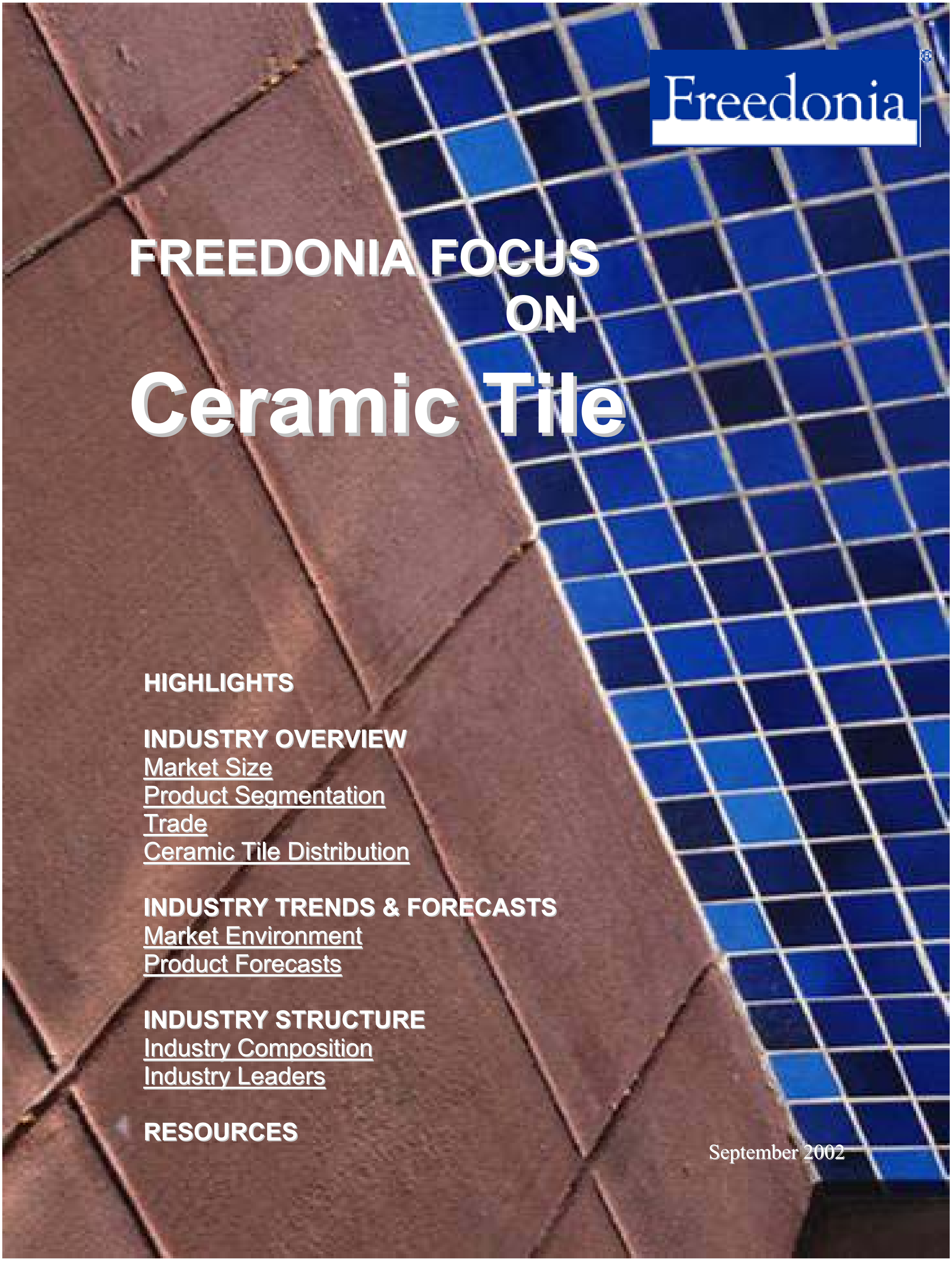

Freedonia®

FREEDONIA FOCUS ON

Ceramic Tile

HIGHLIGHTS

September 2002

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- Total US demand for ceramic floor and wall tile reached 2.2 billion square feet in 2001. Average annual growth between 1996 and 2001 was 9.4 percent.

- Shipments of ceramic floor and wall tile from US producers totaled 578 million square feet valued at $738 million in 2001. Annual growth between 1996 and 2001 was negative 0.1 percent.

- Imports of ceramic floor and wall tile reached 1.7 billion square feet valued at $1.36 billion in 2001, representing 75 percent of demand.

- Large glazed tile, the fastest growing product, has substantially increased its market share at the expense of small glazed tile.

- Shipments of ceramic floor and wall tile are forecast to increase 2.2 percent annually through 2006 to reach 645 million square feet valued at $823 million.

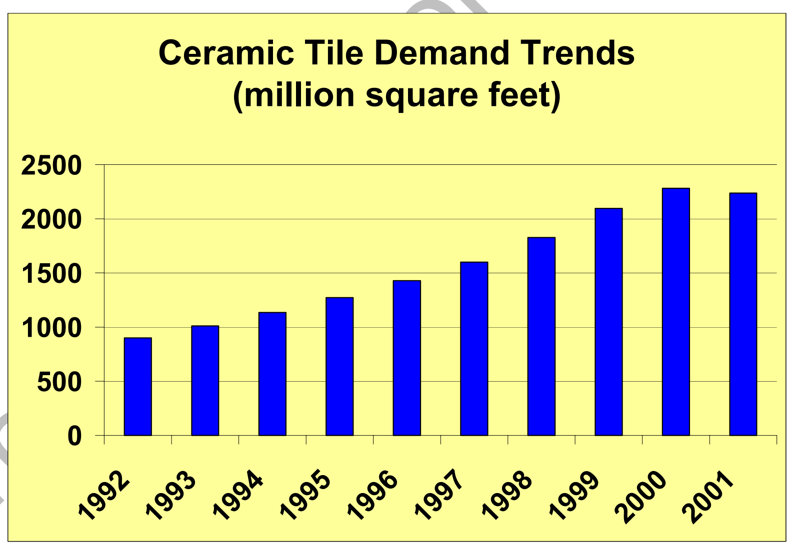
- Total demand for ceramic floor and wall tile is forecast to increase 3.6 percent annually through 2006 to reach 2.7 billion square feet.

- The largest ceramic tile producers in the US are Dal-Tile, Marazzi Gruppo (Italy), Florida Tile, and Il Gruppo Roca (Spain).

INDUSTRY OVERVIEW

Market Size

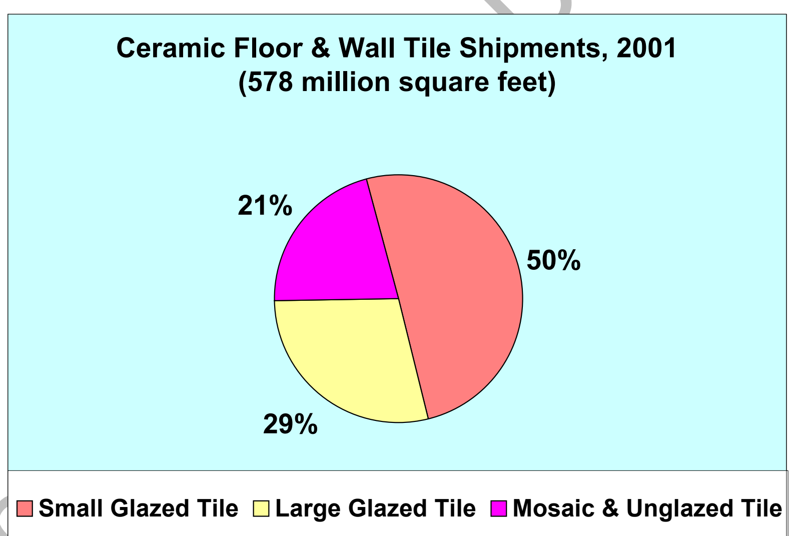
Total US demand for ceramic floor and wall tile reached 2.2 billion square feet in 2001, a slight drop from the peak level of 2.3 billion square feet achieved the previous year. Average annual growth between 1996 and 2001 was 9.4 percent. The ceramic tile industry enjoyed robust growth during the 1990s, spurred by healthy building construction spending levels as well as a shift in consumer preferences away from carpets and rugs and towards hard surface flooring materials. Floor tiles represent the bulk of ceramic floor and wall tile demand. The "floor and wall" designation distinguishes these tiles from structural ceramic tiles used in such applications as exterior cladding for buildings.



Source: The Freedonia Group, Inc.

Product Segmentation

Ceramic tiles are made from a mixture of clay, water, feldspar, talc, flint and other naturally occurring minerals. The mixture is pressed into shape and finished using either a single-fired (monocottura) or double-fired (bicottura) process. A variety of thicknesses and grades are available, depending on the intended use. The industry has become more fashion-oriented, now offering an unprecedented array of designs, textures, colors and finishes. The industry is also dominated by imports. Shipments from US producers totaled 578 million square feet valued at $738 million in 2001, accounting for 25 percent of total demand. Annual shipments growth between 1996 and 2001 was negative 0.1 percent.



Source: The Freedonia Group, Inc.

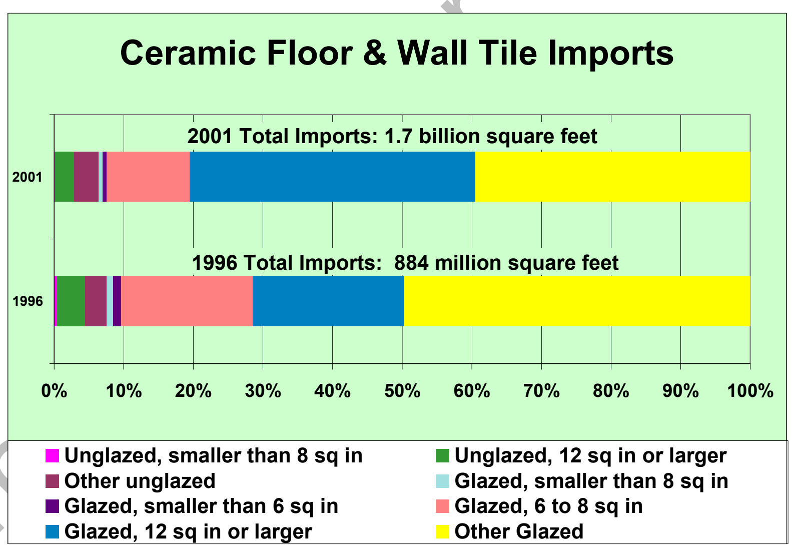
Small Glazed Tile: Shipments of small glazed tile decreased by 1.9 percent annually between 1996 and 2001, reaching 290 million square feet. These glazed tiles have a facial area that is larger than six square inches but smaller than 59 square inches. This segment represented 55 percent of shipments in 1996. The decline in market share is due to competition from large tile. For consumers, the biggest drawback to using ceramic tile is the high maintenance involved in keeping the grout clean. Larger tiles have less grout, a cleaner look and lower maintenance requirements.

Large Glazed Tile: Shipments of large glazed tile posted average annual gains of 4.6 percent between 1996 and 2001 and reached 166 million square feet. Shipments of large glazed tile increased from 23 percent of the total in 1996 to 29 percent in 2001. Large tiles are those with a surface area of over 59 square inches. Ceramic tile is one of the fastest growing hard surface flooring products. Aggregate ceramic tile growth has been driven by flooring demand, where larger tile is more likely to be used. Large tile is also being used increasingly on walls, decks, tub and shower surrounds and other less traditional applications. Ceramic tiles that look like more expensive natural materials, such as marble or stone, are enormously popular, and larger formats highlight the materials' natural elegance better than smaller formats.

Mosaic & Unglazed Tile: Shipments of mosaic and unglazed tile declined by an average of one percent per year between 1996 and 2001, and totaled 122 million square feet. Shipment growth would have been positive if not for the declines in 2001. Mosaic tile is glazed or unglazed and has a facial area of less than six square inches. In addition to covering floors and walls, mosaic tiles can be used where curved surfaces are needed, such as in hot tubs or fountains, and in the creation of designs on floors and walls. Unglazed tiles are the most durable, do not show wear from heavy traffic, and are often used in commercial applications.

Trade

The percentage of ceramic floor and wall tile demand in the US that is satisfied through imports has increased dramatically over the last decade, from one-quarter in the early 1990s to approximately three-quarters by 2001. Ceramic tile makers in countries such as Italy and Spain have been honing the craft for centuries. As a result, manufacturers in these countries operate with technologically superior production facilities and a more highly skilled labor force, and so are able to offer lower-priced products with higher-level styling. US producers, for their part, did not invest as aggressively in plant upgrades and were unprepared for the rapid growth that began in the 1980s. Exports have represented about six percent of US shipments since 1996.



Source: The Freedonia Group, Inc.

Imports of ceramic floor and wall tile grew by an average of 13.9 percent annually between 1996 and 2001, reaching an historic high of 1.7 billion square feet in 2001 – even as US shipments fell that same year. In value terms, imports increased from $734 million in 1996 to $1.36 billion in 2001, reflecting average annual growth of 13.1 percent. Lower tariffs, intense competition among suppliers, and aggressive pricing have contributed to declines in the average unit value of ceramic tile between 1996 and 2001. Shifts in the imported product mix demonstrate the same trends evident in shipments from US manufacturers – namely, increasing demand for larger glazed tile at the expense of smaller glazed tile. Glazed tiles represent close to 95 percent of all imports.

The largest share – 36 percent – of ceramic floor and wall tile imports come from Italy. Italy, Spain, Mexico and Brazil account for more than 80 percent of all imports. The remainder arrives from a total of 47 countries. Italy houses hundreds of ceramic tile makers who are generally recognized as having superior technological and design capabilities. In general, higher-end imports are more likely to be stoneware (nonporous; fired at higher temperatures) products from Italy or Spain. Lower-end imports are typically earthenware (porous; more decorative end uses) products from Mexico or Brazil.

Most imports target residential markets. The commercial ceramic tile market is still dominated by US manufacturers because of the need for closer relationships among the suppliers and builders, architects, designers and other participants. Foreign tile producers are just beginning to focus on the potential of the largely untapped US commercial market.

Ceramic Tile Distribution

Ceramic floor and wall tiles are distributed through company-operated sales centers, independent distributors, and home center retailers. In addition to retail consumers, customers include floor covering dealers, ceramic specialty retailers, tile contractors, architects, designers, builders, and developers. The architectural community is particularly influential regarding specifications for products used in commercial applications.

Independent and manufacturer-owned distributors account for 85 percent of ceramic tile sold in the US. Home centers and building materials dealers account for 15 percent, but are seeing faster sales growth. Of the tile sold through distributors, almost half is sold to home builders and developers. About one-third is sold to contract specialty tile dealers, and the remainder is sold to independent floorcovering retailers.

Home Depot and Lowe's are the two leading flooring retailers. The bulk of ceramic tile sales at Home Depot and Lowe's comes from the more modestly priced tile lines. The primary obstacle to further ceramic tile growth in these outlets involves installation. Properly installed and maintained, ceramic tile can last a lifetime. Improper installation can ruin a project. Different tools, materials and techniques are needed for the installation of different types of tile, and a certain amount of expertise is crucial to proper installation. Maintaining relationships with reliable and highly skilled installers to whom customers may be referred has thus far not been within the purview of the big box retailers.

INDUSTRY TRENDS & FORECASTS

Market Environment

Consumption of ceramic floor and wall tiles is primarily driven by demand for hard surface flooring. Hard surface flooring demand patterns are, in turn, closely related to the highly cyclical building construction sector. For example, an unfavorable construction market in 1995 coincided with a dip in both hard surface flooring and ceramic tile shipments from US producers (though not total tile demand). A decline in tile shipments in 2001 is likewise attributable to the recession that began in March 2001 and the ensuing softening of construction activity.

Overall demand for ceramic tiles is less sensitive to economic cycling than many other construction-related industries because of the wide utilization of ceramic tile in repair and improvement, rather than new, construction projects. Additionally, ceramic tiles are often installed for purely decorative purposes that are completely independent of either repair projects or new construction activity.

Key Indicators for Ceramic Tile
(billion 1996 dollars)

Item	1996	2001	2006	% Annual Growth 06/01
Gross Domestic Product	7813	9215	10700	3.0
Residential Building Construction	281.1	322.4	335	0.8
Nonresidential Building Construction	219.4	246.9	276	2.3
Hard Surface Flooring Sales (mil sq yd)	711	905	1051	3.0

Source: The Freedonia Group, Inc.

Product Forecasts

Demand for ceramic floor and wall tile in the US is forecast to increase 3.6 percent annually through 2006 to reach 2.7 billion square feet. While this represents a considerable slowdown from the 1996 to 2001 period, growth will be respectable, spurred by strong replacement flooring demand.

Shipments of ceramic floor and wall tile are forecast to rise 2.2 percent annually through 2006 to reach 645 million square feet valued at $823 million. US producers dominate commercial markets where demand is more sensitive to the cyclicality of construction activity. Through 2006, shipment growth will stem from nonresidential construction spending. New plants, facility upgrades, and acquisitions of US companies by foreign producers will also contribute to increases in domestic production.

Small Glazed Tile: Shipments of small glazed tile are forecast to decrease by one half of one percent per annum through 2006, totaling 283 million square feet. With minor fluctuations, declines in small glazed tile demand have been evident for at least a decade and the trend is not expected to abate in the near future.

Large Glazed Tile: Shipments of large glazed tile will continue to grow at the fastest rate, 6.4 percent annually through 2006, and will reach 226 million square feet. The majority of flooring demand stems from repair and improvement activity, and consumer preferences in flooring have decidedly shifted towards greater use of high-end products made of natural materials. Residential replacement demand will benefit from an aging housing stock as well as from various demographic variables, such as growth in the 45 to 54 year-old age segment, which promote refurbishment over the purchase of new homes. Trends toward larger kitchens and bathrooms, as well as more bathrooms per structure, will also benefit ceramic tile demand. Kitchens and baths are often the focus of renovation activity, and tile use is greater in these rooms. Large porcelain tiles, which are actually tougher than standard ceramic, are one of the fastest growing types. The color in porcelain permeates the entire tile, making chips and scratches less noticeable.

Mosaic & Unglazed Tile: Shipments of mosaic and unglazed tile are projected to grow 2.3 percent annually through 2006 to reach 136 million square feet. Large tile use promotes demand for mosaic tiles, which are often used as coordinated design elements. Demand for large unglazed tiles, which show the least wear from high levels of foot traffic, will stem from repair and improvement spending in nonresidential building markets.

Ceramic Tile Shipments
(million square feet)

Item	1996	2001	2006	% Annual Growth 06/01
Ceramic Tile Shipments	580.4	577.6	645	2.2
Small Glazed Tile	320.0	290.0	283	-0.5
Large Glazed Tile	132.5	166.0	226	6.4
Mosaic & Unglazed Tile	127.9	121.6	136	2.3
+ net imports	848.8	1660.7	2027	4.1
Ceramic Tile Demand	1429.2	2238.3	2672	3.6

Source: The Freedonia Group, Inc.

INDUSTRY STRUCTURE

Industry Composition

The ceramic tile industry in the US is fragmented, with over one hundred and fifty ceramic floor and wall tile manufacturers that range in size from giant corporations to one-person studios. Many are US subsidiaries of foreign companies. About sixty percent of the companies have fewer than ten employees. Roughly ten percent of ceramic tile producers have more than 100 employees, and about five percent have more than 500 employees.

There has been a good deal of consolidation within the industry. In early 2002, **Mohawk** acquired Dal-Tile, the largest US ceramic tile producer. In 2000, **Florim Ceramiche** (Italy) launched Florim USA and built the largest single-site tile manufacturing facility in the US with an annual production capacity of 150 million square feet. In 1999, **Roca** (Spain) created Laufen USA after acquiring Laufen Ceramic Tile (Switzerland) and a Laufen subsidiary, U.S. Ceramic Tile. In 2002, three US ceramic tile factories closed, though not necessarily permanently, primarily due to pricing pressure from imports. **Crossville Ceramics** recently built a state-of-the-art porcelain tile facility with an annual production capacity of 20 million square feet. In 2001, Dal-Tile announced plans to build a plant with an annual production capacity of 130 million square feet; completion is expected in late 2002.

The largest US tile manufacturers are **Dal-Tile** and **Florida Tile**. Niche leaders include **Crossville** in porcelain and **Metropolitan** in quarry tile. Leaders among US subsidiaries of foreign companies include **Laufen USA**, and two subsidiaries f**Marazzi Gruppo** (Italy) – American Marazzi and Monarch Ceramic Tile.

Industry Leaders

Mohawk Industries Incorporated
160 S. Industrial Blvd.
Calhoun, GA 30701
706-629-7721
www.mohawkind.com

Dal-Tile International Incorporated
7834 C.F. Hawn Freeway
Dallas, TX 75217
214-398-1411
www.daltile.com

Dal-Tile is the largest US manufacturer of ceramic floor and wall tile with a 26 percent market share, and is also one of the leading producers of ceramic tile world-wide. Dal-Tile had sales of $1 billion and employed 7,800 in 2001. Dal-Tile also manufactures and markets a full range of stone products, as well as materials and tools for installation. In March 2002, Mohawk, the second largest US producer of carpets and rugs, completed its $1.5 billion acquisition of Dal-Tile. Excluding Dal-Tile, Mohawk had total sales of $3.4 billion and 23,550 employees in 2001.

Dal-Tile's products are marketed under two of the leading tile brand names, ***DALTILE*** and ***AMERICAN OLEAN***. The company has an aggregate annual production capacity of 527 million square feet. A new ceramic tile plant with a 130 million square foot capacity is scheduled to open in late 2002. The company operates more than 200 sales centers of its own, serves about 200 independent distributors, and is the largest tile supplier to home center retailers. Among Dal-Tile's larger customers are McDonald's, Wendy's, Taco Bell, Burger King, Barnes & Noble, Wal-Mart, and ExxonMobil. In 2000, Dal-Tile strengthened its market position by establishing a joint venture with EmilCeramica.

Illinois Tool Works Incorporated
3600 West Lake Avenue
Glenview, IL 60025
847-724-7500
www.itw.com

Florida Tile Industries, Inc.
1 Sikes Boulevard
Lakeland, FL 33815
941-687-7171
www.floridatile.com

Florida Tile is the second largest US-based producer of ceramic tile, and is among the top four ceramic tile firms that serve US markets. The company had estimated revenues of $126 million in 2001 (representing the second straight year of declining sales) and employed 1,300 in 2000. Illinois Tool Works (ITW) acquired Florida Tile as part of its 1999 acquisition of Premark International, and Florida Tile subsequently became part of ITW's Consumer Products segment. In early 2002, ITW announced plans to divest the entire Consumer Products segment during 2002. As of September 2002, Florida Tile had not been sold. ITW employed 52,000 and had total sales of $9.3 billion in 2001.

Florida Tile manufactures and distributes ceramic floor and wall tile for both residential and commercial applications. According to the company, ***FLORIDA TILE*** is the most widely recognized floor tile brand name among builders. The company also distributes various ceramic (including porcelain) and stone products. The ceramic tiles made by the company are primarily glazed, high-strength, flat-backed tiles that are produced using a single-fired process to impart high impact resistance and breaking strength. Floor tiles are primarily marketed under the ***NATURA*** brand name. The company maintains plants in three cities and sells its products through more than 1,500 independent distributors.

Marazzi Gruppo Ceramiche SpA
Via le Regina Pacis 39
41049 Sassuolo
Italy
39-0536-860111
www.marazzi.it

American Marazzi Tile Inc.
359 Clay Road
Sunnyvale, Texas 75182
972-226-0110
www.marazzitile.com

Monarch Ceramic Tile
834 Rickwood Road
Florence, Alabama 35630
256-764-6181
www.monarchceramictile.com

The Marazzi Group is a leading global producer of ceramic floor and wall tile and is, through its two US subsidiaries, among the top four ceramic tile suppliers to US markets. The Marazzi Group operates 16 ceramic tile plants in four countries with an aggregate annual production capacity of more than 800 million square feet. The company had total sales of $600 million, including US sales of $60 million, and employed 3,500 in 2001.

Both US subsidiaries offer a wide range of glazed and unglazed tiles for residential and commercial applications. American Marazzi Tile operates one plant, employing 390, and has an annual production capacity of 100 million square feet. Among its tile collections are ***FLORENTINE***, ***COLORADO STONE***, ***TRIBAL SLATE***, and ***DESERTSTONE***. Monarch operates one plant and employed approximately 160 in 2000. Floor tile products include the ***PERSIA***, ***CAMEO*** and ***DOMUS*** lines.

The Marazzi Group also operates four company-owned sales centers and two design centers in the US. Products are also sold through independent distributors and home center retailers.

Il Gruppo Roca

Avda. Diagonal 513
08029 Barcelona
Spain
34-3-366-1200
www.roca-italia.it

U.S. Ceramic Tile Company
10233 Sandyville Road Southeast
East Sparta, Ohio 44626
330-866-5531
www.usceramictile.com

Laufen Ceramic Tile
6531 North Laufen Drive
Tulsa, Oklahoma 74114
918-428-3851
www.laufenusa.com

Roca, one of the top four ceramic tile suppliers to the US market, is a privately-held producer of heating and air conditioning equipment, ceramic sanitary ware, and ceramic floor and wall tile. Roca entered the top tier of global tile producers through its 1999 acquisition of Keramik Holding AG Laufen (Switzerland), a $700 million producer of sanitary ware and ceramic tile, and the holding company for Laufen USA. Laufen USA, comprising Laufen Ceramic Tile, U.S. Ceramic Tile (USCT) and Laufen International Distribution Centers, had combined annual sales of over $150 million in 1999. Roca had estimated sales of $1.3 billion and employed 14,000 in the year 2000.

Laufen, known as a design leader, is credited with inventing the concept of coordinating floor and wall tile. Ceramic tiles are offered through three major product lines: ***RUSTICS***, ***MARBLES*** and ***BASICS***. Tiles are sold through thirteen Laufen distribution centers as well as a number of independent distributors.

USCT manufactures primarily wall tile, as well as several lines of floor tile. Many tiles are sold as part of the ***INTERNATIONAL*** collection. Matching floor and wall tile lines include ***MAJESTY***, ***ROMANY VILLA*** and ***ISLAND STONE***.

RESOURCES

Trade Publications

Ceramic Industry www.ceramicindustry.com

Floor Daily www.floordaily.com

Home Channel News www.homechannelnews.com

Traditional Building www.traditionalbuilding.com

Associations

Ceramic Tile Education Foundation www.tileschool.org

Tile Council of America, Inc. www.tileusa.com

Related Freedonia Studies

Related Freedonia Group studies include #1415 ***Hard Surface Flooring*** (May 2001; 257 pages; $3,600). This and other industry studies are available from The Freedonia Group by contacting customer service at 800.927.5900 or 440.684.9600, or info@freedoniagroup.com. For more information on any Freedonia study, please visit our web site at www.freedoniagroup.com.