Specialty Silicas


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# Specialty Silicas

US Industry Study with Forecasts for **2011 & 2016**

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Best opportunities are anticipated for applications in the dominant rubber market, while more rapid gains will be experienced in the lower volume electrical and electronic equipment market.

US demand to grow 5.4% annually through 2011

US specialty silica demand is forecast to expand 5.4 percent annually to $1.65 billion in 2011. Specialty silicas, also known as synthetic amorphous silicas or synthetically produced noncrystalline silicon dioxide, include precipitated, fumed, gel, sol and fused types. Precipitated silica constitutes the largest silica type, both in volume and value. Through 2011, growth in precipitated silica demand will be led by increasingly rapid advances in the large volume tire rubber sector, in which silica reinforcement is used for fuel efficient “green” tires.

Higher value fumed silica to be fastest growing type

Fumed silica will experience the fastest advances, spurred by growth in the electronics market, which primarily utilizes fumed silica in slurries. These slurries are used to polish semiconductor substrates, especially silicon wafers, and have been increasingly used in chemical mechanical planarization (CMP) processes. Despite being the smallest silica type by volume, fumed silica constitutes an important segment of the specialty silica market in value terms, due to its high price relative to other silica types.

Best market opportunities to remain in rubber uses

The rubber industry will remain the largest market for specialty silicas through 2011, experiencing growth in both tire and nontire segments. Nontire applications, which include the production of silicone rubber, footwear and industrial rubber products, will grow at a below average rate. More rapid gains in the tire rubber market will result from a modest rebound in motor vehicle production and the penetration of silica-reinforced motor vehicle tires offering greater fuel efficiency. These tires utilize precipitated silica in their manufacture and are likely to grow in popularity as a result of high US fuel prices. Advances, however, will be limited by the availability of competing products such as carbon black and by silica’s high cost relative to other materials.

Electrical/electronic market to lead gains

Through 2011, demand for specialty silicas in the electrical and electronic equipment industry will grow faster than any other market, both by value and volume. Although this industry accounts for less than one-tenth of the silica market by volume, it is second only to the rubber industry in dollar terms. Advances will be due to accelerating growth in electronic component output, especially semiconductors, for which silica is used as an abrasive polish. Continued success for this application will depend on new polishing formulations which work well with copper surfaces and low-k dielectric materials.
MARKETS

Silica Demand

Demand for specialty silicas in the food and beverage markets is expected to grow 2.6 percent annually to 58 million pounds in 2011, valued at $72 million. While advances will be restrained by market maturity, the growing desire for healthier drinks and renewed interest in wine and beer will support these applications. Continued consumption of processed foods, where silicas serve as anticaking and thickening agents, will also stimulate demand. Silicas are well suited for food and beverages because they are chemically inert, have a neutral pH; have little or no health drawbacks; and do not affect the color, taste, odor or nature of food products.

While silicas have numerous applications in food and beverages, their most important functions are as flow improvers, stabilizers and flavor carriers. Silicas help keep powdered or granulated mixtures from caking and are instrumental in converting liquid products into powders. They are utilized across a variety of applications, including powdered milk, cake mixes, dry soup mixes and seasonings. Cabot is active in this segment of the food and beverage market, offering the CAB-O-SIL line of untreated fumed silicas. These products serve as direct additives for the prevention of caking and the enhancement of free flow characteristics in powdered food products. Huber and PPG also participate in this market. The former supplies ZEOFREE precipitated silica products to the food industry. PPG markets FLO-GARD flow conditioning silicas which function to improve anti-caking and free flow properties in such foods as cheeses, non-dairy creamers and seasonings.

In the production of beer, wine and fruit juices, silicas serve as clarifiers and stabilizers. In wine and fruit juices, for example, the large, active surface of silica sol particles removes undesirable proteins and phenolics from the system, thereby improving the taste, appearance and shelf life of the beverage. Beverages are generally treated with 0.1 to 1.0 percent of silica sol by weight.

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Sample Profile, Table & Forecast

COMPANY PROFILES

Cabot Microelectronics Corporation
870 North Commons Drive
Aurora, IL  60504
630-375-6631
http://www.cabotcmp.com

Revenues:  $320 million (FY 2006)
US Revenues:  $66 million (FY 2006)
Employment:  740 (October 2006)

Key Products:  fumed silica-based chemical mechanical planarization polishing slurries

Cabot Microelectronics is the world’s leading producer of chemical mechanical planarization (CMP) polishing slurries used in the manufacture of integrated circuit (IC) devices in the semiconductor industry, disk drive components and other products. The Company also distributes CMP polishing pads and provides wastewater management and water recovery services.

The Company is active in the specialty silicas industry through the manufacture of CMP slurries, which are used in the production of advanced integrated circuit devices by the semiconductor market. Cabot Microelectronics’ CMP slurries, which are typically marketed under the SEMI-SPERSE brand name, are formulated with fumed metal oxides, primarily fumed silicas. These ultra-fine, high-purity fumed silicas can be used as abrasives, to provide rheology control for liquids, serve as reinforcing fillers in elastomers, improve free flow of powders, act as dry carriers for liquids and function as emulsification agents. For example, in May 2007, Cabot Microelectronics introduced WIN W7000 tungsten CMP slurries that are based on fumed silica for the production of ICs.

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MARKETS - US demand for silica gels is forecast to expand 3.6 percent annually to 155 million pounds in 2011, valued at $222 million. Volume gains will be driven by imports of silica gel cat litter from China. Value growth will be buoyed by the development of new, higher value gels for applications including binders for sensor components, adsorbents for environmental uses and pervaporation membranes for dehydration of alcohols and other solvents. The presence of low priced and lower quality grades for cat litter applications will limit value gains, however.”
--Section III, pg. 49
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