LyondellBasell Industries N.V.
Form 10-K
March 18, 2011

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UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-K

(Mark One)

þ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the fiscal year ended December 31, 2010

OR

o **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from to

Commission file number: 001-34726
LyondellBasell Industries N.V.
(Exact name of registrant as specified in its charter)

The Netherlands	**98-0646235**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*

Weena 737
3013 AM Rotterdam
The Netherlands
(Address of principal executive offices) (Zip Code)

Registrant s telephone number, including area code: 31 30 275 5500
Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	**Name of Each Exchange On Which Registered**
Ordinary Shares, 0.04 Par Value	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. o Yes þ No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. o Yes þ No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. þ Yes o No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). þ Yes o No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. þ

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of large accelerated filer, accelerated filer and smaller reporting company in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer o	Accelerated filer o	Non-accelerated filer þ (Do not check if a smaller reporting company)	Smaller reporting company o

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). o Yes þ No

The aggregate market value of common stock held by non-affiliates of the registrant on June 30, 2010, the last business day of the registrant s most recently completed second fiscal quarter, based on the closing price on that date of $16.15, was $5.4 billion. For purposes of this disclosure, the registrant has included Access Industries, LLC, Apollo Management Holdings, L.P. and Ares Management LLC and their affiliates as affiliates.

The registrant had 567,791,511 shares outstanding at March 15, 2011.

Documents incorporated by reference:

Portions of the Proxy Statement for the Annual Meeting of Stockholders to be held on May 5, 2011 (Part III)

PART I

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PART III

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PART I

Items 1 and 2. *BUSINESS AND PROPERTIES*

CORPORATE STRUCTURE AND OVERVIEW

LyondellBasell Industries N.V. was incorporated under Dutch law by deed of incorporation dated October 15, 2009. The Company was formed to serve as the new parent holding company for certain subsidiaries of LyondellBasell AF S.C.A. From January 2009 through April 2010, LyondellBasell AF and 93 of its subsidiaries were debtors in jointly administered bankruptcy cases in U.S. Bankruptcy Court for the Southern District of New York. As of April 30, 2010, the date of emergence from bankruptcy proceedings, LyondellBasell AF s equity interests in its indirect subsidiaries terminated and LyondellBasell Industries N.V. now owns and operates, directly and indirectly, substantially the same business as LyondellBasell AF owned and operated prior to emergence from the bankruptcy cases, including subsidiaries of LyondellBasell AF that were not involved in the bankruptcy cases.

Our Company is the successor to the combination in December 2007 of Lyondell Chemical Company (Lyondell Chemical) and Basell AF S.C.A. (Basell), which created one of the world s largest private petrochemical companies with significant worldwide scale and leading product positions.

We are the world s third largest independent chemical company based on revenues and an industry leader in many of our product lines. We participate in the full petrochemical value chain, from refining to specialized end uses of petrochemical products, and we believe that our vertically integrated facilities, broad product portfolio, manufacturing flexibility, superior technology base and operational excellence allow us to extract value across the full value chain.

SEGMENTS

As of December 31, 2009, we began reporting our results of operations based on five business segments through which our operations are managed. Our reportable segments include:

Olefins and Polyolefins Americas (O&P Americas). Our O&P Americas segment produces and markets olefins, including ethylene and ethylene co-products, and polyolefins

Olefins and Polyolefins Europe, Asia, International (O&P EAI). Our O&P EAI segment produces and markets olefins, including ethylene and ethylene co-products, and polyolefins.

Intermediates and Derivatives (I&D). Our I&D segment produces and markets propylene oxide (PO) and its co-products and derivatives, acetyls, ethylene oxide and its derivatives.

Refining & Oxyfuels. Our Refining & Oxyfuels segment refines heavy, high-sulfur crude oil in the U.S. Gulf Coast, refines light and medium weight crude oil in southern France and produces oxyfuels at several of our olefin and PO units.

Technology. Our Technology segment develops and licenses polyolefin process technologies and provides associated engineering and other services. Our Technology segment also develops, manufactures and sells polyolefin catalysts. We market our process technologies and our polyolefin catalysts to external customers and use them for our own manufacturing operations.

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The following chart sets out our business segments key products:

O&P Americas and O&P EAI	I&D	Refining & Oxyfuels	Technology
Olefins	Propylene oxide, co-products and derivatives	Gasoline	PP process technologies
Ethylene	Propylene oxide (PO)	Ultra low sulfur diesel	*Spheripol*
Propylene	Styrene monomer (SM)	Jet fuel	*Spherizone*
Butadiene	Tertiary butyl alcohol (TBA)	Lube oils	*Metocene*
	Isobutylene	Gasoline blending components	Polyethylene process technologies
Polyolefins	Tertiary butyl hydro-peroxide (TBHP)	Methyl tertiary butyl ether (MTBE)	*Lupotech*
Polypropylene (PP)	Propylene glycol (PG)	Ethyl tertiary butyl ether (ETBE)	*Spherilene*
Polyethylene (PE)	Propylene glycol ethers (PGE)	Alkylate	*Hostalen*
High density polyethylene (HDPE)	Butanediol (BDO)	Vacuum Gas Oil (VGO)	Polyolefin catalysts
Low density polyethylene (LDPE)	Acetyls	Light crude oil	*Avant*
Linear low density polyethylene (LLDPE)	Vinyl acetate monomer (VAM)		Selected chemical technologies
Propylene-based compounds, materials and alloys (PP compounds)*	Acetic acid		
	Methanol		
Catalloy process resins	Ethylene derivatives		
Polybutene-1 (PB-1)*	Ethylene oxide (EO)		
	Ethylene glycol (EG)		
Aromatics	Ethylene Glycol Ethers		
Benzene	Flavor and fragrance chemicals**		
Toluene			
Ethylene derivatives			
Ethanol			

* O&P EAI only.

** Through December 2010, when the flavor and fragrance business was sold.

Olefins and Polyolefins Segments Generally

We are a top worldwide producer of ethylene, propylene and PE, and the world s largest producer of PP and PP compounds. We manage our olefin and polyolefin business in two reportable segments, O&P Americas and O&P EAI.

Ethylene is the most significant petrochemical in terms of worldwide production volume and is the key building block for PE and a large number of other chemicals, plastics and synthetics. The production of ethylene results in

co-products such as propylene, butadiene and aromatics, which include benzene and toluene. Ethylene and its co-products are fundamental to many segments of the economy, including the production of consumer products, packaging, housing and automotive components and other durable and nondurable goods.

Polyolefins are thermoplastics and comprise approximately two-thirds of worldwide thermoplastics demand. Since their industrial commercialization, thermoplastics have found wide-ranging applications and continue to replace traditional materials such as metal, glass, paper and wood. Our products are used in consumer, automotive and industrial applications ranging from food and beverage packaging to housewares and construction materials. PE is the most widely used thermoplastic, measured on a production capacity basis. We produce HDPE, LDPE, LLDPE and metallocene linear low density polyethylene. PP is the single largest polyolefin product produced worldwide, and we produce homopolymer, impact copolymer, random copolymer and metallocene PP.

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We specialize in several specialty product lines: PP compounds; *Catalloy* process resins; and PB-1, focusing on specialty polyolefins and compounds that offer a wide range of performance characteristics. Typical properties of such specialty polyolefins and compounds include impact-stiffness balance, scratch resistance, soft touch and heat scalability. End uses include automotive and industrial products and materials. PP compounds consist of specialty products produced from blends of polyolefins and additives and are sold mainly to the automotive and home appliances industries.

We are the only manufacturer of *Catalloy* process resins, which are our proprietary products. The *Catalloy* process resins business focuses on specialty polyolefins that offer a wide range of performance characteristics. *Catalloy* process resins compete with a number of other materials, such as other PP resins, flexible PVC, ethylene propylene rubber, acrylonitrile butadiene styrene (ABS), polycarbonate, metals and reinforced polyurethanes.

Sales of ethylene accounted for approximately 3% of our total revenues in 2010. Sales of PP accounted for approximately 18% of our total revenues in 2010. Sales of PE (HDPE, LDPE and LLDPE, collectively) accounted for 16% of our total revenues in 2010.

Olefins and Polyolefins Americas Segment

Overview

Our O&P Americas segment produces and markets olefins, polyolefins, aromatics, specialty products and ethylene co-products. We are the largest producer of light olefins (ethylene and propylene) and PP and the third largest producer of PE in North America. In addition, we produce significant quantities of specialty products. In 2010, our O&P Americas segment generated operating revenues of $9.2 billion (excluding inter-segment revenue).

The following table outlines:

the primary products of our O&P Americas segment;

annual processing capacity as of December 31, 2010, unless otherwise noted; and

the primary uses for those products.

Product	Annual Capacity	Primary Uses
Olefins:		
Ethylene	9.6 billion pounds	Ethylene is used as a raw material to manufacture polyethylene, EO, ethanol, ethylene dichloride, styrene and VAM
Propylene	5.5 billion pounds(1)	Propylene is used to produce PP, acrylonitrile and PO
Butadiene	1.1 billion pounds	Butadiene is used to manufacture styrene-butadiene rubber and polybutadiene rubber, which are used in the manufacture of tires, hoses, gaskets and other rubber products. Butadiene is also used in the production of paints, adhesives, nylon clothing, carpets, paper coatings and

		engineered plastics
Aromatics:		
Benzene	195 million gallons	Benzene is used to produce styrene, phenol and cyclohexane. These products are used in the production of nylon, plastics, synthetic rubber and polystyrene. Polystyrene is used in insulation, packaging and drink cups

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Product	Annual Capacity	Primary Uses
Toluene	40 million gallons	Toluene is used as an octane enhancer in gasoline, as a chemical raw material for benzene and/or paraxylene production and as a core ingredient in toluene diisocyanate, a compound used in urethane production
Polyolefins:		
PP	4.4 billion pounds(2)	PP is primarily used to manufacture fibers for carpets, rugs and upholstery; housewares; medical products; automotive interior trim, fascia, running boards, battery cases, and bumpers; toys and sporting goods; fishing tackle boxes; and bottle caps and closures
HDPE	3.3 billion pounds	HDPE is used to manufacture grocery, merchandise and trash bags; food containers for items from frozen desserts to margarine; plastic caps and closures; liners for boxes of cereal and crackers; plastic drink cups and toys; dairy crates; bread trays; pails for items from paint to fresh fruits and vegetables; safety equipment, such as hard hats; house wrap for insulation; bottles for household and industrial chemicals and motor oil; milk, water, and juice bottles; large (rotomolded) tanks for storing liquids such as agricultural and lawn care chemicals; and pipe
LDPE	1.3 billion pounds	LDPE is used to manufacture food packaging films; plastic bottles for packaging food and personal care items; dry cleaning bags; ice bags; pallet shrink wrap; heavy-duty bags for mulch and potting soil; boil-in-bags ; coatings on flexible packaging products; and coatings on paper board such as milk cartons. Ethylene vinyl acetate is a specialized form of LDPE used in foamed sheets, bag-in-box bags, vacuum cleaner hoses, medical tubing, clear sheet protectors and flexible binders

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Product	Annual Capacity	Primary Uses
LLDPE	1.3 billion pounds	LLDPE is used to manufacture garbage and lawn-leaf bags; industrial can liners; housewares; lids for coffee cans and margarine tubs; dishpans, home plastic storage containers, and kitchen trash containers; large (rotomolded) toys like outdoor gym sets; drip irrigation tubing; insulating resins and compounds used to insulate copper and fiber optic wiring; shrink wrap for multi-packaging canned food, bag-in-box bags, produce bags, and pallet stretch wrap
Specialty Polyolefins:		
Catalloy process resins	600 million pounds	*Catalloy* process resins are used primarily in modifying polymer properties in film applications and molded products; for specialty films, geomembranes, and roofing materials; in bitumen modification for roofing and asphalt applications; and to manufacture automotive bumpers
Ethylene Derivatives:		
Ethanol	50 million gallons	Ethanol is used as a fuel and a fuel additive and in the production of solvents as well as household, medicinal and personal care products

(1) Includes (i) refinery-grade material from the Houston Refinery and (ii) 1 billion pounds per year of capacity from the product flex unit at the Channelview facility, which can convert ethylene and other light petrochemicals into propylene.

(2) Includes 100% of 1.31 billion pounds of capacity of our Indelpro joint venture (described below).

See Description of Properties for the locations where we produce the primary products of our O&P Americas segment. Annual processing capacity as of December 31, 2010 was calculated by estimating the average number of days in a typical year that a production unit of a plant is expected to operate, after allowing for downtime for regular maintenance, and multiplying that number by an amount equal to the unit s optimal daily output based on the design raw material mix. Because the processing capacity of a production unit is an estimated amount, actual production volumes may be more or less than the capacities set forth below. Capacities shown include 100% of the capacity of joint venture facilities.

Sales & Marketing / Customers

In 2010, no single external O&P Americas segment customer accounted for 10% or more of our total revenues.

We currently produce ethylene at five sites in the U.S. Our ethylene production in the U.S. generally is consumed internally as a raw material in the production of polymers and other derivatives, or is shipped by pipeline to customers. In North America, we are a net seller of ethylene.

We currently produce propylene at six sites in the U.S., which includes production from the Houston Refinery s fluid catalytic cracker coproduct stream. We use propylene as a raw material for production of PO, PP, and other derivatives. The propylene production within the U.S. that is not consumed internally is generally sold under multi-year contracts. In North America, we are a net seller of propylene.

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We have butadiene and aromatics (benzene and toluene) production capabilities at two sites in the U.S. We generally sell our butadiene under multi-year contracts. We use the benzene as a raw material for production of styrene. In the U.S., we are a net purchaser of benzene. Our Refining & Oxyfuels business uses the toluene to blend into gasoline. Of the toluene production that is not consumed internally, a majority is sold on a spot basis.

We at times purchase ethylene, propylene, benzene and butadiene for resale, when necessary, to satisfy customer demand for these products above production levels. Volumes of ethylene, propylene, benzene and butadiene purchased for resale can vary significantly from period to period. However, purchased volumes have not historically had a significant impact on profits.

In the U.S., most of the ethylene and propylene production of our Channelview, Corpus Christi and La Porte facilities is shipped via a pipeline system, which has connections to numerous U.S. Gulf Coast consumers. This pipeline system, some of which is owned and some of which is leased, extends from Corpus Christi to Mont Belvieu to Port Arthur, Texas, as well as into the Lake Charles, Louisiana area. In addition, exchange agreements with other ethylene and co-products producers allow access to customers who are not directly connected to this pipeline system. Some ethylene is shipped by rail car from Clinton, Iowa to Morris, Illinois and also to customers. A pipeline owned and operated by an unrelated party is used to transport ethylene from Morris, Illinois to Tuscola, Illinois and is used as a raw material in the production of ethanol. Some propylene is shipped by ocean going vessel. Butadiene, benzene, toluene and other products are distributed by pipeline, rail car, truck, barge or ocean going vessel.

We produce PP at three sites in North America, one of which is owned by our Mexican joint venture, and one site in South America. We manufacture PE using a variety of technologies at six sites in the U.S. Our PP and PE production is typically sold to an extensive base of established customers under annual contracts or under customary terms and conditions without formal contracts. We also sell PP into our PP compounds business, which is managed worldwide by our O&P EAI segment. We also have a facility in Ohio that produces performance polymer products, which include enhanced grades of PE. We believe that, over a business cycle, average selling prices and profit margins for specialty polymers tend to be higher than average selling prices and profit margins for higher-volume commodity PEs.

The majority of our polyolefin products sold in North America are sold through our sales organization. We have regional sales offices in various locations throughout the U.S. Polyolefins primarily are distributed in North America by rail car or truck.

Joint Venture Relationships

The following table describes our O&P Americas segment s significant manufacturing joint venture relationships.

Name	Location	Other Parties	LyondellBasell Ownership	Product	2010 Capacity (In millions of pounds)
Indelpro	Mexico	Alfa S.A.B. de C.V.	49 %	PP	1,310(1)

(1) Represents the joint venture s total capacity and not our proportional capacity.

Indelpro s output is marketed by the joint venture. Indelpro s annual capacity includes 770 million pounds produced from our *Spherizone* process technology. We receive equity distributions and revenues from technology licensing and catalyst sales from the joint venture. Further, we believe the geographic diversification provides benefits to our

Company.

We also have a limited partnership with respect to our LaPorte, Texas olefin facility. The partnership produces ethylene and propylene. Our partner s partnership interest entitles it to 500 million pounds of propylene annually. Our partnership interest entitles us to receive all remaining ethylene and propylene production, as well as other products produced.

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Raw Materials

Raw material cost is the largest component of the total cost for the production of ethylene and its co-products. The primary raw materials used are heavy liquids and natural gas liquids (NGLs). Heavy liquids include crude oil-based naphtha and gas oil, as well as condensate, a very light crude oil resulting from natural gas production (collectively referred to as heavy liquids). NGLs include ethane, propane and butane. The use of heavy liquid raw materials results in the production of a significant amount of co-products such as propylene, butadiene, benzene and toluene, as well as gasoline blending components, while the use of NGLs results in the production of a smaller amount of co-products.

Historically, facilities using heavy liquids as feedstock have generated higher margins than those using ethane. However, in recent years ethane has had a cost advantage for use as feedstock based on higher crude oil prices relative to NGLs. As a result, a plant s flexibility to consume a wide range of raw materials generally will provide an advantage over plants that are restricted in processing capabilities over a number of years. We have the capability to process significant quantities of either heavy liquids or NGLs. We estimate that in the U.S. we can process between 35% and 85% NGLs. Changes in the raw material feedstock will result in variances in production capacities among products. We believe our raw material flexibility in the U.S. is a key advantage in the production of ethylene and its co-products.

We source our heavy liquids requirements worldwide via a mix of contractual and spot arrangements. Spot market purchases are made in order to maintain raw material flexibility and to take advantage of raw material pricing opportunities. We purchase NGL requirements via long term and spot contractual arrangements from a variety of sources. A portion of the heavy liquids requirements for ethylene production are also obtained from our Refining & Oxyfuels segment. Heavy liquids generally are delivered by ship or barge, and NGLs are generally delivered via pipeline.

In North America, we also purchase large amounts of natural gas to be used for consumption (not as a raw material) in our business via market-based contractual arrangements with a variety of sources.

The principal raw materials used by our polyolefin business are ethylene and propylene. During 2010, our North American ethylene and propylene production exceeded the North American raw material requirements of the polyolefin business of our O&P Americas segment. However, not all raw material requirements for ethylene and propylene in this region are sourced internally. Our Mexican joint venture, Indelpro, receives the majority of its chemical grade and refinery grade propylene needs from Pemex, the state owned oil company of Mexico, under a long-term contract. We purchase ethylene and propylene on a spot and contract basis to meet our internal and external demands as needed.

The raw materials for polyolefins and *Catalloy* process resins are, in general, commodity chemicals with numerous bulk suppliers and ready availability at competitive prices.

Industry Dynamics / Competition

With respect to olefins and polyolefins, competition is based on price, product quality, product delivery, reliability of supply, product performance and customer service. Industry consolidation in North America has led to fewer, although larger, competitors. Profitability is affected not only by supply and demand for olefins and polyolefins, but also by raw material costs and price competition among producers. Price competition may intensify due to, among other things, the addition of new capacity. In general, demand is a function of worldwide economic growth, which fluctuates. It is not possible to accurately predict the changes in raw material costs, market conditions, capacity utilization and other factors that will affect industry profitability in the future.

Based on published rated production capacities, we were the second largest producer of ethylene in North America as of December 31, 2010. North American ethylene rated capacity at December 31, 2010 was approximately 72 billion pounds per year, with approximately 84% of that North American capacity located along the Gulf Coast. At December 31, 2010, our ethylene rated capacity in the U.S. was approximately 9.6 billion pounds per year, or approximately 13% of total North American ethylene production capacity.

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We compete in North America with other large marketers and producers for sales of ethylene and its co-products such as Dow, ExxonMobil, International Petroleum Investment Company (IPIC), Shell, INEOS, ChevronPhillips, TPC Group and others.

Based on published data regarding PP capacity, we believe that, including our proportionate share of the Indelpro joint venture, we are the largest producer of PP in North America as of December 31, 2010, with a proportionate share capacity of 3.3 billion pounds, or approximately 17% of the total North American capacity. Our largest competitors for sales of PP in North America are ExxonMobil, Total, Braskem, Formosa Plastics and INEOS.

With respect to PE, we believe that we are the third largest producer in North America as of December 31, 2010, with 5.8 billion pounds per year of capacity, or approximately 13% of North American capacity. Our largest competitors for sales of PE in North America are Dow, ExxonMobil, IPIC, Chevron Phillips, INEOS and Westlake.

Olefins and Polyolefins Europe, Asia, International Segment

Overview

Our O&P EAI segment produces and markets olefins (ethylene and ethylene co-products) and polyolefins. We are the largest producer of PP and PE in Europe and the largest worldwide producer of PP compounds. We also produce significant quantities of other specialty products such as *Catalloy* process resins and PB-1. Our O&P EAI segment manages our worldwide PP compound business (including our facilities in North and South America), our worldwide PB-1 business, and our *Catalloy* process resins produced in Europe and Asia. We have eight joint ventures located principally in regions with access to low cost feedstocks or access to growing markets. In 2010, our O&P EAI segment generated operating revenues of $12.5 billion (excluding inter-segment revenue).

We currently produce ethylene, propylene and co-products at three sites in Europe and one joint venture site in the Middle East. Butadiene is an important co-product of this production. We produce polyolefins (PP and PE) at 19 facilities in the EAI region, including 10 facilities located in Europe, four facilities located in East Asia, three facilities located in the Middle East and two facilities located in Australia. Our joint ventures own one of the facilities in Europe, four of the facilities in East Asia and three in the Middle East.

PP compounds consist of specialty products produced from blends of polyolefins and additives and are sold mainly to the automotive and white goods industries. We manufacture PP compounds at 15 facilities worldwide (a number of which are the same facilities as the polyolefin facilities described above), consisting of four facilities in Europe, five facilities in East Asia, three in North America, two in South America and one facility in Australia.

We produce *Catalloy* process resins at two sites in the EAI region, including one in The Netherlands and one in Italy. The process is proprietary technology that is not licensed to third parties, and as a result, we are the only manufacturer of *Catalloy* process resins.

We produce PB-1 at one facility in Europe. We believe that we are the largest worldwide producer of PB-1, a family of flexible, strong and durable butene-based polymers. A majority of the current PB-1 we produce is used in pipe applications and for under-floor heating and thermo sanitary systems. PB-1 is being developed to target new opportunities in applications such as easy-open packaging (seal-peel film), construction, fibers and fabrics, compounds, adhesives and coatings.

The following table outlines:

- the primary products of our O&P EAI segment;

annual processing capacity as of December 31, 2010, unless otherwise noted; and

the primary uses for those products.

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Product	Annual Capacity	Primary Uses
Olefins		
Ethylene	6.4 billion pounds(1)	Ethylene is used as a raw material to manufacture polyethylene, EO, ethanol, ethylene dichloride, styrene and VAM
Propylene	5.4 billion pounds(1)(2)	Propylene is used to produce PP, acrylonitrile and PO
Butadiene	550 million pounds(1)	Butadiene is used to manufacture styrene-butadiene rubber and polybutadiene rubber, which are used in the manufacture of tires, hoses, gaskets and other rubber products. Butadiene is also used in the production of paints, adhesives, nylon clothing, carpets, paper coatings and engineered plastics
Polyolefins:		
PP	12.4 billion pounds(3)(4)	PP is primarily used to manufacture fibers for carpets, rugs and upholstery; housewares; medical products; automotive interior trim, fascia, running boards, battery cases, and bumpers; toys and sporting goods; fishing tackle boxes; and bottle caps and closures
HDPE	4.4 billion pounds(4)(5)	HDPE is used to manufacture grocery, merchandise and trash bags; food containers for items from frozen desserts to margarine; plastic caps and closures; liners for boxes of cereal and crackers; plastic drink cups and toys; dairy crates; bread trays; pails for items from paint to fresh fruits and vegetables; safety equipment, such as hard hats; house wrap for insulation; bottles for household and industrial chemicals and motor oil; milk, water, and juice bottles; large (rotomolded) tanks for storing liquids such as agricultural and lawn care chemicals; and pipe
LDPE	2.8 billion pounds(4)(6)	LDPE is used to manufacture food packaging films; plastic bottles for packaging food and personal care items; dry cleaning bags; ice bags; pallet shrink wrap; heavy-duty bags for mulch and potting soil; boil-in-bag bags; coatings on flexible packaging products; and coatings on paper board such as milk cartons. Ethylene vinyl acetate is a

	specialized form of LDPE used in foamed sheets, bag-in-box bags, vacuum cleaner hoses, medical tubing, clear sheet protectors and flexible binders

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Product	Annual Capacity	Primary Uses
Specialty Polyolefins:		
PP compounds	2.4 billion pounds(7)	PP compounds are used to manufacture automotive interior and exterior trims, dashboards, bumpers and under-hood applications; base material for products and parts used in appliances; anti-corrosion coatings for steel piping, wire and cable
Catalloy process resins	600 million pounds	*Catalloy* process resins are used primarily in modifying polymer properties in film applications and molded products; for specialty films, geomembranes, and roofing materials; in bitumen modification for roofing and asphalt applications; and to manufacture automotive bumpers
PB-1 resins	110 million pounds	PB-1 resins are used in flexible pipes, resins for seal-peel film, film modification, hot melt and polyolefin modification applications, consumer packaging and adhesives

(1) Includes 100% of olefin capacity of SEPC (described below) of which we own 25%, which includes 2.2 billion pounds of ethylene and 630 million pounds of propylene.

(2) Includes (i) refinery-grade material from our French refinery; (ii) 100% of the 1.015 billion pounds of capacity of the propane dehydrogenation (PDH) plant owned by SPC (described below) of which we own 25%; and (iii) 1.015 billion pounds of capacity from the Al-Waha joint venture (described below), of which we currently own 21%. Excludes 660 million pounds of capacity of HMC (described below) that came on line in late 2010.

(3) Includes: (i) 100% of the 1.59 billion pounds of capacity at SPC; (ii) 100% of the 800 million pounds of capacity of SunAllomer (described below) of which we own 50%; (iii) 100% of the 880 million pounds of capacity of BOP (described below) of which we own 50%; (iv) 100% of the 990 million pounds of capacity of HMC (described below) of which we own 29%, but does not include 600 million pounds of expansion capacity that came on line in late 2010; (v) 100% of the 1.545 billion pounds of capacity of PolyMirae (described below) of which we own 42%; and (vi) 100% of the 990 million pounds of capacity at Al Waha. Excludes all capacity at our Terni, Italy location, where production ceased in July 2010.

(4) Includes 100% of 880 million pounds of LDPE capacity and 880 million pounds of HDPE capacity from SEPC.

(5) Includes 100% of the 705 million pounds of capacity of BOP. Also includes 705 million pounds of capacity at a site in Münchsmünster, Germany that was rebuilt following a fire in 2005 and started up in August 2010

(6) Includes 100% of the 240 million pounds of capacity of BOP.

(7) Includes 100% of the 165 million pounds of capacity of PolyPacific Pty (described below) of which we own 50% and 110 million pounds of capacity of SunAllomer.

See Description of Properties for the locations where we produce the primary products of our O&P EAI segment. Annual processing capacity as of December 31, 2010 was calculated by estimating the average number of days in a typical year that a production unit of a plant is expected to operate, after allowing for downtime for regular maintenance, and multiplying that number by an amount equal to the unit s optimal daily output based on the design raw material mix. Because the processing capacity of a production unit is an

estimated amount, actual production volumes may be more or less than the capacities set forth below. Capacities shown include 100% of the capacity of joint venture facilities.

Sales & Marketing / Customers

In 2010, no single external O&P EAI segment customer accounted for 10% or more of our total revenues.

We currently produce ethylene at one site in France, two sites in Germany, and one joint venture site in the Middle East. Our ethylene production is generally consumed internally as a raw material in the production of polymers. In Western Europe, we are essentially balanced in our ethylene supply and demand.

We currently produce propylene at two sites in France, two sites in Germany and the three joint venture sites in the Middle East. We use propylene as a raw material for production of PO and PP. In Europe, we are a net purchaser of propylene.

We currently produce butadiene at one site in France and one site in Germany. We generally sell our butadiene under multi-year contracts.

We at times purchase ethylene, propylene, benzene and butadiene for resale, when necessary, to satisfy customer demand for these products above production levels. Volumes of ethylene, propylene, benzene and butadiene purchased for resale can vary significantly from period to period. However, purchased volumes have not historically had a significant impact on profits.

European ethylene and propylene production is generally either fully integrated with, or is transported via pipeline to, our PE and PP facilities in Europe.

We produce PP at nine sites in Europe, four sites in East Asia, two sites in Australia and two sites in the Middle East. All of the sites in East Asia and the Middle East and one of the sites in Europe (Poland) are owned by joint ventures.

We manufacture PE at five sites in Europe, including one joint venture facility in Poland, and one joint venture site in the Middle East.

With respect to PP and PE, our production is typically sold to an extensive base of established customers under annual contracts or under customary terms and conditions without formal contracts. We believe that, over a business cycle, average selling prices and profit margins for specialty polymers tend to be higher than average selling prices and profit margins for higher-volume commodity PPs.

For the O&P EAI segment, we typically have marketing arrangements with our joint venture partners to sell and market PP and PE outside the country where such a joint venture facility is located.

Polyolefins primarily are distributed in Europe by rail car or truck.

We and our joint ventures manufacture PP compounds at five sites in East Asia (two of which are owned by joint ventures), four sites in Europe, three sites in North America, two sites in South America and one joint venture site in Australia. We manufacture *Catalloy* process resins at one facility in Italy and one facility in The Netherlands. We also manufacture PB-1 at the facility in The Netherlands.

Our regional sales offices are located in various locations, including The Netherlands; Hong Kong, China; India; and United Arab Emirates. We also operate through a worldwide network of local sales and representative offices in

Europe, Asia and Africa. Our joint ventures typically manage their domestic sales and marketing efforts independently, and we typically operate as their agent/distributor for exports.

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Joint Venture Relationships

The following table describes our O&P EAI segment s significant manufacturing joint venture relationships.

Name	Location	Other Parties	LyondellBasell Ownership	Product	2010 Capacity(1) (In millions of pounds)
SPC	Al-Jubail Industrial City, Saudi Arabia	Tasnee	25%	PP	1,590
				Propylene	1,015
SEPC	Al-Jubail Industrial City, Saudi Arabia	Tasnee, Sahara Petrochemical Company	25%	Ethylene	2,200
				Propylene	630
				HDPE	880
				LDPE	880
Al-Waha	Al-Jubail Industrial City, Saudi Arabia	Sahara Petrochemical Company and others	21%(2)	PP	990
				Propylene	1,015
HMC	Thailand	PTT and others	29%	PP	990
Basell Orlen Polyolefins	Poland	Orlen	50%	PP	880
				HDPE	705
				LDPE	240
PolyPacific	Australia, Malaysia	Mirlex Pty.	50%	PP Compounding	165
SunAllomer	Japan	Showa Denko, Nippon Oil	50%	PP	940
				PP Compounding	110
Polymirae	South Korea	Dailem, SunAllomer	42%(3)	PP	1,540

(1) Represents the joint venture s total capacity and not our proportional capacity.

(2) Reflects our current ownership percentage. Assuming the joint venture pays dividends over time, we anticipate our ownership will increase to a maximum of 25%.

(3) Reflects our 35% direct ownership and 7% indirect ownership through SunAllomer.

These joint ventures provide us with additional income streams from cash dividends, licensing revenues, catalyst sales and marketing fees from selling joint venture products, as well as geographical diversification and access to local market skills and expertise. We generally license our polyolefin process technologies and supply catalysts to our joint ventures. Some of our joint ventures source cost advantaged raw materials from their local shareholders.

We market approximately 70% of the PP produced annually by SPC and are currently the exclusive marketer for the PP produced by Al-Waha that is sold outside of Saudi Arabia. We also market all of BOP s PP, HPDE and LDPE sales outside of Poland. Our PolyPacific Pty. Joint venture markets all of its PP compounds production, and we market a portion of the PP produced by SunAllomer.

Raw Materials

Raw material cost is the largest component of the total cost for the production of ethylene and its co-products. The primary raw materials used in our European olefin facilities are heavy liquids and, for our Saudi joint venture facilities, NGLs, including include ethane, propane and butane. The principal raw materials used by our polyolefin and *Catalloy* process resins businesses are propylene and ethylene. In Western Europe, we have the capacity to produce approximately 50% of the propylene requirements of our European PP business and nearly 90% of the ethylene requirements of our European PE business. European propylene and ethylene requirements that are not produced internally generally are purchased pursuant to long-term contracts with third-party suppliers and are delivered via pipeline. Prices under these third-party contracts are market related and are negotiated monthly, and are generally based on published market indicators, normally with discounts.

In our wholly owned operations in Australia, greater than 90% of our propylene normally comes from third-party refinery grade propylene purchased under long-term contracts linked to Saudi or Singapore fuel markers and is processed at our integrated splitters located on each manufacturing site. Some of our EAI joint

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ventures receive propylene from their local shareholders under long-term contracts. The remaining supply for the joint ventures is purchased from local suppliers under long-term contracts and some spot purchases. Our Saudi joint ventures, Al-Waha, SEPC and SPC, produce their own olefins utilizing cost advantaged Saudi Arabian propane and ethane.

The raw materials for polyolefins are, in general, commodity chemicals with numerous bulk suppliers and ready availability at competitive prices.

A significant portion of the raw materials for our PP compounds are PP and other polymers (primarily *Catalloy* process resins). Our PP compounding facilities generally receive their PP and other polymers from one of our wholly owned or joint venture facilities via truck or rail car. In addition, there are four sites (two in Europe, one in North America and one in South America) that have both PP and PP compounding operations co-located, thereby minimizing product handling. PB-1 raw materials are sourced solely from external supply.

Industry Dynamics / Competition

Our ethylene rated capacity in Western Europe at December 31, 2010 was approximately 4.2 billion pounds per year, or approximately 8% of the 53 billion pounds per year of total Western Europe ethylene production capacity. Based on these published rated production capacities, we are the seventh largest producer of ethylene in Western Europe. In Western Europe, key ethylene competitors include INEOS, Dow, Polimeri Europa, Total, SABIC, Shell, BASF and ExxonMobil.

Based on published data regarding PP capacity, we believe that we are the largest producer of PP in Western Europe as of December 31, 2010, with 5.7 billion pounds per year of capacity, or approximately 25% of the Western European capacity for PP. Our largest competitors for sales of PP are Polimeri Europa, Total, SABIC, INEOS and Dow.

Based on published data regarding PE capacity, we believe that we are the largest producer of PE in Western Europe as of December 31, 2010, with 5.5 billion pounds per year of capacity, or approximately 16% of HDPE and LDPE Western European capacity. Our largest competitors for sales of PE are ExxonMobil, Dow, INEOS, SABIC, Total, Polimeri Europe, and Repsol.

We believe we are the largest PP compounds producer in the world with 2.3 billion pounds (which includes our proportionate share of joint ventures) of installed annual capacity as of December 31, 2010. Approximately 54% of our PP compounding capacity is in Europe, 20% is in North America, and 26% is in the rest of the world (including the capacity of our joint ventures). Our competitors for sales of PP compounds are Borealis, ExxonMobil, King Fa, Mitsubishi, Mitsui , SABIC, Sumitomo Chemical Co., Ltd., Washington Penn and many other independent companies.

Our 110 million pound PB-1 capacity competes with polybutene producers, of which Mitsui is the largest, and other polymers, plastomers and elastomers.

Intermediates and Derivatives Segment

Overview

Our I&D segment produces and markets PO and its co-products and derivatives; acetyls; and ethylene oxide and its derivatives. PO co-products include SM and C_4 chemicals (TBA, oxyfuels (which is managed in the Refining & Oxyfuels segment), isobutylene and TBHP). PO derivatives include PG, PGE and BDO. We believe that our

proprietary PO and acetyls production process technologies provide us with a cost advantaged position for these products and their derivatives. In 2010, our I&D segment generated $5.5 billion of revenues (excluding inter-segment revenue).

We produce PO through two distinct technologies based on indirect oxidation processes that yield co-products. One process yields TBA as the co-product; the other process yields SM as the co-product. The two technologies are mutually exclusive, necessitating that a manufacturing facility be dedicated either to PO/TBA or to PO/SM. Isobutylene and TBHP are derivatives of TBA. MTBE and ETBE are derivatives of isobutylene and are gasoline blending components reported in our Refining & Oxyfuels segment. PG, PGE and BDO are

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derivatives of PO. PG collectively refers to mono-propylene glycol (MPG), which is PG meeting U.S. pharmacopeia standards, and several grades of dipropylene glycol (DPG) and tri-propylene glycol (TPG).

The following table outlines:

the primary products of our I&D segment;

annual processing capacity as of December 31, 2010, unless otherwise noted; and

the primary uses for those products.

Product	Annual Capacity	Primary Uses
Propylene Oxide (PO)	5.2 billion pounds(1)	PO is a key component of polyols, PG, PGE and BDO
PO Co-Products:		
Styrene Monomer (SM)	6.4 billion pounds(2)	SM is used to produce plastics, such as expandable polystyrene for packaging, foam cups and containers, insulation products and durables and engineering resins
TBA Derivative Isobutylene	1.4 billion pounds(3)	Isobutylene is a derivative of TBA used in the manufacture of synthetic rubber as well as fuel and lubricant additives, such as MTBE and ETBE
PO Derivatives:		
Propylene Glycol (PG)	1.2 billion pounds(4)	PG is used to produce unsaturated polyester resins for bathroom fixtures and boat hulls; antifreeze, coolants and aircraft deicers; and cosmetics and cleaners
Propylene Glycol Ethers (PGE)	545 million pounds(5)	PGE are used as solvents for paints, coatings, cleaners and a variety of electronics applications
Butanediol (BDO)	395 million pounds	BDO is used in the manufacture of engineering resins, films, personal care products, pharmaceuticals, coatings, solvents and adhesives
Acetyls:		
Methanol	190 million gallons(6)	Methanol is a raw material used to produce acetic acid, MTBE, formaldehyde and several other products
Acetic Acid	1.2 billion pounds	Acetic acid is a raw material used to produce VAM, terephthalic acid (used to produce polyester for textiles and plastic bottles), industrial solvents and a variety of other chemicals
Vinyl Acetate Monomer (VAM)	700 million pounds	VAM is used to produce a variety of polymers, products used in adhesives, water-based paint, textile coatings and paper coatings
Ethylene Derivatives:		
Ethylene Oxide (EO)	800 million pounds EO equivalents; 400	EO is used to produce surfactants, industrial cleaners, cosmetics, emulsifiers, paint, heat transfer fluids and ethylene glycol

	million pounds as pure EO	
Ethylene Glycol (EG)	700 million pounds	EG is used to produce polyester fibers and film, polyethylene terephthalate resin, heat transfer fluids and automobile antifreeze
Ethylene Glycol Ethers	225 million pounds	Ethylene glycol ethers are used to produce paint and coatings, polishes, solvents and chemical intermediates
Other:		
Flavor and Fragrance Chemicals(7)		Flavor and fragrance chemicals include terpene-based fragrance ingredients and flavor ingredients, primarily for the oral care markets, and also include products used in applications such as chemical reaction agents, or initiators, for the rubber industry and solvents and cleaners, such as pine oil, for the hard surface cleaner markets

(1) Includes (i) 100% of the 385 million pounds of capacity of Nihon Oxirane (described below) of which we own 40%; (ii) 1.5 billion pounds of capacity that represents Bayer Corporation s (Bayer) share of PO production from the Channelview PO/SM I plant and the Bayport, Texas PO/TBA plants under the U.S.

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PO Joint Venture (described below); (iii) 100% of the 690 million pounds of capacity of the Maasvlakte PO/SM plant owned by the European PO Joint Venture, as to which Bayer has the right to 50% of the production; and (iv) 100% of the 600 million pounds of capacity of Ningbo ZRCC (described below) of which we own 27%.

(2) Includes (i) approximately 700 million pounds of SM production from the Channelview PO/SM II plant that is committed to unrelated equity investors under processing agreements; (ii) 100% of the 830 million pounds of capacity of Nihon Oxirane; (iii) 100% of the 1.5 billion pounds of capacity of the Maasvlakte PO/SM plant; and (iv) 1.3 billion pounds of capacity from Ningbo ZRCC.

(3) Represents total high-purity isobutylene capacity and purified isobutylene capacity.

(4) PG capacity includes 100% of the approximately 220 million pounds of capacity of Nihon Oxirane. The capacity stated is MPG capacity. Smaller quantities of DPG and TPG are co-produced with MPG.

(5) Includes 100% of the 110 million pounds associated with a tolling arrangement with Shiny Chemical Co., Ltd. (Shiny).

(6) Represents 100% of the methanol capacity at the La Porte, Texas facility, which is owned by La Porte Methanol Company, a partnership owned 85% by us.

(7) The Flavor and Fragrance chemicals business was sold in December 2010.

See Description of Properties for the locations where we produce the primary products of our I&D segment. Annual processing capacity as of December 31, 2010 was calculated by estimating the average number of days in a typical year that a production unit of a plant is expected to operate, after allowing for downtime for regular maintenance, and multiplying that number by an amount equal to the unit s optimal daily output based on the design raw material mix. Because the processing capacity of a production unit is an estimated amount, actual production volumes may be more or less than the capacities set forth below. Except as indicated, capacities shown include 100% of the capacity of joint venture facilities.

Sales & Marketing / Customers

In 2010, no single I&D segment customer accounted for 10% or more of our total revenues.

We estimate, based in part on published data, that worldwide demand for PO was approximately 15.1 billion pounds in 2010. More than 75% of that volume was consumed in the manufacture of three families of PO derivative products: polyols, glycols and glycol ethers. The remainder was consumed in the manufacture of performance products, including BDO and its derivatives.

We produce and deliver our PO and PO co-products through sales agreements, processing agreements and spot sales as well as product exchanges. We have a number of multi-year processing (or tolling) and sales agreements. In addition, Bayer s ownership interest in the U.S. PO Joint Venture, which operates four of the U.S. operating units, represents ownership of an in-kind portion of the PO production. Bayer also has the right to 50% of the production of one of the facilities in The Netherlands. Our PO derivatives are sold through market-based sales contracts and spot sales. PO sold in the merchant market accounted for less than 10% of our total revenues in 2010.

Production levels at the PO/SM and PO/TBA co-product facilities are primarily determined by the demand for PO and PO derivatives. As a result, production levels of SM and TBA and its derivatives, isobutylene, TBHP, MTBE, and ETBE is based primarily on the demand for PO and PO derivatives and secondarily on the relative market demand for

the co-products and the operational flexibility of our facilities in meeting this demand. MTBE and ETBE our reported in our Refining & Oxyfuels segment.

Based on published data, worldwide demand for SM in 2010 is estimated to have been approximately 56 billion pounds. SM accounted for less than 10% of our total revenues in 2010. We sell most of our SM production into the North American and European merchant markets and to Asian and South American export markets through long-term sales contracts and processing agreements.

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We purchase SM for resale, when necessary, to satisfy customer demand above production levels. Volumes of SM purchases made for resale can vary significantly from period to period. However, purchased volumes have not historically had a significant impact on profits.

Our I&D segment converts most of its TBA, which is produced as a co-product to the PO process, to isobutylene and sells some of the TBA into the market. Over half of the isobutylene from the I&D segment is reacted with methanol or ethanol to produce MTBE and ETBE, which is marketed by the Refining & Oxyfuels segment. The remaining isobutylene is sold as high purity and purity grade isobutylene by the I&D segment. Isobutylene sales accounted for less than 10% of our total revenues in 2010.

Sales of our PO, its co-products, and its derivatives are made by us, Nihon Oxirane (a joint venture of which we own 40%) and their affiliates directly, and through distributors and independent agents located in the Americas, Europe, the Middle East, Africa and the Asia Pacific region. We have centralized certain sales and order fulfillment functions in regional customer service centers located in Houston, Texas; Rotterdam, The Netherlands; and Hong Kong, China. PO, PG and SM are transported by barge, ocean going vessel, pipeline, rail car and tank truck. BDO is primarily transported by tank truck and rail car.

Acetic acid and VAM are manufactured at a facility in La Porte, Texas, and are consumed internally, sold worldwide generally under multi-year contracts and sold on a spot basis. Acetic acid and VAM are shipped by barge, ocean going vessel, pipeline, rail car and tank truck. We have bulk storage arrangements in Europe and South America to serve our customers requirements in those regions. Sales are made through a direct sales force, agents and distributors. Sales of acetyls, including acetic acid and VAM, collectively accounted for less than 10% of our total revenues in 2010.

We estimate, based on published data, that worldwide demand in 2010 for acetic acid and VAM was 23.3 billion pounds and 11.4 billion pounds, respectively.

Methanol is produced at a La Porte, Texas facility owned by La Porte Methanol Company, our 85% owned joint venture with Linde. Each party to the joint venture receives its respective share of the methanol production. Our acetyls business uses the methanol as a raw material for acetic acid and also sells the methanol under annual contracts and on a spot basis to large U.S. customers. The product is shipped by barge and pipeline.

Ethylene oxide (EO) or EO equivalents, and EO s primary derivative, ethylene glycol (EG), are produced at a wholly owned facility located in Bayport, Texas. The Bayport facility also produces other derivatives of EO, principally glycol ethers.

EO and EG typically are sold under multi-year contracts, with market-based pricing. Glycol ethers and ethanolamines are sold primarily into the solvent and distributor markets at market prices. EO is shipped by rail car, and its derivatives are shipped by rail car, truck, isotank or ocean-going vessel. EO and EG sales accounted for less than 10% of our total revenues in 2010.

The vast majority of the ethylene derivative products are sold in North America and Asia, primarily through our sales organizations.

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Joint Venture Relationships

The following table describes our I&D segment s significant manufacturing joint venture relationships.

Name	Location	Other Parties	LyondellBasell Ownership	Product	2010 Capacity (1) (In millions of pounds)	
U.S. PO Joint Venture	Channelview, TX Bayport, TX	Bayer	(2)	Propylene Oxide	1,500	(3)
European PO Joint Venture	Rotterdam, The Netherlands	Bayer	50%	Propylene Oxide	690	
				Styrene Monomer	1,480	
PO/ SM II LP	Channelview, TX	IPIC & BASF	(2)	Styrene Monomer	700	(3)
Nihon Oxirane	Chiba, Japan	Sumitomo	40%	Propylene Oxide	385	
				Styrene Monomer	830	
				Propylene Glycol	220	
Ningbo ZRCC LCC Ltd.(4)	Ningbo, China	ZRCC	27%	Propylene Oxide	600	
				Styrene Monomer	1,300	
La Porte Methanol	La Porte, TX	Linde	85%	Methanol	190 million gallons	

(1) Unless otherwise noted, represents the joint venture s total capacity and not our proportional capacity.

(2) The parties rights in the joint ventures are based on off-takes, as opposed to ownership percentages.

(3) Amount of off-take by other parties in the joint venture.

(4) Start-up occurred in mid-2010.

Bayer s ownership interest in the U.S. PO Joint Venture represents its off-take of 1.5 billion pounds of the joint venture s PO production. We take, in-kind, the remaining PO production and all co-product (SM and TBA) production. Lyondell Chemical and Bayer have a separate joint venture, the PO Technology Joint Venture, through which Bayer was granted a non-exclusive and non-transferable right to use certain of our proprietary PO technology in the U.S. PO Joint Venture. Under the terms of operating and logistics agreements, we operate the U.S. PO Joint Venture plants and arrange and coordinate the logistics of PO delivery from the plants. We do not share marketing or product sales with Bayer under the U.S. PO Joint Venture.

Lyondell Chemical and Bayer also have a 50/50 joint venture, the European PO Joint Venture, for the ownership of the Maasvlakte PO/SM plant near Rotterdam, The Netherlands. Each party takes in-kind 50% of the PO and SM production of the European PO Joint Venture.

Lyondell Chemical s PO/SM II plant at the Channelview, Texas complex was created through a joint venture among Lyondell Chemical, BASF and IPIC. Lyondell Chemical retains a majority interest in the joint venture and is the operator of the plant. As of December 31, 2010, 700 million pounds of SM capacity was committed to BASF and IPIC under processing arrangements.

In addition to the Nihon Oxirane joint venture shown in the table above, we participate in marketing most of the PO capacity from a 440 million pound facility in Rabigh, Saudi Arabia owned by Sumitomo and Saudi Aramco, through NOC Asia Co. Ltd. in which we have a 40% equity interest.

We jointly market all of the PO manufactured by the Ningbo ZRCC joint venture.

We also have a multi-year processing agreement, entered into by Lyondell Chemical and Shiny, whereby we provide the raw materials used to produce PGE at Shiny s PGE plant in Tainan, Taiwan.

Raw Materials

The primary raw materials used for the production of PO and its co-products and derivatives are propylene, isobutane, mixed butane, ethylene and benzene. The market prices of these raw materials historically have been related to the price of crude oil, NGLs and natural gas, as well as market conditions for the raw materials. These raw materials are received in bulk quantities via pipeline or ocean going vessels.

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In the U.S., we obtain a large portion of our propylene, benzene and ethylene raw materials needed for the production of PO and its co-products and derivatives internally from our crackers. Raw materials for the non-U.S. production of PO and its co-products and derivatives primarily are obtained from unrelated parties. We consume a significant portion of our internally-produced PO in the production of PO derivatives.

We consume large volumes of mixed butane for the production of PO and its co-products and derivatives. We have invested in facilities, or entered into processing agreements with unrelated parties, to convert the widely available commodity, normal butane, to isobutane. We also are a large consumer of oxygen for our PO/TBA plants.

The cost of raw materials generally is the largest component of total production cost for PO and its co-products and derivatives. Generally, the raw material requirements for these businesses are purchased at market-based prices from numerous suppliers in the U.S. and Europe with which we have established contractual relationships, as well as in the spot market. The raw materials for these businesses are, in general, commodity chemicals with ready availability at competitive prices. Historically, raw material availability has not been an issue. However, in order to enhance reliability and competitiveness of prices and rates for supplies of raw materials, industrial gas and other utilities, we have long-term agreements and other arrangements for a substantial portion of our production requirements.

The primary raw materials required for the production of acetic acid are carbon monoxide and methanol. We purchase the carbon monoxide from Linde pursuant to a long-term contract under which pricing is based primarily on cost of production. La Porte Methanol Company, our 85%-owned joint venture, supplies all of the methanol requirements for acetyls production. Natural gas is the primary raw material required for the production of methanol.

In addition to ethylene, acetic acid is a primary raw material for the production of VAM. For the production of VAM, we obtain our entire requirements for acetic acid and ethylene from our internal production. In 2010, we used a large percentage of our acetic acid production to produce VAM.

Industry Dynamics / Competition

With respect to PO, its co-products and derivatives, competition is based on a variety of factors, including product quality and price, reliability of supply, technical support, customer service and potential substitute materials. Profitability is affected by the worldwide level of demand along with price competition, which may intensify due to, among other things, new industry capacity. It is expected that from 2011 to 2012, approximately 9% of the 2010 worldwide PO capacity will be added in China and Thailand. During the same period, average world demand is expected to grow by approximately 6%. However, demand is a function of worldwide economic growth, which fluctuates. The PO demand growth rate also could be impacted by further development of alternative bio-based PO derivatives. It is not possible to predict accurately the changes in raw material costs, market conditions and other factors that will affect industry profitability in the future.

Based on published data regarding PO capacity, we believe that, including our share of Nihon Oxirane, Ningbo ZRCC and the European PO Joint Venture, we are the second largest producer of PO worldwide, with approximately 19% of the total worldwide capacity for PO. Our major worldwide competitors for sales of PO and its derivatives are Dow and Shell.

Based on published data regarding SM capacity, we believe that we are one of the largest producers of SM worldwide, with approximately 5% of the total worldwide capacity for SM as of December 31, 2010. We compete worldwide for sales of SM with many marketers and producers, among which are BASF, Dow, INEOS, Shell and Total.

We believe that we are the fourth and sixth largest producer of acetic acid and VAM, respectively, each with approximately 4% and 5% of the total worldwide capacity as of December 31, 2010. Our primary competitors include

Celanese and BP for acetic acid and Celanese, Dow and DuPont for VAM.

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Refining & Oxyfuels Segment

Overview

Our Refining & Oxyfuels segment refines heavy, high-sulfur crude oil in the U.S. Gulf Coast, refines light and medium weight crude oil in southern France and produces gasoline blending components at several of our olefin and PO units. In 2010, our Refining & Oxyfuels segment generated operating revenues of $13.5 billion (excluding inter-segment revenue).

The Houston Refinery, which is located on the Houston Ship Channel in Houston, Texas, has a heavy, high-sulfur crude oil processing capacity of approximately 268,000 barrels per day on a calendar day basis (normal operating basis), or approximately 292,000 barrels per day on a stream day basis (maximum achievable over a 24 hour period). The Houston Refinery has a Nelson Complexity Index of 11.4. The Houston Refinery is a full conversion refinery designed to refine heavy, high-sulfur crude oil. This crude oil is more viscous and dense than traditional crude oil and contains higher concentrations of sulfur and heavy metals, making it more difficult to refine into gasoline and other high-value fuel products. However, this crude oil has historically been less costly to purchase than light, low-sulfur crude oil. Processing heavy, high-sulfur crude oil in significant quantities requires a refinery with extensive coking, catalytic cracking, hydrotreating and desulfurization capabilities, i.e., a complex refinery. The Houston Refinery s refined fuel products include gasoline (including blendstocks for oxygenate blending), jet fuel and ultra low sulfur diesel. The Houston Refinery s products also include heating oil, lube oils (industrial lubricants, white oils and process oils), carbon black oil, refinery-grade propylene, petrochemical raw materials, sulfur, residual fuel and petroleum coke.

The Berre Refinery is designed to run light to medium sulfur crude oil and has a current capacity of approximately 105,000 barrels per day. It produces naphtha, vacuum gas oil, liquefied petroleum gas, gasoline, aviation fuel, diesel, bitumen and heating oil. The Berre Refinery provides raw material and site integration for our operations in France and supports our polyolefin business in Europe. The Berre Refinery also provides us with access to significant logistics assets, including pipeline access, storage terminals and harbor access to the Mediterranean Sea. The Berre Refinery has a Nelson Complexity Index of 6.7.

The Refining & Oxyfuels segment also includes gasoline blending components such as MTBE, ETBE and alkylate. MTBE and ETBE are produced as co-products of the PO and olefin production process at four sites located in the United States, France and The Netherlands. In 2009, we converted one of our MTBE units at Channelview, Texas to ETBE production. We currently have three sites that can produce either MTBE or ETBE with a combined capacity to produce 59,000 barrels per day of MTBE or ETBE; the Company s total capacity for MTBE or ETBE production is 75,000 barrels per day. Alkylate is produced at one facility located in Texas.

The following table outlines:

- the primary products of our Refining & Oxyfuels segment;
- capacity as of December 31, 2010, unless otherwise noted; and
- the primary uses for those products.

See Description of Properties for the locations where we produce the primary products of our Refining & Oxyfuels segment.

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Key Products	Capacity(1)	Primary Uses
Houston Refinery:		
Gasoline and components	120,000 barrels per day	Automotive fuel
Ultra Low Sulfur Diesel	95,000 barrels per day	Diesel fuel for cars and trucks
Jet Fuel	25,000 barrels per day	Aviation fuel
Lube Oils	4,000 barrels per day	Industrial lube oils, railroad engine additives and white oils for food-grade applications
Berre Refinery:		
Diesel	42,000 barrels per day	Diesel fuel for cars and trucks
Cracker Feedstock	27,000 barrels per day	Raw material for Olefin unit
Fuel Oil	12,000 barrels per day	Heating fuel
Gasoline	8,000 barrels per day	Automotive fuel
Bitumen	7,000 barrels per day	Asphalt
Gasoline Blending Components:		
MTBE/ ETBE	75,000 barrels per day(2)	MTBE is a high octane gasoline blending component; ETBE is an alternative gasoline blending component based on agriculturally produced ethanol
Alkylate	22,000 barrels per day	Alkylate is a high octane gasoline blending component

(1) Only certain key products for the Houston Refinery and the Berre Refinery are identified. Thus, the sum of the capacities in this table will not equal either facility s total capacity.

(2) Represents total combined MTBE and ETBE capacity.

Sales & Marketing / Customers

In 2010, no single Refining & Oxyfuels segment customer accounted for 10% or more of our total revenues.

In the U.S., we market and sell gasoline (including blendstocks for oxygenate blending), jet fuel, heating oil, ultra low sulfur diesel fuel, lube oils, coke and sulfur produced at the Houston Refinery. These products are sold in large commodity markets. The Houston Refinery evaluates and determines its optimal product output mix, based on market prices and conditions. As a result, we are subject to various risks associated with selling commodity products.

Gasoline sales accounted for 9% of our total revenues in 2010. The Houston Refinery s products primarily are sold in bulk on the U.S. Gulf Coast to other refiners, marketers, distributors and wholesalers at market-related prices. Diesel fuel is produced to meet ultra low sulfur specifications for the on-road transportation market. Most of the Houston Refinery s products are sold under contracts with a term of one year or less or are sold in the spot market. The Houston Refinery s products generally are transported to customers via pipelines and terminals owned and operated by other parties. Products also are transported via rail car, barge, truck and ocean going vessel. In addition to sales of refined products produced by the Houston Refinery, we also sell refined products purchased or received on exchange from other parties. The exchange arrangements help optimize refinery supply operations and lower transportation costs. To meet market demands, we also from time to time purchase refined products manufactured by others for resale to our customers. However, purchased volumes have not historically had a significant impact on profitability.

In Europe, the Berre Refinery provides a significant portion of the raw materials requirements for our nearby steam cracker. The remaining products are sold into local markets under market-based sales agreements

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or in the spot market. Key customers of the Berre Refinery include other refiners, marketers and distributors, and its products are primarily transported via pipelines and other infrastructure assets owned by us.

MTBE and ETBE are derivatives of TBA, which is a co-product of the PO produced by our I&D segment. As described, production levels of the TBA derivatives MTBE and ETBE depend primarily on the demand for PO and PO derivatives and secondarily on the relative market demand for MTBE and ETBE and the operational flexibility of our multiple production facilities in meeting this demand. Separately, MTBE and alkylate are also produced as derivatives of the ethylene co-products produced by our O&P Americas segment. When necessary, we purchase MTBE for resale to satisfy customer demand for MTBE above our production levels. Volumes of MTBE purchased for resale can vary significantly from period to period. However, purchased volumes have not historically had a significant impact on profitability.

We sell our MTBE and ETBE production under market-based sales agreements and in the spot market. We blend our alkylate into gasoline and also sell alkylate under short-term contracts and in the spot market. Sales of MTBE and ETBE together, and alkylate each accounted for less than 10% of our total revenues in 2010.

Substantially all refiners and blenders have discontinued the use of MTBE in the U.S., partly as a result of governmental initiatives to increase use of bio-ethanol in gasoline and to reduce or effectively ban the use of MTBE. However, MTBE/ETBE demand for gasoline blending remains strong within most of the remaining worldwide market. Accordingly, we market MTBE and ETBE produced in the U.S. for use outside of the U.S. Our MTBE/ETBE plants generally have the flexibility to produce either MTBE or ETBE to accommodate market needs.

Japan has opted to use ETBE as a means of meeting its carbon dioxide reduction commitments under the Kyoto Protocol, and we source a significant portion of Japan s bio-fuels needs.

Sales of our MTBE, ETBE and alkylate are made by our marketing and sales personnel, and through distributors and independent agents located in the Americas, Europe, the Middle East, Africa and the Asia Pacific region. We have centralized certain sales and order fulfillment functions in regional customer service centers located in Houston, Texas; Rotterdam, The Netherlands; and Hong Kong, China. We also have long-term contracts for distribution and logistics to supply to our customers. MTBE, ETBE and alkylate are transported by barge, ocean going vessel and tank truck.

Raw Materials

The largest source of the crude oil used as a raw material for the Houston Refinery in the past several years has been a crude supply agreement with PDVSA-Petroleo S.A., a corporation organized under the laws of the Bolivarian Republic of Venezuela, which terminates in July 2011. During 2010, less than half of our crude supply was purchased under the crude supply agreement with PdVSA.

Most of the crude oil used as a raw material for the Berre Refinery is sourced from North Africa, the Middle East, Russia and other areas generally available in the Mediterranean region.

We purchase our ethanol requirements for the production of ETBE from regional producers and importers in Europe at market-related prices. Additionally, we have entered into a supply contract with a Brazilian ethanol producer to supply a significant portion of the ethanol used for the manufacture of ETBE at our Channelview facility. For further discussion regarding the raw materials requirements for the production of MTBE, ETBE and alkylate, see Intermediates and Derivatives Raw Materials.

Industry Dynamics / Competition

The markets for fuel products tend to be volatile as well as cyclical as a result of changing global economic conditions and prices for crude oil and refined product prices. Crude oil prices are impacted by worldwide economic conditions and political events, the economics of exploration and production, refined products demand and currency fluctuations. Prices and demand for fuel products are influenced by seasonal and short-term factors such as weather and driving patterns, as well as by longer term issues such as the

economy, energy conservation and alternative fuels. Industry fuel products supply is dependent on short-term industry operating capabilities and on long-term refining capacity.

With a throughput capacity of approximately 268,000 barrels per day (on a calendar day basis), we believe that the Houston Refinery is among North America s largest full conversion refineries capable of processing significant quantities of heavy, high-sulfur crude oil.

In North America, we compete for the purchase of heavy, high-sulfur crude oil based on price and quality. Our crude oil supply contract with PDVSA Oil terminates in July 2011, which will increase the need for us to purchase crude oil competitively on the open market. We began diversifying our portfolio in 2010 and expect to continue to purchase some of our crude oil from sources other than PDVSA on market-based terms. We compete in gasoline and distillate markets as a bulk supplier of fungible products satisfying industry and government specifications. Competition is based on price and location. Our refining competitors are major integrated oil companies, refineries owned or controlled by foreign governments and independent domestic refiners. Based on published data, as of January 2011, there were 148 operable crude oil refineries in the U.S., and total U.S. refinery capacity was approximately 17.6 million barrels per day.

During 2010, the Houston Refinery processed an average of approximately 241,000 barrels per day of crude oil, representing approximately 1% of all U.S. crude processing capacity.

A crack spread is a benchmark indication of refining margins based on the processing of a specific type of crude oil into an assumed selection of refined products. The Houston Refinery generally tracks the Maya 2-1-1 crack spread, which represents the difference between the first month futures price of two barrels of Maya crude oil as set by Pemex and one barrel each of U.S. Gulf Coast 87 Octane Conventional Gasoline and U.S. Gulf Coast No. 2 Heating Oil (high-sulfur diesel). The Berre Refinery refining spreads generally track the 4-1-2-1 Ural reported benchmark spread. This spread is calculated by adding the price of one barrel of gasoline to the price of two barrels of diesel and one barrel of #6 fuel oil and subtracting the price of four barrels of Mediterranean crude oil. While these benchmark refining spreads are generally indicative of the level of profitability at both the Houston Refinery and the Berre Refinery, there are many other factors specific to each refinery that influence operating results.

We believe that we are the largest producer of MTBE/ETBE worldwide. We compete for sales of MTBE and ETBE with independent MTBE producers worldwide and independent ETBE producers mainly in Europe. The most significant MTBE competitor is Saudi Basic Industries Corp., and the most significant ETBE competitors are Repsol, Total, Neste and Braskem. MTBE and ETBE face competition from products such as ethanol and other octane components. We compete with other refiners and olefin manufacturers for sales of alkylate that we do not internally blend into gasoline.

Technology Segment

Overview

Our Technology segment develops and licenses polyolefin and other process technologies and provides associated engineering and other services. Our Technology segment further develops, manufactures and sells polyolefin catalysts. We market our process technologies and our polyolefin catalysts to external customers and also use them in our own manufacturing operations. In 2010, our Technology segment generated operating revenues of $395 million (excluding inter-segment revenue).

Our polyolefin process licenses are structured to provide a standard core technology, with individual customer needs met by adding customized modules that provide the required capabilities to produce the defined production grade slate

and plant capacity. For licenses involving proven technologies, we typically receive the majority of our license fees in cash at or before the date of customer acceptance rather than ongoing royalties. For these licenses, we generally recognize revenue upon delivery of the process design package and the related license. Each license agreement includes long-term confidentiality provisions to protect the technology. In addition to the basic license agreement, a range of services can also be provided, including project assistance; training; start-up assistance of the plant; and supply of resins from our production for pre-marketing by the licensee. We may also offer marketing and sales services. In addition, licensees

generally continue to purchase polyolefin catalysts that are consumed in the production process, generally under long-term catalyst supply agreements with us.

Process Technology Licensing

We are a leading licensor of polyolefin process technologies.

Our PP licensing portfolio includes our *Spheripol* and *Spherizone* process technologies as well as *Metocene* technology.

Our PE process licensing portfolio comprises the *Lupotech* T (high pressure tubular process for producing LDPE), the *Lupotech* A (autoclave process mainly for producing ethylene vinyl acetate (EVA) copolymers), *Hostalen* (slurry process for producing multimodal HDPE), and *Spherilene* (gas phase process for producing full-density range of LLDPE to HDPE) processes.

In addition, we license a selective portfolio of chemical process technologies in the fields of olefin recovery, olefin conversion, aromatics extraction and acetyls.

Since 2000, we have sold licenses representing approximately 25 million tons of polyolefin capacity, which represents about 40% of worldwide installed capacity. In 2010, we entered into licensing agreements representing about one million tons of polyolefin capacity. Process licenses accounted for less than 10% of our total revenues in 2010.

Our Technology segment also provides technology services to our licensees. Such services include safety reviews, training and start-up assistance, engineering services for process and product improvements and manufacturing troubleshooting.

PP Process Technology

We license several PP process technologies, including *Spheripol*, *Spherizone* and *Metocene*.

Our *Spheripol* technology produces homopolymers and random copolymers in a single stage and impact copolymers in a multi-stage process. We believe that the *Spheripol* process is the most widely used PP production process in the world.

The *Spherizone* process, our newest technology, commercialized in 2002 and introduced for licensing in 2004, is able to produce higher quality PP, novel PP-based polyolefinic resins, and a wider product grade range than existing processes at similar operating cost. The *Spherizone* process introduces a single reactor concept, in which bimodality is created within one single reactor operating at different conditions between the different zones inside the reactor. The final product is a result of an intimate mixing of the different property determining phases at a macro molecular level.

Metocene PP technology was introduced for licensing in 2006. This add-on technology for the production of specialty PP products is based on using single-site catalyst systems. *Metocene* technology can be adapted to virtually any PP process, and its versatility expands the end use product range of conventional PP. In 2009, Polymirae became the first licensee to commence commercial production of *Metocene*.

PE Processes Technology

The different families of PE (HDPE, LDPE and LLDPE) require specialized process technologies for production, which are available through our broad PE process licensing portfolio. The portfolio includes *Lupotech*, *Spherilene* and

Hostalen process technologies.

Lupotech T is a high pressure, tubular reactor process for the production of LDPE. This high pressure technology does not use a catalyst system typical for low pressure processes, but rather peroxide initiators to polymerize ethylene and optionally VAM for EVA-copolymers. By adjusting the temperature profile along the reactor and adding different peroxide mixtures, process conditions are modified to produce the desired products. The process produces the entire melt flow ratio and density range with competitive investment costs and low utilities and raw material demand.

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Lupotech A is a high pressure autoclave process using peroxide mixture for polymerization and is mainly utilized for specialty LDPE and for the production of EVA copolymers with high VAM content.

Spherilene is a flexible gas-phase process for the production of the entire density range of PE products from LLDPE and MDPE to HDPE. The flexibility of this technology, which is demonstrated by a broad portfolio of grades, enables licensees to effectively manage the continuously dynamic PE markets at low investments costs and very low operating costs.

Hostalen is a low-pressure slurry process technology for the production of high-performance multimodal HDPE grades. This is desirable because a different product structure can be produced in each stage of the polymerization process, yielding products that are tailored for demanding processing requirements and sophisticated end use applications such as film, blow molding and pipe applications.

Chemical Process Technologies

We also offer for licensing a selective number of chemical processes, including the group of *Trans4m* processes, Aromatics extractions, *Glacido* and *Vacido* technology.

The *Trans4m* portfolio of process technologies offers tailored solutions for C4 and higher olefin recovery and conversion. These processes include separation, purification and skeletal isomerization of the C4 and C5 olefin streams for the selective conversion of low-value, mixed olefin streams from crackers to isobutylene, isoamylenes, butadiene, isoprene, piperylene and Dicyclopentadiene (DCPD). This group of processes is complemented by Aromatics extractions technology, which enables LyondellBasell to offer a comprehensive portfolio of processes to upgrade all olefinic streams from steam crackers to higher value products.

Glacido is a process technology for manufacturing of acetic acid by carbonylation of methanol. It utilizes a Rhodium-based homogeneous catalyst system. *Vacido* is a fixed-bed tubular process for the production of high-quality VAM, from acetic acid and ethylene. It utilizes a proprietary heterogeneous catalyst system.

Superflex technology produces propylene and ethylene, and is based on a fluidized catalytic reactor. The process technology is used for cracking less refined feedstock such as coker or fluid catalytic cracking unit light gasoline as well as mixed C4 to C9 streams.

Polyolefin Catalysts

Under the *Avant* brand, we are a leading manufacturer and supplier of polyolefin catalysts. Polyolefin catalysts accounted for less than 10% of our total revenues in 2010. As a large polyolefin producer, approximately 30% of catalyst sales are inter-company. Polyolefin catalysts are packaged and shipped via road, sea or air to our customers.

We produce catalysts at two facilities in Germany, one facility in Italy and one facility in the U.S. Our polyolefin catalysts, which are consumed during the polyolefin production process and define the processing and mechanical properties of polyolefins, provide enhanced performance for our process technologies and are being developed to enhance performance when used in third-party process technologies. We also supply catalysts for producing sophisticated PEs.

Customers using polyolefin catalysts must make continual purchases, because they are consumed during the polyolefin production process. New licensees generally elect to enter into long-term catalyst supply agreements.

Sales & Marketing

In 2010, no single Technology segment customer accounted for 10% or more of our total revenues. We market our process technologies and catalysts to external customers and also use them for our own polyolefin manufacturing operations. We have a marketing and sales force dedicated to the Technology segment, including catalyst sales and customer technical support for licensees.

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Industry Dynamics / Competition

We believe that competition in the polyolefin process licensing industry is based on the quality and efficiency of the process technology, product performance and product application, complemented by customer service and technical support. Since the formation of Basell in 2000 through December 31, 2010, we have sold licenses representing approximately 25 million tons of capacity based on its six process technologies to polyolefin manufacturers. We estimate that approximately 40% of PP and 31% of PE worldwide licensed capacity from 2003 through 2010 use our technologies. As of December 31, 2010, we estimate that over 200 polyolefin production lines use our licensed process technologies. Our major competitors in PP technologies licensing are Dow Chemical, INEOS, Novolene Technology Holdings and Mitsui Chemicals. Our major competitors in PE technologies licensing are Chevronphillips, INEOS, Mitsui Chemicals and Univation Technologies.

We are one of the world s largest manufacturers and suppliers of PP catalysts. We also supply catalysts for producing PEs. Our major competitors in the worldwide catalyst business are Dow Chemical, BASF, Mitsui Chemicals, Toho Catalyst and WR Grace.