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# Flame Retardants

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

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Study #2217 | August 2007 | \$4400 | 209 pages

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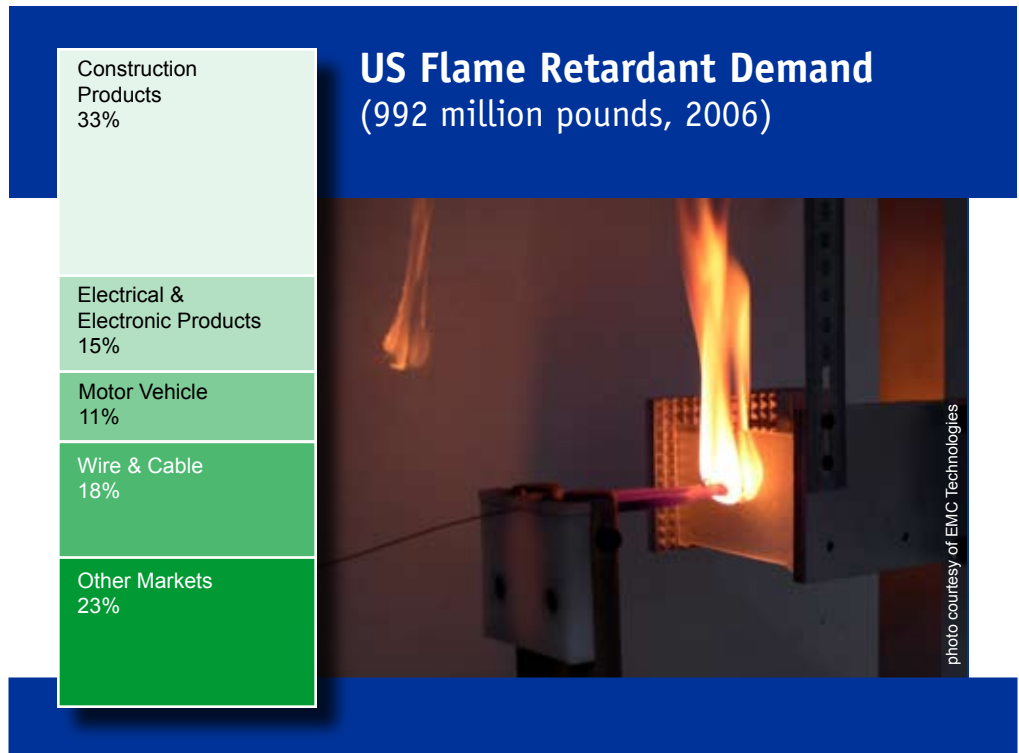
*US demand for flame retardants through 2011 will be supported by increasingly stringent fire codes and flammability requirements and improved economic outlook in key applications.*

## US demand to rise 3% annually through 2011

US demand for flame retardants will rise 3.0 percent per year to 1.15 billion pounds in 2011. Gains will be driven by increasingly stringent fire codes and flammability requirements, especially in building materials and consumer products. Additionally, an improved economic outlook in key applications, such as wire and cable insulation and jacketing, electronics housings and aerospace products, will fuel demand. However, gains will be limited by cost sensitivity in price-competitive markets such as motor vehicles and textiles, as well as environmental and health concerns over several flame retardant chemicals.

## Phosphorus-based types to be the fastest growing

Phosphorus-based flame retardants will grow at the fastest pace, driven by increasing trends toward non-halogenated products. However, brominated compounds will continue to lead the market in total value, as the regulatory climate in the US is unlikely to undergo dramatic changes in the near future. Rapid gains are also expected for smaller-volume flame retardants, such as magnesium hydroxide, which is finding increased use in polypropylene and engineering resins. Alumina trihydrate (ATH) will remain the largest volume flame retardant through 2011, comprising 45 percent of demand and growing in line with the whole market.



## Wire, cable & electronics to see best prospects

Construction products were the largest market for flame retardants in 2006. However, the strongest gains are projected for wire and cable applications, representing a substantial turnaround from declining demand during the 2001-2006 period. A similar improvement is expected in electrical and electronics markets for flame retardants. Smaller-volume outlets such as aerospace products and furniture will also grow at an above-average pace, driven by strict flammability regulations. Flame retardant demand in motor vehicle and textile markets will advance at a rate slightly slower than the overall industry.

## Thermoplastics to lead gains by material

Plastic resins (both thermoplastics and thermosets) accounted for over three-quarters of flame retardants demand in 2006. The most rapid gains will be seen for polyolefins and other thermoplastics such as engineering resins, which are increasingly used in flame retardant construction and electronics applications. Slower growth is expected for PVC, polystyrene and epoxy resins, although gains will improve considerably from the 2001-2006 period. Demand for flame retardants in non-plastic materials will advance at a subpar rate, restrained by weakness in the highly mature cellulose insulation market.

## Sample Text, Table & Chart

### FLAME RETARDANT PRODUCTS

#### Halogenated Compounds

Demand for halogenated flame retardants will advance 2% annually to 291 million pounds in 2016. This category includes all of the chlorinated and brominated phosphorus-based products. Chlorinated phosphorus-based products are extremely effective flame retardants, but their environmental drawbacks of halogenated compounds have led to a significant decline in demand. Polybrominated diphenyls were the most common compounds used in the past, and their demand has declined for several decades. However, brominated compounds will remain among the most effective flame retardants used, due to their performance advantages and superior environmental profile compared to chlorinated products.

Halogenated flame retardants accounted for just over half of flame retardants demand in 2006 on a value basis and 26 percent in terms of volume. However, even though halogenated products are more expensive than some other flame retardants (such as alumina trihydrate), they are more effective flame retardants, meaning that smaller quantities can afford the same protection as larger amounts of other products. Brominated flame retardants are preferred over chlorinated products, since they are heavier than chlorinated compounds, a factor contributing to greater flame retardant efficiency. In addition, brominated flame retardants release significantly less volatile decomposition products than chlorinated compounds, which makes them preferable to the latter with respect to health and environmental considerations.

Chlorine has been the subject of intense debate for more than a decade, primarily due to its suspected role in the depletion of the Earth's ozone layer, its carcinogenicity and its persistence in the environment. A number of chlorine applications have been phased out or sharply reduced, including pesticides, pulp and paper bleaching, and some water

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SAMPLE  
TEXT

TABLE III-1

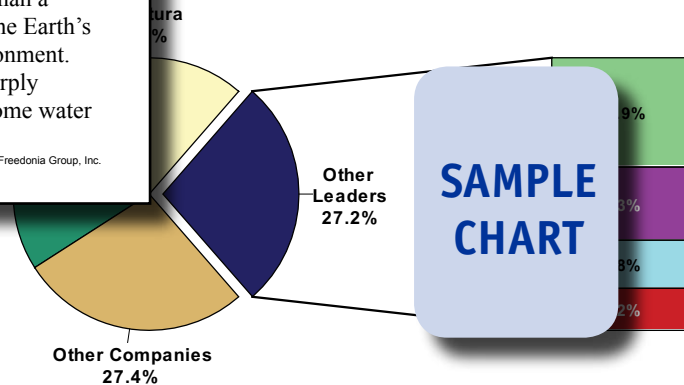
FLAME RETARDANTS DEMAND BY MATERIAL

Item	1996	2001	2006	2011	2016
Plastics Demand (mil lb)	75200	80000	85000	90000	95000
lb FR/000 lb plastic	10	10	10	10	10
Flame Retardants Demand (mil lb)	822	822	822	822	822
Thermoplastic Resins	328	328	328	328	328
Thermoset Resins	295	295	295	295	295
Other Materials	198	198	198	198	198
\$/lb	0.6	0.6	0.6	0.6	0.6
Flame Retardants Demand (mil \$)	55	55	55	55	55
Thermoplastic Resins	28	28	28	28	28
Thermoset Resins	18	18	18	18	18
Other Materials	87	87	87	87	87

SAMPLE  
TABLE

CHART VI-1

RETARDANTS MARKET SHARE, 2006  
 (\$827 million)



SAMPLE  
CHART

## Sample Profile, Table & Forecast

**TABLE IV-3**  
**CONSTRUCTION MARKET FOR FLAME RETARDANTS**  
 (million pounds)

Item	1996	2001	2006	2011	2016
Construction Plastics Demand lb FR/000 lb plastic	100	100	100	100	100
Flame Retardants in Construction					
Insulation					
Roofing Material					
Wood Panel Binder Resins					
Other Construction Products					
\$/lb					
FR Demand in Construction (mil \$)					
% construction					
Flame Retardants Demand (mil \$)					



### COMPANY PROFILES

#### Cytec Industries Incorporated

Five Garret Mountain Plaza  
 West Paterson, NJ 07424  
 973-357-  
 http://wv

Sales: \$  
 North Am  
 Employe

Key pro



Cytec Industries is a vertically integrated producer of specialty chemicals and materials. The Company operates in four segments: Cytec Performance Chemicals, Cytec Surface Specialties, Cytec Engineered Materials and Building Block Chemicals.

Cytec is active in the US flame retardant industry through the Performance Chemicals segment, which had 2006 sales of \$865 million. Of the segment's total 2006 sales, North America accounted for \$324 million. The segment produces mining chemicals, phosphines and polymer additives, among other products, for applications that include pharmaceuticals, coatings and electronic manufacturing. The segment has manufacturing facilities in the US, Chile, Mexico, Colombia, Belgium and Korea. The Performance Chemicals segment's US plants are in Belmont, West Virginia; Kalamazoo, Michigan; Indian Orchard, Massachusetts; Langley, South Carolina; Mount Pleasant, Tennessee; New Castle, Delaware; Olean, New York; and Stamford and Wallingford, Connecticut.

Cytec's phosphine-based flame retardants are produced and sold under the PYROSET, CYAGARD and CYPHOS brand names. For textile applications, Cytec manufactures PYROSET flame retardants.

**"Roofing** -- Demand for flame retardants in roofing materials is forecast to grow 3.7 percent per year to 45 million pounds in 2011. This strong growth will result mainly from the increased use of thermoplastic polyolefin (TPO) sheeting as a roofing material. Gains will also be driven by trends toward stricter flammability requirements for roofing materials in fire-prone areas ..."

--Section IV, pg. 77

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**OTHER STUDIES**

**World Flame Retardants**

This study analyzes the global market for flame retardant chemicals. Historical demand data (1996, 2001, 2006) is presented as well as forecasts for 2011 and 2016 by type (e.g., brominated, phosphorus, ATH), by market (e.g., construction, electrical/electronics, motor vehicles), by world region (e.g. Asia/Pacific, North America, Western Europe) and for 13 major countries. The study also considers market environmental trends and indicators, details industry structure and profiles leading manufacturers worldwide.

#2277 ..... 12/2007..... \$5400

**Wood Protection Coatings & Preservatives**

US demand for wood protection coatings and preservatives is analyzed in this study. It presents historical demand data (1996, 2001, 2006) and forecasts for the years 2011 and 2016 by product (coatings, preservatives), application (siding, decking, furniture, cabinets, windows and doors, fencing, flooring) and market (building construction, nonbuilding construction). The study also considers market environment factors, details industry structure, evaluates company market share and profiles major competitors.

#2243 ..... 09/2007..... \$4500

**Pigments: Inorganic, Organic & Specialty**

US color pigment demand will grow 4.4% yearly through 2011, driven by a shift toward high-performance organic pigments and specialty types. Metallic, pearlescent and other specialty pigments will lead gains based on the need for more novel, eye-catching optical effects in automotive coatings, printing inks, plastics, cosmetics and toiletries. This study analyzes the \$3 billion US pigments industry, with forecasts for 2011 and 2016 by type and market. It also details market share and profiles major players.

#2232 ..... 08/2007..... \$4500

**Glass Fibers**

US glass fiber demand will reach \$7 billion in 2011. The dominant glass wool fiber sector will grow the fastest, driven by rebounding demand in office and commercial construction and increasing insulation use per structure to improve energy efficiency. Reinforced plastics will present the best opportunities for textile glass fiber. This study analyzes the US glass fiber industry, with forecasts for 2011 and 2016 presented by type and market. It also evaluates company market share and profiles leading competitors.

#2199 ..... 05/2007..... \$4400

**Reinforced Plastics**

US reinforced plastics demand will reach 4.2 billion pounds in 2011, driven by broadened applications and enhanced competitiveness with steel and aluminum. Thermoset resins will remain dominant while thermoplastics will grow faster. Glass fibers will stay the top reinforcement material while nanomaterials will lead gains. This study analyzes the \$6.7 billion US reinforced plastics industry for 2011 and 2016 by resin, market and reinforcement. It also evaluates company market share and profiles major players.

#2195 ..... 04/2007..... \$4400

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