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Refractories

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

Study #2309 | February 2008 | \$4600 | 245 pages

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The Freedonia Group

767 Beta Drive

Cleveland, OH • 44143-2326 • USA

Toll Free US Tel: 800.927.5900 or +1 440.684.9600

Fax: +1 440.646.0484

E-mail: info@freedoniagroup.com

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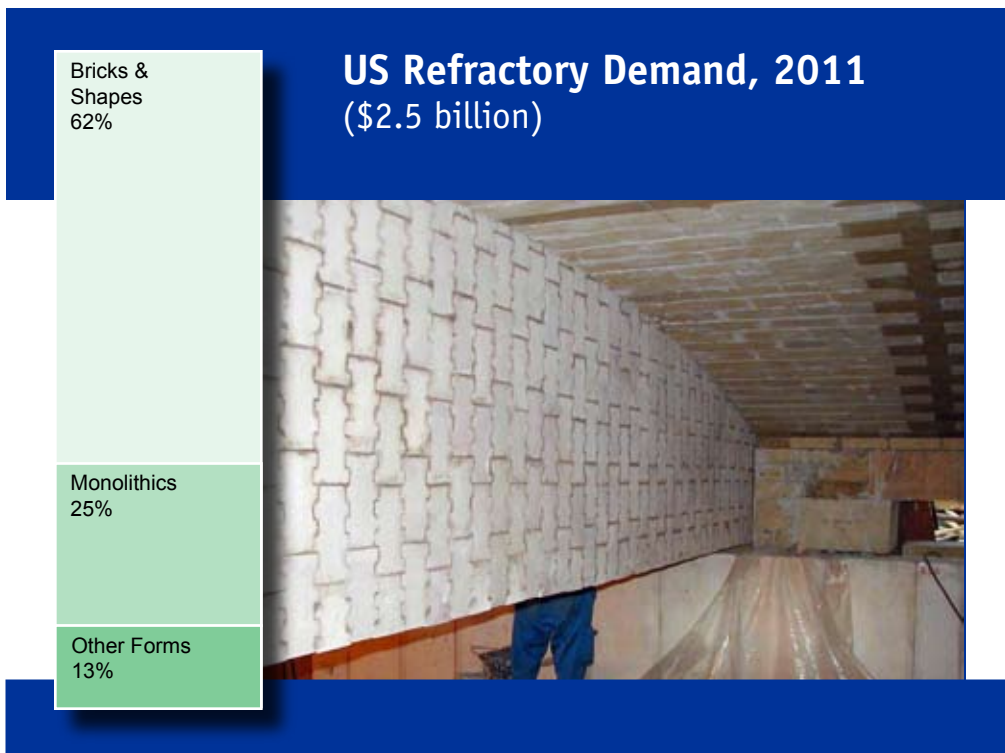
Gains will be driven by strong growth in the production of nonmetallic mineral products, particularly cement, as nonresidential and nonbuilding construction expenditures accelerate.

Better performing, more expensive refractories to bolster demand

US demand for refractory products is forecast to advance 1.8 percent per annum to \$2.5 billion in 2011, accelerating from the 2001-2006 period. Gains will be driven by strong growth in the production of nonmetallic mineral products, particularly cement, as nonresidential and nonbuilding construction expenditures are expected to accelerate. Growth will also be supported by the increasing use of better performing, more expensive refractories, which will bolster demand in value terms. Advances will be somewhat restrained, however, by slowing steel production and a weak outlook for fabricated metals.

US refractory imports to outpace exports

Imports of refractories will increase more rapidly than exports, in part the result of recent policy changes instituted by the Chinese government that discourage the export of raw materials and favor the export of finished refractory products. Furthermore, refractory products continue to become more efficient and thereby longer lasting. As a result, shipments of refractories will grow more slowly than demand, rising 1.3 percent per year through 2011. In volume terms, shipments are expected to fall to below 2.8 million tons in 2011.



Bricks, shapes to lead gains

Among refractory forms, demand for bricks and shapes is expected to advance more rapidly than for monolithics, as preformed shapes continue to be increasingly utilized due to the performance advantages they offer, such as reduced heat-up time. However, demand for monolithic bonding and other mortars is projected to grow at an above-average pace, as the use of these products provides an economic advantage by extending the time-span between brick relinings. Clay refractories are expected to outperform nonclay refractories through 2011, benefiting from the increasing use of higher-value materials

such as high-alumina due to their superior performance attributes.

The largest dollar gains are expected in the nonmetallic mineral products market, which will increase more in value terms than the considerably larger metal products market, despite its smaller size. Gains will be spurred by strong growth in the production of ceramics, cement and other mineral products, fueling demand for associated refractories. Refractory demand from nonmanufacturing industries will also be strong, supported by the increased use of stone ovens in restaurants and the growing popularity of outdoor fireplaces.

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Sample Text, Table & Chart

MATERIALS

High-Alumina

Shipments of high-alumina refractory products are forecast to advance 3.4 percent per annum through 2011, at a pace of any refractory product. Shipments of high-alumina refractories are expected to reach 1.5 billion tons in 2011. Growth will be driven by the characteristics of these refractories, including resistance to chipping, high volume stability, and resistance to thermal shock and corrosion. High-alumina refractories will continue to benefit from higher prices through 2011. Gains will be somewhat restrained, on the other hand, by a slowdown in steel production through 2011.

High-alumina clay refractories are typically defined as those containing between 50 and 87.5 percent alumina content, while those with over 87.5 percent alumina content are classified as nonclay, extra-high alumina refractories. High-alumina clay refractories provide resistance to chemical and slag attacks, and, depending upon the impurities present, have higher volume stability and excellent resistance to chipping compared to other clay refractory products. As in the case of nonclay alumino-silicate materials, performance and cost both increase as alumina content rises. Given their solid performance characteristics, high-alumina refractories are available in virtually any form, including bricks, shapes, castables, cements, gunning mixes and a number of others.

Key applications for high-alumina refractories include aluminum furnace linings, iron and steel furnace and ladle linings (including continuous casting), kiln linings (including rotary kilns) and tank furnace sidewalls. Depending upon the alumina content, these refractories can be suitable for use in applications where temperatures reach 3,200 degrees Fahrenheit. High-alumina clay refractories can be manufactured from a number of raw materials, including andalusite, calcined bauxite, kaolin

SAMPLE
TEXT

TABLE V-3

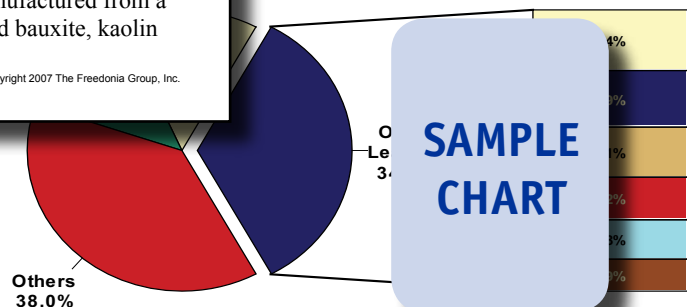
METAL INDUSTRY REFRACTORY MARKET (million dollars)

Item	1996	2001	2006	2011	2016
Metal Product Shipments (bil \$)	300	350	400	450	500
\$ refractory/000\$ shpt	15	15	15	15	15
Metal Industry Refractory Demand	45	45	45	45	45
Iron & Steel Production	80	80	80	80	80
Nonferrous Metal Production	85	85	85	85	85
Metal Casting & Fabrication	80	80	80	80	80
% metals	9.8	9.8	9.8	9.8	9.8
Refractory Demand	200	200	200	200	200

SAMPLE
TABLE

CHART VI-1

MARKET SHARE BY COMPANY, 2006 (\$2.3 billion)



SAMPLE
CHART

*excludes sales of refractory raw materials

Sample Profile, Table & Forecast

COMPANY PROFILES

Kyanite Mining Corporation

30 Willis Mountain
 Dillwyn, VA 22821
 434-983-2085
<http://www.kyanite.com>

Annual Sales: \$100 million
 Employment: 100

Key Products:

The privately held company also sells kyanite dimensional stone. Kyanite Mining's products are used in refractory, ceramic, investment casting, kiln furniture, foundry and other high-temperature applications worldwide.

The Company's kyanite and mullite products, which are sold under the VIRGINIA KYANITE and VIRGINIA MULLITE brand names, respectively, can be used in the production of refractory bricks, monolithics, mortars, investment casting mold materials, kiln furniture, mold wash, brake shoe linings, electronic ceramics, pottery and sanitary ware. Specifically, VIRGINIA KYANITE materials expand irreversibly when heated, which aids in offsetting the shrinkage of other raw materials and binders used in the production of refractories. These materials contain 92- to 96-percent kyanite. The Company's VIRGINIA MULLITE materials contain 80-percent mullite, eleven-percent finely dispersed amorphous silica, three- to six-percent quartz, and about two-percent cristobalite. These materials also feature high melting temperatures and low thermal expansion coefficients. In addition, when re-crystallized in refractories and ceramics, VIRGINIA MULLITE materials form small lenticular crystals that offer high strength.

**SAMPLE
PROFILE**

TABLE III-2

REFRACTORY BRICK & SHAPE SUPPLY & DEMAND (million dollars)

Item	1996	2001	2006	2011	2016
Refractory Demand	2320	2148	2305	2525	2700
% bricks & shapes	59.2	53.5	59.4	62.0	63.7
Brick & Shape Demand	1374	1148	1378	1565	1720
net exports					
Brick & Shape Shipments					
By Form:					
Standard Bricks					
Preformed Shapes					
By Material:					
Nonclay					
Clay					
\$/ton					
Brick & Shape Shpts (000 tons)					

**SAMPLE
TABLE**

"Shipments of standard bricks are forecast to advance 1.4 percent per year to \$770 million, approximating the 2001-2006 pace. In volume terms, shipments of these products are projected to decline slightly, falling to 710,000 tons in 2011. Gains will be hampered by the continuing replacement by preformed shapes, as well as increasing competition from imported bricks."

--Section III, pg. 47

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OTHER STUDIES

Brick & Block

The US market for brick and block is analyzed in this study. It presents historical demand data (1997, 2002, 2007) and forecasts for 2012 and 2017 by product (e.g., common, glazed and other clay bricks; structural and decorative concrete block; concrete pavers; concrete brick); market (residential, nonresidential, nonbuilding); application (e.g., siding, structural, chimneywork, fencing); and US region. The study also considers market environment factors, evaluates company market share and profiles major players.
 #2331 04/2008..... \$4500

Abrasives

US abrasives demand will reach \$5.3 billion in 2011 based on strength in the electrical/electronic product, motor vehicle and aerospace sectors. Nonmetallic abrasives will outperform metallic types. Raw material demand will be led by manufactured minerals such as manufactured diamond, cubic boron nitride and other superabrasives. This study analyzes the US abrasives industry, with forecasts for 2011 and 2016 by raw material, product and market. It also details company market share and profiles major players.
 #2291 12/2007..... \$4500

Industrial Castings

US industrial castings demand will reach \$35 billion in 2011, supported by gains in smaller markets such as aerospace and electrical/electronic equipment. Shipments of nonferrous types will accelerate, led by magnesium-based castings. Ferrous castings will continue to lose market share to nonferrous, both in value and tonnage. This study analyzes the 15.8 billion ton US industrial castings industry, with forecasts given for 2011 and 2016 by type and market. It also details market share and profiles major players.
 #2214 07/2007..... \$4400

Air Pollution Control in China

Demand for air pollution control equipment in the world's leading emitter of sulfur dioxide and other air pollutants will grow 18% annually through 2010. Particulate removal equipment will remain the largest product category and grow the fastest. Manufacturing and utilities will stay the top markets. This study analyzes the ¥30 billion Chinese air pollution control industry for 2010 and 2015 by product, market and region. The study also evaluates company market share and profiles leading industry players.
 #2163 04/2007..... \$4900

Gaskets & Seals

US demand for gaskets and seals will grow 3.6% annually through 2010. Gains will be supported by an improved economic outlook and increasing penetration of more advanced materials. Molded seals and packings, plastic gaskets, expanded graphite gaskets and metallic gaskets will grow the fastest. Aerospace will see the most rapid gains by market. This study analyzes the \$7.3 billion US gasket and seal industry for 2010 and 2015 by product and market. It also evaluates market share and profiles major firms.
 #2150 02/2007..... \$4300

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