World Activated Carbon

Industry Study with Forecasts for 2016 & 2021

Study #2878 | April 2012 | $6200 | 415 pages
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**WORLD PRODUCT & MARKET OVERVIEW**

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<td>3 World Granular Activated Carbon Demand by Region</td>
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<td>5 World Activated Carbon Demand by Application</td>
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<td>6 World Liquid Phase Activated Carbon Demand by Region</td>
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<td>7 World Gas Phase Activated Carbon Demand by Region</td>
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<td>13 World Drinking Water Demand for Activated Carbon</td>
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<td>14 World Other Water Treatment Markets Demand for Activated Carbon</td>
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<td>18 World Motor Vehicle Demand for Activated Carbon</td>
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<td>20 World Other Markets Demand for Activated Carbon</td>
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**NORTH AMERICA**

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<td>1 North America -- Activated Carbon Market Environment</td>
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<td>2 North America -- Activated Carbon Supply &amp; Demand</td>
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**WESTERN EUROPE**

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Gains will be driven by more stringent pollution controls in the US and China, and expanding production of edible oils, beverages, and sweeteners in much of the rest of the world.

World demand to advance 10.3% yearly through 2016

World demand for activated carbon is expected to increase more than ten percent per year through 2016 to 1.9 million metric tons. This high rate of growth will be attributable to a number of factors, though regulatory changes in the US will be the largest single driver. China’s activated carbon market will also rise rapidly as the country’s Twelfth Five-Year Plan (2011-2015) seeks to improve water and air quality in the nation. Expanding production of edible oils, beverages, and sweeteners will stimulate growth in much of the rest of the world, but overall demand will rise more slowly than in the US and China.

New rules to spur world-leading gains in US demand

The US Environmental Protection Agency (EPA) placed into force new Mercury and Air Toxics Standards (MATS) in 2011. These rules require drastic reductions in mercury emitted from coal-fired power plants, industrial boilers, and portland cement kilns, among other sources. Activated carbon is widely accepted to be the most economical and effective method for controlling these emissions, and enormous amounts of activated carbon will be needed to do so. Further regulatory changes, such as the implementation of the EPA’s Disinfectants and Disinfection Byproducts Rule in 2012, limit the allowable concentration of a variety of chemicals in US drinking water. The new rules will spur world-leading growth in US activated carbon demand between 2011 and 2016, with overall sales expected to more than double.

The activated carbon market in China will be driven by more than regulation, and will advance at a slightly lower rate than sales in the US. While implementation of the newest Five-Year Plan will bolster activated carbon use, gains will also come from increasing consumption by industry, as demand for activated carbon rises faster than the world average. The Twelfth Five-Year Plan will also lead to greater use of activated carbon in water treatment and in air purification. Consumption of activated carbon at the household level in point-of-use tap water filtration systems will also boost demand.

Several other nations will also experience rapid growth. For instance, India is expected to surpass Germany to become the fourth largest market for activated carbon in 2016 (behind Japan), with sales rising on increased food and beverage manufacturing and increased levels of water treatment. Many other nations in the Asia/Pacific region, along with many in Central and South America, Eastern Europe and the Africa/Mideast region, will exceed historical growth levels as industrial, water treatment and food and beverage production markets for activated carbon grow.
Asia/Pacific

India: Activated Carbon Supply & Demand

The activated carbon market in India expanded 9.7 percent per year between 2006 and 2011 to 39,500 metric tons. Growth was above the Asia/Pacific average, with demand in India accounting for nearly nine percent of the regional total in 2011. Activated carbon sales in both of these markets rose appreciably in this period, spurred by a number of factors.

The food and beverage market accounts for the largest portion of India’s activated carbon demand. Local governments have struggled to supply drinkable water to the population, and with the growing population, bottled water production has increased significantly since 2001. In addition, India’s demand for edible oil has climbed at a consistent rate for some time. The nation used to import well over 50 percent of its edible oil needs, though that percentage had declined to 40 percent by 2011. The production of these oils requires activated carbon for decolorization and filtration. Gains in these markets helped to offset a decline in demand from sugar producers, whose output fell somewhat between 2006 and 2011.

Smaller markets have also contributed to growth. India’s motor vehicle production has experienced double digit annual growth since 2001. Activated carbon used in these automobiles has risen at a similar rate. Pharmaceutical manufacturing, a perennial growth market in India, has also increased its consumption of activated carbon as manufacturers have continued to focus on the output of high purity drugs.

As in many other industrializing nations, Indian activated carbon market consumers favor PAC. Low capital costs, combined with ease of use, make PAC popular with a variety of consumers. This product represented 76 percent of the activated carbon market in 2011. GAC, which

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**TABLE VII-15**

<table>
<thead>
<tr>
<th>Item</th>
<th>2001</th>
<th>2006</th>
<th>2011</th>
<th>2016</th>
<th>2021</th>
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<tbody>
<tr>
<td>Gross Domestic Product (bil 2010$)</td>
<td>2097</td>
<td>3009</td>
<td>4445</td>
<td>6395</td>
<td>9025</td>
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<tr>
<td>metric tons AC/bil $ GDP</td>
<td>7.3</td>
<td>8.3</td>
<td>8.9</td>
<td>11.4</td>
<td>13.6</td>
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<tr>
<td>Activated Carbon Demand</td>
<td>15.3</td>
<td>24.9</td>
<td>39.5</td>
<td>72.8</td>
<td>122.5</td>
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<td>By Application:</td>
<td></td>
<td></td>
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<tr>
<td>Liquid Phase</td>
<td>7.5</td>
<td>11.5</td>
<td>17.0</td>
<td>29.5</td>
<td>48.0</td>
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<td>Gas Phase</td>
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<td>13.4</td>
<td>22.5</td>
<td>43.3</td>
<td>74.5</td>
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<td>By Market:</td>
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<td>Industrial</td>
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<td>7.7</td>
<td>11.5</td>
<td>18.8</td>
<td>29.9</td>
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<td>Water Treatment</td>
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<td>9.0</td>
<td>14.6</td>
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<td>49.0</td>
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<td>Motor Vehicle</td>
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<td>0.7</td>
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<td>5.5</td>
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<td>Pharmaceutical &amp; Medical</td>
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<td>0.9</td>
<td>1.5</td>
<td>2.8</td>
<td>4.9</td>
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<tr>
<td>Other</td>
<td>0.7</td>
<td>1.2</td>
<td>2.0</td>
<td>3.8</td>
<td>5.4</td>
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**CHART IX-1**

WORLD ACTIVATED CARBON MARKET SHARE, 2011 ($2.4 billion)

<table>
<thead>
<tr>
<th>Market Share</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>PAC</td>
<td>76.2%</td>
</tr>
<tr>
<td>GAC</td>
<td>21.2%</td>
</tr>
<tr>
<td>Others</td>
<td>4.6%</td>
</tr>
</tbody>
</table>

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Sample Profile, Table & Forecast

COMPANY PROFILES

Shanxi Xinhua Chemical Company Limited
No. 71 Xinlan Road
Taiyuan, Shanxi 030008
China
86-351-287-7821
http://www.sxxhhb.cn

Annual Sales: $65 million (verified by company, 3/12)
Employment: 5,600 (verified by company, 3/12)
Key Products: granular, pelletized, powdered and specialty activated carbon

Shanxi Xinhua Chemical is a manufacturer of activated carbon and related products. Moreover, the Company makes membrane-based filtration systems and components. Shanxi Xinhua Chemical is a state-owned enterprise that is operated by China North Industries Group Corporation.

The Company produces and markets coal-, coconut shell- and wood-based activated carbon in granular, pelletized, powdered and specialty forms under the XINHUA brand name. These products are suitable for a wide range of applications, including water purification, air and gas purification, solvent recovery, odor control in industrial waste gas applications, catalysis, environmental protection, gas masks, decolorization, and desulfurization and denitrification processes.

Shanxi Xinhua Chemical maintains a plant in Taiyuan, Shanxi, China that occupies more than 100,000 square meters of space and has an annual production capacity of 40,000 metric tons. The Company’s products are sold to customers in the Asia/Pacific region, Europe, the Africa/Mideast region, North America and South America.

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TABLE VII-14
INDIA – ACTIVATED CARBON SUPPLY & DEMAND
(thousand metric tons)

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<tr>
<th>Item</th>
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<th>2011</th>
<th>2016</th>
<th>2021</th>
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<tr>
<td>Asia/Pacific Activated Carbon Dmnd</td>
<td>210.8</td>
<td>316.0</td>
<td>464.5</td>
<td>749.5</td>
<td>1115.0</td>
</tr>
<tr>
<td>% India</td>
<td>7.3</td>
<td>7.9</td>
<td>8.5</td>
<td>9.7</td>
<td>11.0</td>
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</tr>
<tr>
<td>Powdered</td>
<td>13.2</td>
<td>19.8</td>
<td>30.1</td>
<td>50.3</td>
<td>78.8</td>
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<tr>
<td>Granular</td>
<td>1.8</td>
<td>4.4</td>
<td>8.2</td>
<td>19.7</td>
<td>39.4</td>
</tr>
<tr>
<td>Other</td>
<td>0.3</td>
<td>0.7</td>
<td>1.2</td>
<td>2.8</td>
<td>4.3</td>
</tr>
<tr>
<td>- imports</td>
<td>0.8</td>
<td>5.3</td>
<td>15.0</td>
<td>35.0</td>
<td>55.0</td>
</tr>
<tr>
<td>+ exports</td>
<td>4.1</td>
<td>9.7</td>
<td>27.8</td>
<td>64.0</td>
<td>118.5</td>
</tr>
<tr>
<td>Activated Carbon Shipments</td>
<td>18.6</td>
<td>29.3</td>
<td>52.3</td>
<td>101.8</td>
<td>186.0</td>
</tr>
<tr>
<td>Imports as a Percent of Demand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports as a Percent of Shipments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

“Shipments of activated carbon from India’s producers are expected to grow at a 14 percent annual rate to 101,800 metric tons in 2016. This pace, faster than the 2006-2011 average, is well above the expected regional activated carbon shipments growth rate for the 2011-2016 period. The trade surplus in India is forecast to increase to 28 percent of total production, reaching 29,000 metric tons in 2016.”

--Section VII, pg. 236
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