

The Economics Petroleum Coke

Fifth Edition, 2007

Read the definitive report on the global petroleum coke industry, its markets and its future

What this report gives you:

- Independent, in-depth research and analysis
- Essential market intelligence for successful business planning
- Detailed survey of production and processing in 61 countries
- Up-to-date profiles of the activities of over 90 petroleum coke producing and processing companies, including Valero Energy, PDVSA, ConocoPhillips, ExxonMobil, BP, Chevron and Pemex
- Forecasts for end-use consumption & world supply & demand

A valuable resource for:

- Chief executives
- Market researchers
- Information centres
- Strategic planners
- Financial analysts
- Product developers

Production of petroleum coke forecast to continue increasing

Petroleum coke is a by-product of the oil refining industry and the main factors influencing output are the levels of crude oil production, demand for refined products and the quality of oil extracted from wells and processed in refineries. Global demand for gasoline and other transport fuels is expected to continue rising. At the same time, increasingly stringent environmental regulations are forcing a move to cleaner, more highly refined fuels. Because of these factors, we predict that the long-term growth trend in petroleum coke production will be maintained. These demand-side influences are reflected in the very substantial increases in coking capacity currently planned or underway. Price trends for green petroleum coke also closely mirror those for crude oil, which have been on a steep upward trend since 2001. The effects of Hurricane Katrina in the third quarter of 2005, which reduced new supply and led to a drawdown of inventories, can be clearly seen from the immediate and sharp increase in prices for Gulf Coast coke. In August 2005, spot market prices for 4.5-5% sulphur Gulf Coast coke were US\$13-16.50/t. By year-end, they had reached US\$30-32/t. Prices continued to rise during 2006, reflecting both the tight supply of coke and rising prices for coal, with which coke competes as a fuel, and in November were at US\$46-52/t. The peak was probably reached during the third quarter of 2006 and we anticipate that prices will ease during 2007 and 2008, particularly as new coking capacity is due to come on-stream during that period.

The key drivers, issues and developments in the petroleum coke market are analysed in this major new report from Roskill. It provides a clear insight into the industry and its trends and an authoritative analysis of the prospects for the future.

Report Highlights

At the start of 2006, global production capacity for marketable petroleum coke was 82.5Mtpy. Close to half of that capacity was located at refineries in the USA. As much as 35Mtpy of new capacity may come on-stream between 2006 and 2010 and by 2012 a total of 45.2Mtpy could have been added. Around 45% of that new capacity will be in Canada and Venezuela, to meet the needs of rapidly growing Alberta oil sands and Orinoco Belt upgrading operations, with another 30% going into conventional refineries in the USA and Mexico.

An important development in the first half of this decade has been the rise in coke exports from Canada and Venezuela, which has resulted from rapidly growing production by the upgraders. Canada's exports have increased from around 90,000tpy to more than 600,000tpy, while those from Venezuela were 3.5Mt in 2005, compared with 0.9Mt the previous year.

Globally, around three quarters of petroleum coke consumption is in energy applications, mainly as a refinery fuel (catalyst coke), for electricity generation and for heating cement kilns (marketable coke). Demand for coke in these applications is strong and likely to increase further, albeit with significant regional variations.

Deregulation of the energy sector in the USA has enabled US power utility companies to increase their use of petroleum coke as a more cost-effective alternative to coal. Consequently, North America has become the largest user of petroleum coke in power generation, with estimated consumption of 8.1Mt in 2005.

Global consumption of calcined petroleum coke in aluminium production is estimated at 11-12Mtpy. Aluminium production has been on a steady upward trend for some years and the demand for petroleum coke is expected to continue rising. One area of risk to future demand for petroleum coke in this market is the research being undertaken by the aluminium industry into inert anode technology, which involves no petroleum coke. The successful introduction of such technology could ultimately remove one of the major end uses for high-grade petroleum coke.

Sources and Methodology

This report is the result of an extensive programme of research by Roskill analysts. They have conducted a close appraisal of information from a wide variety of sources, including governments, trade associations, company sources, official organisations, trade journals and technical literature.

Information gathering is only the first step in preparing a report. The data is then extensively analysed so that the finished report provides a comprehensive insight into the industry today, as well as top-level analysis of the long-term prospects.

Authoritative research in this report can help you:

- Explore commercial opportunities
- Gather intelligence on your competitors
- Strengthen your business capabilities
- Plan your materials buying & sourcing
- Assess key trends and growth areas
- Establish sales targets for your products
- Analyse company market share
- Save time searching for specialist information
- And improve your results

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Delayed coking; Fluid coking; Flexicoking; **Types of green petroleum coke:** Sponge coke; Shot coke; Needle coke; Other types of green petroleum coke; **Calcined coke;** **Factors affecting levels of petroleum coke production:** Trends in petroleum production; Trends in gasoline demand; Crude oil feedstock quality;

3 Overview of world petroleum coke production

Petroleum coke production capacity; Petroleum coke production: Outlook for petroleum coke production;

4 Notes on countries producing petroleum coke

Details of resources, production, producers of petroleum coke in each of the following countries, where applicable:

Albania; Argentina; Aruba; Australia; Austria; Azerbaijan; Bahrain; Belarus; Belgium; Brazil; Canada; Chile; China; Croatia; Czech Republic; Denmark; Dubai; Egypt; Finland; France; Germany; Greece; Hungary; India; Indonesia; Iraq; Italy; Japan; Kazakhstan; South Korea; Malaysia; Mexico; Myanmar; Netherlands; Netherlands Antilles; Norway; Peru; Philippines; Poland; Portugal; Puerto Rico; Romania; Russia; Saudi Arabia; Slovak Republic; Slovenia; South Africa; Spain; Sweden; Syria; Taiwan; Thailand; Turkey; Turkmenistan; Ukraine; UK; USA; Uzbekistan; Venezuela; US Virgin Islands;

Profiles of over 80 petroleum coke producing and processing companies, including:

Repsol-YPF SA; Petroleo Brasileiro SA (Petrobras); Husky Energy; Suncor Energy; Syncrude Canada Ltd. (SCL); Petropower Energia; China Petroleum & Chemical Corp. (Sinopec); PetroChina Co.; Middle East Oil Refineries (MIDOR); Deutsche BP; BPCL; IOCL; Reliance Industries Ltd. (RIL); Fuji Oil Co.; Japan Energy Corp.; Hyundai Oil Refinery Co.; Kuwait National Petroleum Co. (KNPC); Malaysia Refining Co. (MRC); Petróleos Mexicanos (Pemex); Statoil ASA; LUKOIL; Yukos; Shell and BP South African Petroleum Refineries Pty Ltd. (Sapref); Chinese Petroleum Corp. (CPC); Formosa Petrochemical Co. (FPCC); ConocoPhillips; BP United States; Chevron Corp.; CITGO Petroleum Corp. & LYONDELL-CITGO Refinery; ExxonMobil Corp.; Flint Hills Resources; Motiva Enterprises LLC; Valero Energy Corp.; Petróleos de Venezuela SA (PDVSA); Hovensa LLC; **And more...**

5 Overview of world petroleum coke consumption

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The use of petroleum coke in carbon and graphite electrodes and other products: Manufacture of carbon and graphite products; Production of carbon and graphite electrodes: C/G Electrodes LLC; Graphite India Ltd. (GIL); GrafTech International Ltd.; HEG Ltd.; SGL Carbon Group; Sinosteel Jilin Carbon Co.; Japanese producers; The use of carbon and graphite in the aluminium industry: Manufacture of carbon anodes for aluminium; Carbon cathodes or potlining for aluminium; Consumption of petroleum coke in the aluminium industry; The use of carbon and graphite electrodes in steelmaking: Manufacture of EAF electrodes for steelmaking; World steel production; The use of carbon and graphite in ferro-alloys production: Ferro-silicon and silicon metal; Ferro-manganese, silico-manganese and other manganese products; Ferro-chromium; The use of carbon and graphite in: Phosphorus production; Calcium carbide production; Silicon carbide production; The use of petroleum coke in: Magnesium metal production; The chlor-alkali industry: Chlorine; Caustic soda; Other electrical applications for petroleum coke;

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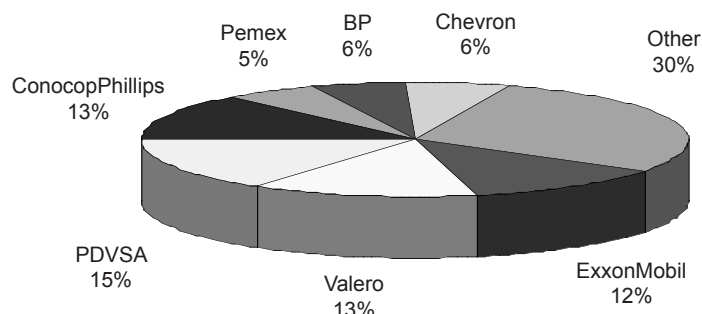
7 International trade in petroleum coke

International trade in: Green petroleum coke; Calcined petroleum coke;

8 Petroleum coke prices

Uncalcined petroleum coke prices; Calcined petroleum coke prices;

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- Calcined petroleum coke prices

**A full list of tables and figures can be found at
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