Silicones

US Industry Study with Forecasts for **2016 & 2021**

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Gains in US demand for silicones through 2016 will be driven by renewed economic growth, along with rising manufacturing output and rebounding growth in construction activity.

US demand to climb 5.6% annually through 2016

US demand for silicones is forecast to climb 5.6 percent annually to $4.1 billion in 2016, with advances accelerating strongly from the pace of the recession-impacted 2006-2011 period. Gains will stem from renewed economic growth, along with rising manufacturing output and rebounding construction activity. In volume terms, silicone demand is projected to rise at a 4.8 percent annual pace to 890 million pounds in 2016.

Cosmetics, toiletries to boost key fluids segment

Silicone fluids and elastomers comprised the largest share of silicone demand in 2011, with each product accounting for more than 40 percent of the total. Although silicone fluids will experience below average gains through 2016 due to maturity in certain markets, increasing output of cosmetics and toiletries will promote the development of innovative silicone fluid emollients and conditioning agents designed for use with natural ingredients. Rebounding growth in the construction market will drive above average gains in demand for silicone elastomers, as well as for silicone resins. Advances will also be promoted by greater use of elastomers in medical applications, where liquid silicone rubber (LSR) is increasingly valued for its ease of processing, flexibility, and ability to form high precision parts. Silicone gels represent a small but important product segment. Demand for these materials

US Silicone Demand, 2016
($4.1 billion)

will benefit from the increasing utilization of silicone gel encapsulants in the fast growing photovoltaic and LED sectors of the electronics market. Moreover, silicone gel-filled breast implants -- which were reintroduced to the market in 2006 after a 14-year ban -- will continue to capture market share from their saline-filled counterparts.

Industrial uses to remain largest silicone market

The industrial market will remain by far the largest outlet for silicones. The motor vehicle segment is projected to provide the best growth opportunities, driven by substantial increases in vehicle output from relatively low 2011 levels, as well as by advancements in silicone technology aimed at improving vehicle safety and fuel efficiency. In addition, consumer preferences for quieter cabins will promote the use of silicone sealants and other products that aid in noise and vibration reduction. Among other markets, construction and medical products will achieve particularly rapid growth. Advances in the construction segment will be propelled by a strong recovery in building construction, particularly in the new residential segment, as well as by the use of high performance silicone-based adhesives, caulks, and coatings. The medical market will continue to expand strongly due to the ongoing technological development of new products.

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Sample Text, Table & Chart

TABLE III-11

SILICONE GEL DEMAND
(million dollars)

Item	2001	2006	2011	2016	2021
Gross Domestic Product (bil 2005$)	1				0
lb silicone/mil $ GDP					0
Silicone Gel Demand (mil lb)					5
$/lb					5
Silicone Gel Demand					0
Electronics					6
Medical					0
Other Markets					4
% gel					7
Silicone Demand	2				00

SAMPLE TABLE

PRODUCTS

Gels

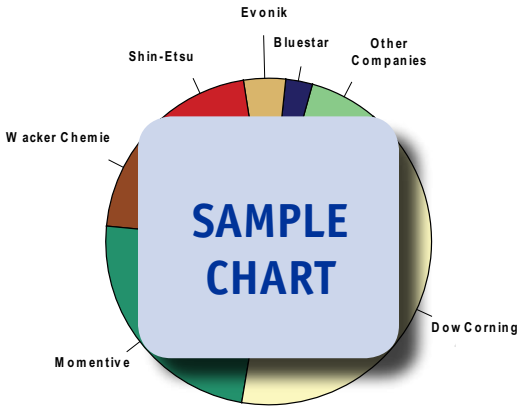
1 percent per y
$ nd is projected
p ounds. Electro
re vances in this
b t shipments fo
d g gains in the e
ics ew applications,
encapsulants for solar cells and light emitting diodes (LEDs)
offer healthy growth opportunities. Outside of electronics, d
silicone gels in the medical field will continue to expand at a
boosted by the rising popularity of silicone gel-filled breast i
lowing their re-approval by the FDA in 2006 after a 14-year ban.

SAMPLE TEXT

Silicone gels are produced by lightly crosslinking silicone fluids to form a loose, three-dimensional network, resulting in jelly-like material somewhere between a fluid and an elastomer. The majority of silicone gel demand is in the electronics market as encapsulants, but these products are also used in medical, consumer, and other industrial applications. In the electronics sector, silicone gels are valued for their ability to provide protection against mechanical shock and vibration. Silicone gels also offer moisture resistance to various electronic components. For instance, they protect connections and splices from moisture, dirt, and other environmental conditions that can cause damage and r
ability. Silicone gels are just one type of material used as en
in the electronics industry, and will continue to encounter co
from well-established materials such as urethanes and epoxi
less expensive. A key advantage of silicones in this applicat
effectiveness over a wider temperature range, which will fav
over competing materials.

CHART VI-1

US SILICONE MARKET SHARE
($3.1 billion, 2011)



SAMPLE CHART

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Sample Profile, Table & Forecast

TABLE IV-8

MACHINERY MARKET FOR SILICONES BY APPLICATION
(million dollars)

Item	2001	2006	2011	2016	2021
Machinery Shipments (bil $)	2				0
$ silicone/000$ machinery					0
Machinery Silicone Demand					5
Adhesives, Sealants & Coatings					7
Lubricants & Greases					7
Elastomeric Components					1
Other Applications					0
% machinery					2
Industrial Silicone Demand	1				0

SAMPLE TABLE

COMPANY PROFILES

Ashland Incorporated
50 East RiverCenter Boulevard
Covington, KY 41012
859-815-
http://ww

Revenue
US Reve
Employ

Key Pro ersonal care additives

SAMPLE PROFILE

Ashl corporation. The Company operates through four segments: Ashland Water Technologies, Ashland Specialty Ingredients, Ashland Performance Materials, and Ashland Consumer Markets. In August 2011, the Company purchased International Specialty Products Incorporated (ISP -- Wayne, New Jersey), a global manufacturer of specialty chemicals, for $3.2 billion. In FY 2011, the company had sales of $1.9 billion. Following the acquisition, the majority of ISP's operations were integrated into the Ashland Specialty Ingredients segment, while the company's Elastomers business was incorporated into the Ashland Performance Materials segment.

The Company participates in the US silicone market through the Ashland Water Technologies and Ashland Specialty Ingredients segments. In FY 2011, the Ashland Water Technologies segment had revenues of $1.9 billion. Among a number of other chemicals, the segment makes silicone based antifoam agents. Silicone based antifoam agents are available in water- and oil-based varieties, and are sold by the division under the ADVANTAGE and DREWPLUS brand names. The Ashland Water Technologies segment's ADVANTAGE line

"Adhesives, sealants, and coatings represent the leading category, accounting for 43 percent of silicones used in the machinery and equipment market. Through 2016, demand for these materials is expected to rise 4.9 percent annually to $159 million. Advances will be based on their high heat and chemical resistance. Silicone sealants are used where resistance to high temperatures, oil, coolants, lubricants, and fuels is mandatory."

--Section IV, pg. 98

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Other Studies

Custom Thermoplastic Compounding

US demand for custom compounded thermoplastics is forecast to rise 5.0 percent annually to 11.4 billion pounds in 2017, valued at $14.3 billion (resin content only). Construction will offer the best market prospects, as the industry recovers from recession. PVC represents the largest and fastest growing compounded thermoplastic. This study analyzes the 8.9 billion pound US custom compounded thermoplastic industry, with forecasts for 2017 and 2022 by resin and market. The study also evaluates company market share and profiles industry players.

#2991 ..... February 2013 ..... $5100

Bioplastics

US demand for biodegradable and non-biodegradable bio-based resins is forecast to climb at a 20 percent annual pace through 2016 to 550 million pounds. Polylactic acid will remain the largest bioplastic segment, while bio-based polyethylene and degradable polyesters will grow the fastest at double-digit rates. Nonpackaging markets will outpace packaging uses. This study analyzes the 220 million pound US bioplastic industry, with forecasts for 2016 and 2021 by resin, product and market. The study also evaluates company market share and profiles industry players.

#2908 ..... June 2012 ..... $4900

High Performance Composites

US demand for polymer materials containing advanced fiber reinforcements is forecast to rise almost 15 percent per year to $10.2 billion in 2016. Aerospace will remain the dominant and fastest growing market, followed by the energy market. Carbon will continue as the dominant and most rapidly growing fiber, followed by S-glass. This study analyzes the $5.1 billion US high performance composite industry, with forecasts for 2016 and 2021 by fiber, market and resin. The study evaluates company market share and profiles industry players.

#2905 ..... June 2012 ..... $4900

World Rubber

Global rubber consumption is forecast to rise 4.3 percent annually through 2015 to 30.5 million metric tons, driven by increasing tire output as global motor vehicle production accelerates from a weak base. The Asia/Pacific market will remain dominant and grow the fastest. Non-tire rubber sales will outpace growth in tire rubber sales. This study analyzes the 24.8 million metric ton world rubber industry, with forecasts for 2015 and 2020 by market, world region and for 30 countries. The study also evaluates company market shares and profiles industry players.

#2843 ..... March 2012 ..... $5800

World Thermoplastic Elastomers

Global demand for thermoplastic elastomers (TPEs) will rise 6.3 percent annually through 2015. Gains will be driven by rebounding motor vehicle production in the US and Western Europe. Advances will also be fueled by the rising use of TPEs in the developing countries, where these materials are continuing to penetrate new applications. This study analyzes the 4.1 million metric ton world TPE industry, with forecasts for 2015 and 2020 by market, product, world region and for 15 countries. The study also evaluates company market share and profiles industry players.

#2803 ..... September 2011 ..... $6400

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