. The longer the primary chain, the greater the number of atoms, and consequently, the greater the molecular weight will be. The molecular weight, the molecular weight distribution and the amount of branching determine many of the mechanical and chemical properties of the end product.

The extent of branching determines the degree of crystallinity, which in turn affects density and other properties. Polyethylenes are thus usually classified according to

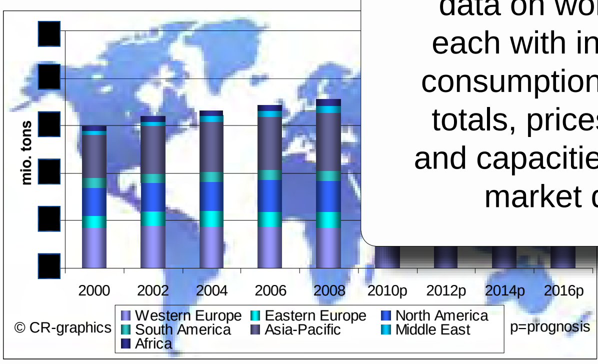
Vol. I / Chapter 1

All important, fundamental information regarding LDPE – compiled overview

2 Market Data - World

Demand

Worldwide consumption of LDPE totaled X million tons in the year 2000. Demand
reached approximately X million tons in 2008, follow
year (Graph). We expect demand for LDPE to grow
starting in 2008, amounting to X million tons by
industry in the Asian Pacific proved to be the large
X% of global demand, followed by Western Europe



Graph: Worldwide LDPE consumption divided by region from 2000 until 2016

Market share in the Asian Pacific is anticipated to increase an additional X percentage points by 2016, whereas Western European LDPE processors will see a drop of X percentage points in the global market. Market share in North American's processing industry is expected to fall by X percentage points. Rising prosperity and increasing consumer confidence in East European countries have led to positive development in the LDPE industry during the past eight years. However, high growth rates from the past will not be reached again. Unfortunately, the global economic crisis has slowed dynamic growth in many East European countries and has resulted

Vol. I / Chapter 2

Comprehensive market data on world regions – each with information on consumption and revenue totals, prices, production and capacities, trends, and market dynamics

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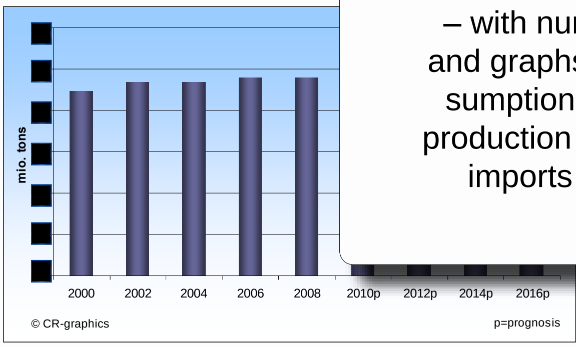
3.5.8.2 Production and Capacities in South Korea

South Korean LDPE production increased from X million tons in the year 2000 to X million tons in 2008, corresponding to an average growth rate of X% per year (Graph). South Korea had an X% share of all LI Asian Pacific during 2008. The total capacity of among four suppliers (Table). We anticipate seeir of X% annually during the next several years, spe to X million tons in 2016.



Vol. I / Chapter 3

Detailed country analyses – with numerous tables and graphs covering consumption and revenue, production and capacities, imports and exports

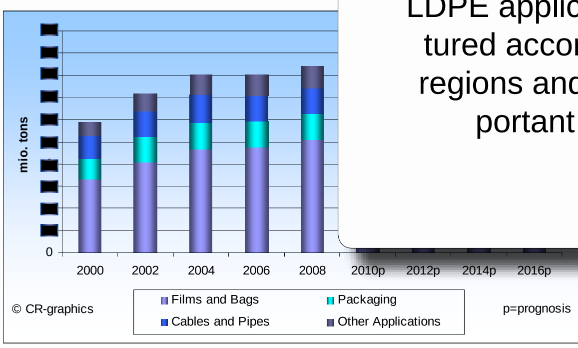
Graph: Production of LDPE in South Korea from 2000 until 2016

Company	Capacity in tons
Hanwha Chemical	XXX,000
LG Chem	XXX,000
Honam Petrochemical	XXX,000
Samsung/Total (JV Samsung Total Petrochemicals)	XXX,000
Total	**XXX,000**

Table: LDPE capacity in South Korea during 2008, in tons

4.3 Eastern Europe - Applications

LDPE consumption in Eastern Europe increased over the past eight years, to a total volume of X part, this was the result of rising demand amon which had an X% share of regional demand dur share, as well as cables and pipes, each totaled amounted to X%.



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Concise market data for LDPE applications – structured according to world regions and the most important countries

Graph: Demand of LDPE in Eastern Europe between 2000 and 2016 divided by application

Following a short-term drop in 2009, we expect to see demand recover. According to our prognoses, there will be an average growth of X% per year between 2008 and 2016, resulting in a total market volume of X million tons. Shares of the various markets are only expected to change marginally by 2016. While market share for manufacturers of films and bags, as well as other applications, is expected to increase by about X percentage points, cables and pipes will lose X percentage points.

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5.5.2 China

PetroChina Company Limited	
No.16 Andelu Dongcheng District	
100011 Beijing	
China	
Tel.	86 10 6209 4114
Fax	86 10 8488 6260
Web	www.petrochina.com.cn/ptr
E-mail	n.a.
Foundation	1988
Staff	> 440,000 (2008)
Turnover 08	RMB XX trillion
Turnover 07	RMB XX billion
Turnover 06	RMB XX billion
Earnings 08	RMB XX billion (profit before taxation)
Earnings 07	RMB XX billion (profit before taxation)
Earnings 06	RMB XX billion (profit before taxation)
Divisions, Product range	The company's product portfolio includes: • Refined Products Diesel, gasoline, fuel oil, naphtha, jet fuel, lubricants, asphalt and paraffin • Chemical Products Ethylene, propylene, benzene, polyethylene, polypropylene, ABS, terylene fiber, polyacrylic fiber, polypropylene fiber, urea, ammonium nitrate, PTA, glacial acetic acid, alkylbenzene, octanol, synthesized ethanol, butyl alcohol, purified methanol

Vol. II / Chapter 5

Extensive company profiles for 87 manufacturers – with sales and earnings figures, product ranges, production facilities, cooperations, and new developments

Associated Companies	Subsidiary companies: • **Lanzhou Petrochemical Corporation** Established in 2000, the company was restructured on the basis of Lanzhou Refining Company and Lanzhou Petrochemical Company, Northwest China. • **Daqing Petrochemica** Daqing Petrochemical Co of PetroChina. It is a p products, chemicals, fert major raw materials of cru gas from Daqing oilfield. • **Dushanzi Petrochemi** Dushanzi Petrochemical PetroChina Company Lim Dushanzi refinery, founded	
Technologies / Licensee	n.a.	
Site / Plant (current)	Capacity (tons / year)	Start-Up
Daqing, China	XX,000	2005
Daqing, China	XX,000	n.a.
Lanzhou, China	XX,000	2007
Lanzhou, China	XX,000	n.a.
Total capacity (currently)	XX,000	
Site / Plant (planned)	Capacity (tons / year)	Start-Up
Dushanzi, China	XX,000	2009
Total Capacity (2009)	XX,000	

Vol. II / Chapter 5

List of current LDPE production facilities – and prognoses regarding future capacities

The studies are particularly suitable for

- Manufacturers, retailers and distributors
- Suppliers of feedstocks & additives
- Users of plastics, e.g. manufacturers and sellers of packaging, agricultural, multi-layer, and shrink films, bags, sacks, containers, lids, closures, cable insulation, coatings, sporting goods, housewares, hygienic articles, toys, medical products
- Investors and analysts
- Organizations and authorities
- Associations and institutes

12 reasons to order today

- Get the most extensive overview of global markets
- Find current prognoses for single application areas and product lines until 2016
- Gain an objective and detailed analysis of factors which influence your business
- Recognize opportunities and risks
- Be informed about research and technology trends
- Use data for the world market and single regions
- Be timely informed of take-overs and innovations
- Use reliable information (e.g. prices, turnover, volumes) for a successful business plan
- Learn about the most important product lines and application fields with their single consumption quantities
- Gain a detailed description of LDPE: performance, usage and requirements
- Analyze technical and toxicological product characteristics
- Be up to date with the most important manufacturers through a multitude of company profiles

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(More Infos: Click covers)

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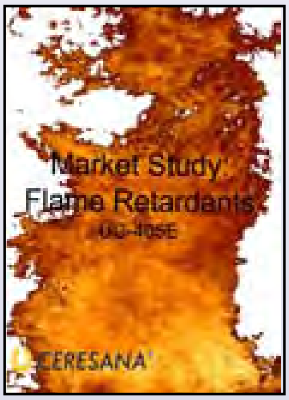

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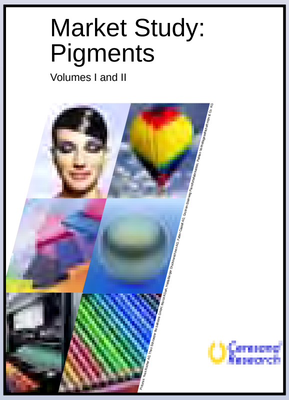

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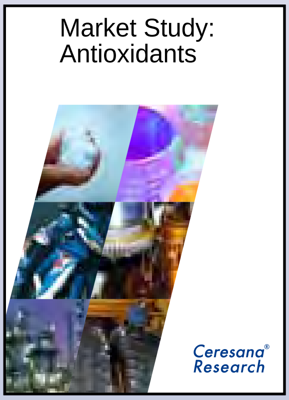

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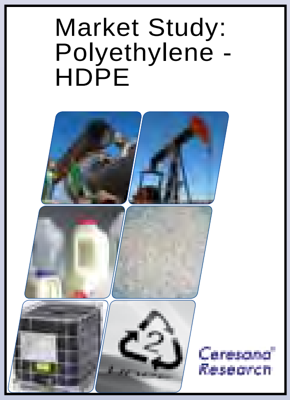

Polyethylene - HDPE
65 Countries, 100 Producers; 2 Vol., 994 Pages, 285 Graphs, 99 Tables; from €1.895; 09/08

About us

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In addition to multi-client studies, we also offer commissioned studies according to an individual client's specifications. Our core competencies include:

- chemicals
- plastics
- additives
- commodities
- industrial components
- packaging
- construction materials.

Companies, institutions, and associations from more than 40 countries have already profited from our global market data and well-founded prognoses.

When will you use our knowledge?

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- Comprehensive information and objective analyses for an enduring competitive edge.
- Basis for successful business management
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- Assess future and already completed R&D Projects
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- „Your study is very useful for us, because this is the first one which gives comprehensive data and facts about the „bioplastic industry" . So let's say it is the starting point and the „reference" today " (JP LF, Sales Director, Biosphere on Bioplastics)
- „Very detailed study about each country, that I like most. Overall a very good and comprehensive report." (SR, Corporate, ISIN International on Polyethylene - HDPE)
- „Charts and Graphs were clear and pertinent." (JK, Chemical Engineer, Roquette Frères on Polypropylene)
- „The market study covers all application segments of antioxidants: Plastics, Rubber, Lubricants and Fuels." (AN, Sales SBU Organics, Duslo on Antioxidants)
- „A comprehensive work covering Pigments with easy to find manufacturers and suppliers" (RS, President, Harold-Scholz on Pigments)
- „clear and easy to understand. Findings were clearly laid out." (F-TT, IGP Pulvertechnik on Pigments)
- „Ceresana has created a very useful study" (Dr GB, Head of Department, Chemical - Physical Laboratories on Fillers)
- „Informative, all-encompassing, I am satisfied." (TM, Thor GmbH on Flame Retardants)
- „very well arranged" (Dr JS, Quarzwerke GmbH on Fillers)
- „Everything at a glance." (Dr SS, Pelikan on Plasticizers)
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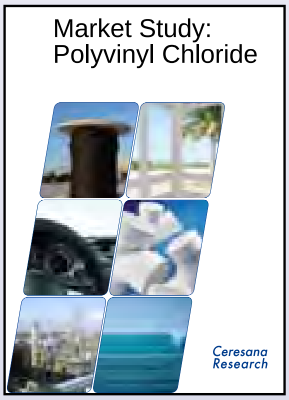

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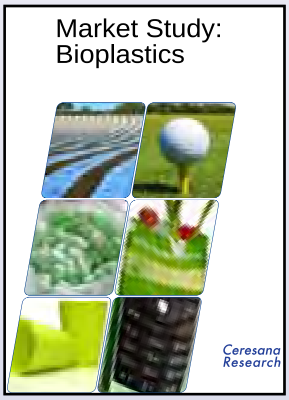

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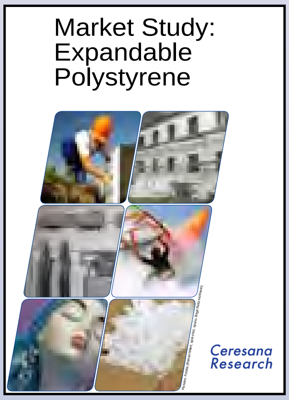

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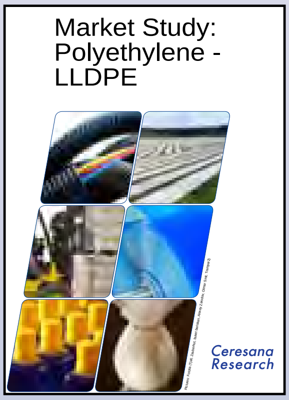

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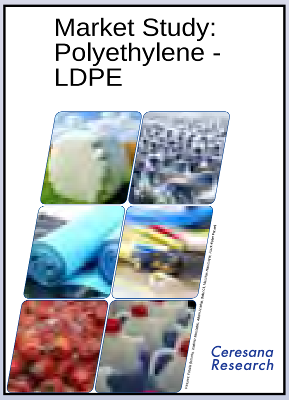

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