



**From Oil to Polymers**  
Integrated World-class Petrochemicals

**TOTAL PETROCHEMICALS**



# Total's Petrochemicals

## A new identity with a long-standing history

In February 2004, Total announced a project to reorganize its Chemical Branch by establishing more autonomous, market-oriented and reactive groups. This reorganization took the shape of the creation, alongside Petrochemicals and Specialties, of a decentralized structure comprising Chlorochemicals, Intermediates and Performance Products.

On October 1, 2004 the Petrochemicals business changed its name to Total Petrochemicals. Operating under a new name, the Company continues to offer the same great products and services. As a fully integrated operation, Total Petrochemicals includes base petrochemicals from steamcrackers and certain refinery processing plants - olefins (ethylene, propylene), C4 fractions and aromatics (benzene, toluene, xylene, styrene) - as well as the commodity polymers they produce (polyethylene, polypropylene, polystyrene, elastomers).

With the new identity clearly establishing roots within the Group, Petrochemicals' aim is to capitalize on their synergies with refining (which have increased with the latest fuel specification requirements), strengthen their competitiveness in Europe and the United States, and speed up their development in fast growing regions, primarily Asia.

## The Total Group

The businesses and activities of Total, the world's fourth leading oil and gas Group, cover the entire oil chain: oil and gas exploration and production, refining and distribution, trading, as well as gas and power. Total is also a major player in the chemical industry. The Group employs over 110,000 people in over 130 countries on all five continents.

## Total Petrochemicals

→ International Headquarters in Brussels

→ 4 divisions:

- *Base Petrochemicals (Olefins, C4 fractions and Aromatics)*
- *Polyethylene*
- *Polypropylene*
- *Styrenics (Styrene, Polystyrene and Elastomers)*

→ 18 industrial facilities in the world

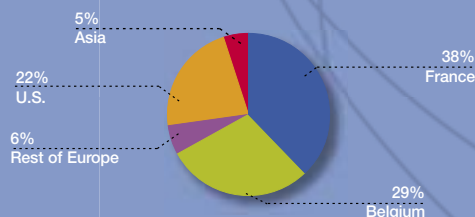
3 research centers:

*Feluy (Belgium), LaPorte (US), Lacq/Mont (France);*

**Lyon Technical Pole (France)**

→ 2003 sales: 6.7 billion euros

→ Personnel: 7,500 employees on 3 continents



→ World rankings:

*Source: Company data vs PTM 03Q4 (capacities 2004)*

- n° 3 in Polypropylene
- n° 3 in Polystyrene
- n° 4 in Aromatics



## A global presence, a manufacturing activity built on integration

As part of an oil group, Total Petrochemicals gains extensively from integration within refining, particularly in Europe and the United States. Based on this industrial rationale, which plays a greater role than with many of its competitors, the Company operates large-scale facilities around the world, and in particular in two of the world's largest oil and petrochemicals centers:

- > in the United States, Texas and Louisiana account for 80% of all American petrochemicals activities;
- > in Europe, in the Antwerp-Rotterdam zone, connected to the Ruhr basin, the hub of 50% of Europe's petrochemicals activity.

In addition, in France, Total Petrochemicals runs three major facilities, in Normandy, the Lorraine region and the Rhône basin, which are largely integrated within the country's petroleum and petrochemicals platforms.

Finally, in Qatar, the Middle East, South Korea, Singapore and China, Total Petrochemicals boasts industrial facilities with major development potential.

## Synergies between Refining and Petrochemicals

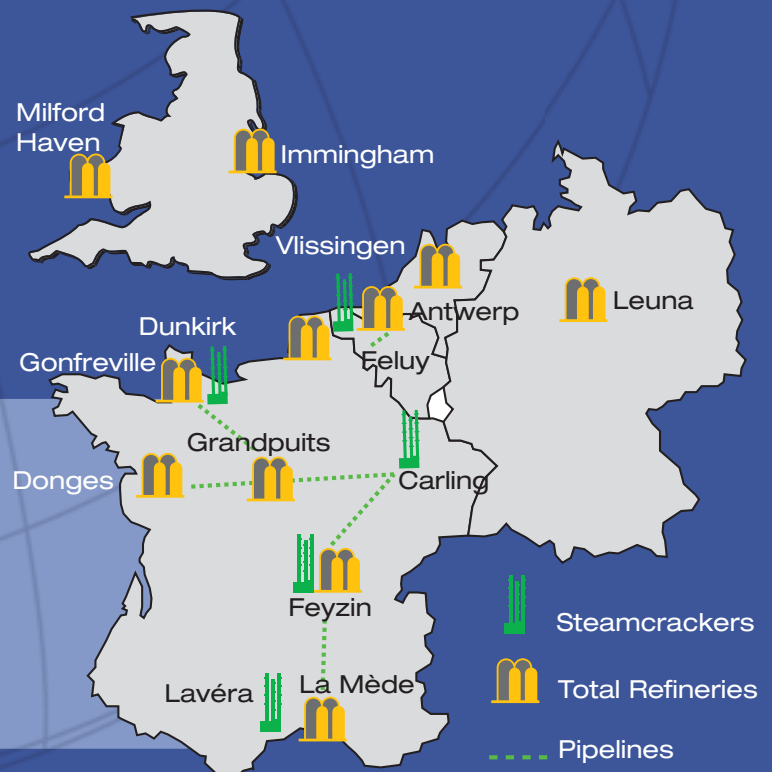
(example: Gonfreville, France)



In Europe, the Group's refineries supply 50% of steamcracker feedstock. 2/3rds of steamcracker feedstock supplied by the Total Group's refineries are used in petrochemicals manufacture, which then returns to refining 12% of the charge processed in the steamcrackers.

## Integration of refineries and steamcrackers in Europe

In just over six years, volumes exchanged between refining and petrochemicals have almost doubled. For example naphtha, the main material used in steamcrackers and supplied by the Total Group's refineries, has increased from 2.5 million metric tons in 1997 to approximately 4 million metric tons today.



**Industrial facility**

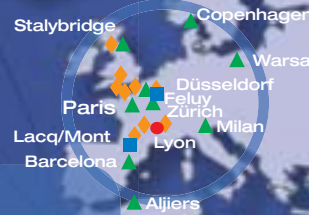
- Research center
- Lyon Technical Pole
- ▲ Sales office

Total Petrochemicals markets its products in approximately 110 countries through both sales offices and third party agents.

Port Arthur<sup>(1)</sup> (Texas)  
 La Porte (Texas)  
 Bayport (Texas)  
 Carville<sup>(2)</sup> (Louisiana)



Antwerp<sup>(3)</sup> (Belgium)  
 Feluy (Belgium)  
 Carling-Saint-Avoid (France)  
 Gonfreville (France)  
 Notre-Dame de Gravenchon (France)  
 Lavéra<sup>(4)</sup> (France)  
 Feyzin<sup>(5)</sup> (France)  
 El Prat del Llobregat (Spain)  
 Stalybridge (United Kingdom)



# Total Petrochemicals

## La Porte (Texas)



Total Petrochemicals operates the most competitive plants in the United States, in LaPorte and Bayport, Texas, and in Carville, Louisiana. These major polymer facilities - with annual capacities in excess of one million metric tons - benefit from the proximity of the Port Arthur refinery, and one of the world's largest crackers, commissioned in 2001 by Total and BASF.

## Antwerp (Belgium)



In Belgium, in the Antwerp port complex, Europe's leading petrochemicals hub, Total Petrochemicals' activities revolve around the Group refinery which produces the raw materials for the major Antwerp and Feluy petrochemicals plants, both facilities being connected by pipeline.

## El Prat del Llobregat (Spain)



In Spain, Total's petrochemicals activities are centered in El Prat del Llobregat, near Barcelona, where the Company operates polystyrene production plants.

## Gonfreville (France)



Based in the Basse-Seine industrial basin, the Gonfreville facility boasts a major integration with the region's industrial fabric, both upstream with over 20 pipelines linking it up to the Total Normandy refinery, and downstream with the pipelines allowing it to supply customers in the Le Havre and Lillebonne-Notre-Dame-de-Gravenchon areas. Gonfreville's production covers base petrochemicals as well as polymers. It represents around 15% of commodity plastics manufactured in France.

## Stalybridge (UK)



With its industrial and technical know-how, the compact polystyrene plant in Stalybridge, United Kingdom, supplies commodity grades to the UK and Irish markets, as well as specialty grades (PS compounds) to the European consumer electronics market.



Messaied<sup>(7)</sup> (Qatar)

Daesan<sup>(6)</sup> (South Korea)

Ayuthaya (Thailand)

Foshan<sup>(\*)</sup> (China)

Singapore

# around the world

- (1) Port Arthur steamcracker:  
40% Total Petrochemicals - 60% BASF
- (2) Styrene: 50% Total Petrochemicals  
- 50% General Electric
- (3) Fina Antwerp Olefins: 65% Total Petrochemicals  
- 35% Exxon Chemicals
- (4) Lavéra steamcracker (operated by  
Naphtachimie: 50% Total Petrochemicals  
- 50% BP Chemicals)
- (5) Feyzin steamcracker  
(57.5% Total Petrochemicals  
- 42.5 % Solvay, operated by Total Raffinage)
- (6) 50% Samsung General Chemicals  
- 50% Total Petrochemicals
- (7) Qapco: 80% Qatar Petroleum  
- 20% Total Petrochemicals



## Carling-Saint-Avold (France)

Located in the Moselle region of Eastern France, the Carling-Saint-Avold petrochemicals site enjoys an outstanding geographic location, at the crossroads of industrial Europe. An extensive pipeline network links up its facilities in particular to most Total refineries in France as well as to the Viriat ethylene underground storage facilities in the Ain region. Its activities range from base petrochemicals (ethylene, propylene, benzene, styrene) to commodity plastics (polyethylene and polystyrene).



## Daesan (South Korea)

Total Petrochemicals consolidated its position in Asia by creating a 50/50 joint venture with Samsung General Chemicals on August 1st 2003. Based in Daesan, South Korea, the JV produces and sells a comprehensive range of petrochemicals and polymers, with a major growth potential to supply buoyant markets.



## Messaied (Qatar)

In Qatar, Total Petrochemicals has an interest in an ethane cracker and a polyethylene (LDPE) plant in Messaied, in the South-East of the country, through Qapco<sup>(\*)</sup>. On the strength of the Group's extensive upstream presence, Total Petrochemicals has also invested, via Qatofin<sup>(\*\*)</sup>, in a project to build a new 1.3 million metric ton ethane cracker in Ras Laffan, in the North-East of the country, and a new polyethylene (LLDPE) plant in Messaied. These projects will help the Company consolidate its positions in the development of a world-scale petrochemicals hub serving the Asian markets.



## Foshan<sup>(\*)</sup>(China)

Located in Foshan in the Guangdong Province, China, and commissioned in April 2003, this 100 kt/year polystyrene plant has enabled Total Petrochemicals to consolidate its styrenics business in Asia, where it already ran an 80 kt/year polystyrene plant in Singapore.

<sup>(\*)</sup> ex Sanshui

<sup>(\*)</sup> Qapco: Total Petrochemicals 20%, Qatar Petroleum 80% joint venture  
<sup>(\*\*)</sup> Qatofin: Total Petrochemicals 36%, Qapco 63%, Qatar Petroleum 1% joint venture



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