

# STONE, DIMENSION

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Dimension stone can be defined as any rock that has been removed from its natural place of origin for ultimate use in construction and monuments where the three dimensions of size—width, length, and thickness—together with shape and usually various other elements of appearance, such as color, grain texture and pattern, and surface finish are normal requirements. Durability (essentially based on mineral composition and hardness, and past performance) and strength are other important selection criteria. This is in contrast to crushed or broken stone and sand and gravel where overall particle size, general shape, and chemical composition are important factors, as well as durability, hardness, and strength, when used as construction aggregate or fill. A variety of igneous, metamorphic, and sedimentary rock is used as dimension stone, but the principal rock types are granite, limestone, marble, sandstone, and slate. Other dimension stone normally considered special minor types include alabaster (massive gypsum), soapstone (massive talc) and various articles fashioned from natural stone. However, as with many of the terms used in the industry, various organizations and authors have included additional or special characteristics in their definitions and names. In addition, terms are not always used consistently, particularly in different geographic localities, and they often differ from scientific usage.

Domestic data in this report cover rough crude quarried, irregular-shaped and rectangular blocks, as well as processed stone sold or used by quarries from their own production. A number of terms are used to describe processing, such as worked, dressed, finished, and manufactured. In recent years, the major share of U.S.-produced dimension stone has been construction stone. A large portion of construction stone was for flagstones and curbing, and a somewhat smaller portion, termed building stone, was mostly for ornamental, rather than structural, applications, such as blocks, slabs, panels, veneers, and other architectural components. Monumental stone has been the other major use and includes memorials of various kinds.

The principal producing countries for the past several years, in descending order, were China, Italy, India, Egypt, and Spain (Napoli, 1998). In 1996, the latest year having complete data, these five countries contributed more than two-thirds of the 53 million metric tons of total world production from 37 countries. The U.S. production was ranked 11th in the world.

Dimension stone production data for the United States are developed by the U.S. Geological Survey (USGS) from a voluntary survey of U.S. quarry producers of rough and dressed dimension stone on a sold or used basis. No adjustments are made in the data to account for the sometimes substantial losses in processing rough stone into dressed stone. Sold or used data are considered to be equivalent to production because changes in stocks are not surveyed. Of the 273 producing dimension stone operations included in the survey for 1997, 209 or 77%

responded, which represent 86% of the estimated tonnage. (*See table 1.*) Of the producers surveyed, 33 were reported or estimated to be idle in 1997. In 1997, compared with 1996, stone production tonnage was about 3% higher at 1.18 million tons but value was almost 4% lower at \$225 million.

Exports of dimension stone, as reported by the U.S. Bureau of the Census, increased about 11% in value to \$54.8 million. Excluding slate, for which tonnage is not fully reported, export tonnage increased about 14% to 225,000 tons, and value increased about 7% to \$46.5 million. Imports for consumption increased about 19% in value to \$548 million, almost 2 ½ times the value of domestic production.

## Legislation and Government Programs

The U.S. Harmonized Tariff Schedule for 1998 shows that during 1997, in accordance with various international agreements, effective on January 1, 1998, many U.S. import duties on dimension stone were substantially reduced. However, the schedule's General Notes indicate that because of such agreements, imports of dimension stone from most "Most Favored Nation" countries and some others were already free of duty in 1997 and continue to be free in 1998 despite the listed "General" import duties. (*See table 2.*)

## Production

Rough stone blocks split or cut from a quarry face are transported to processing plants, frequently located at the quarry site, at least for preliminary sizing. Further dressing, including final sizing and finishing operations such as polishing, edging, and decorating, may also be done at the quarry site.

Of the total reported and estimated dimension stone production (i.e., stone sold or used by quarries) in the United States during 1997, by tonnage, 38% was granite, 29% was limestone, 16% was sandstone, 3% was marble, 2% was slate, and 12% was miscellaneous stone. Of total value, granite was 49%; limestone, 23%; sandstone, 11%; marble, 4%; slate, 6%; and miscellaneous, 7%. Production was reported in 33 States and Puerto Rico. In descending order of tonnage, Indiana, Vermont, Massachusetts, Wisconsin, Georgia, and New York were the largest dimension-stone-producing States, together contributing more than 50% of the U.S. total tonnage. In decending order of value, Indiana, Vermont, Minnesota, Massachusetts, North Carolina, and Wisconsin represented 50% of domestic production value. (*See table 3.*)

Leading producing companies, according to survey responses, were, alphabetically, Cold Spring Granite Co., principally in California, Minnesota, South Dakota, and Texas; Fletcher Granite Co., Inc., in Massachusetts and New Hampshire; Indiana

<sup>1</sup>Deceased.

Limestone Co., Inc. in Indiana; Victor Oolitic Stone Co. in Indiana; Rock of Ages Corp. in Georgia, New Hampshire, and Vermont; Valdars Stone and Marble Inc. in Wisconsin; and Williams Stone Co. in Massachusetts. Those 7 companies together produce more than one-third of U.S. total production in tonnage and value, and together with another 7 companies, the 14 leading companies produce more than one-half the domestic tonnage and value.

**Granite.**—Dimension granite includes all visibly coarse-grained igneous and some similar metamorphic rocks. Finer-grained igneous rock is termed traprock and is not normally included. Granite production in 1997 had a value of \$110 million that was comparable with 1996 levels, but the quantity of 444,000 tons was 11% lower. Granite was produced by 38 companies at 73 quarries in 1997, compared with 39 companies at 74 quarries in 1996. Cold Spring Granite, Fletcher Granite, and Rock of Ages were the leading producers and accounted for more than one-half of U.S. production in tonnage and value. As in 1996, 18 States had operating quarries. Massachusetts was the leading producing State, producing almost one-fourth of the tonnage and more than 17% of the value of the U.S. total. Georgia, Minnesota, North Carolina, South Dakota, and Vermont were the other largest producers in tonnage or value in 1997. (See table 4.)

**Limestone.**—Dimension limestone, composed mainly of calcite, includes dolomitic and siliceous limestones. The term also includes travertine (a crystalline, layered variety) and other porous and clastic-granular types of calcareous rock. Varieties that can be polished are optionally classified as marble by many producers and users. Production in 1997 of 345,000 tons was comparable to that of 1996, but value decreased 9% to \$52.3 million. In 1997, limestone was produced by 25 companies from 29 quarries, versus 29 and 39, respectively, in 1996. The major companies were Buechel Stone Corporation, B.G. Hoadley Quarries Inc., Indiana Limestone Co. Inc., Victor Oolitic Stone Co., and Valdars Stone and Marble Inc., which together produced about one-half the total U.S. tonnage and value. Quarries were operated in 10 States in 1997, down from 12 in 1996. Indiana, again the leading State, produced 55% of the U.S. tonnage and 48% of the value, followed by Wisconsin with 26% and 20%, respectively. Kansas and Texas were other large producers. (See table 5.)

**Marble.**—Marble covers a variety of calcareous rocks in addition to those with the primary metamorphic crystalline carbonate composition and includes serpentine (a greenish hydrated magnesium silicate commonly veined with calcareous material), all of which must be capable of taking a polish. For 1997, production was 40,800 tons with a value of \$10.2 million, which, as compared with 1996, is a 46% tonnage increase but a 49% decrease in value. Six producing companies operated eight quarries versus six companies and twelve quarries in 1996. Vermont Quarries Co. was the largest producer, followed by Tennessee Marble Co. and Georgia Marble Co. Five States and Puerto Rico produced marble in 1997. Additional company and State data are withheld to avoid disclosing company proprietary information.

**Sandstone.**—Dimension sandstone includes calcareous- and siliceous-cemented sandstones, conglomerates (rounded pebbles

and cobbles cemented in a matrix of sand), or breccia (cemented angular particles), as well as siltstone (fine quartz and clay particles). Quartzite, also included, may be described as any metamorphosed siliceous-cemented sandstone that fractures conchoidally through the grains. In 1997, the total U.S. production of sandstone increased in tonnage by 24% from 1996 levels to 187,000 tons and increased in value by 19% to \$24 million. These figures are based on dimension sandstone production by 31 companies at 33 quarries, compared with 26 companies at 47 quarries in 1996. The producers that together contributed about one-half the U.S. total tonnage and value were Blaser Corp., Finger Lakes Stone Co., Herb Kilmer and Sons, Johnston & Rhodes Bluestone Co., Waller Brothers Stone Co., and Western State Stone Co. Inc. As in 1996, 15 States continued to have operating quarries. The leading producing State was New York, providing 27% of the tonnage and 32% of the value. Arizona, Ohio, and Pennsylvania were the other largest producers in tonnage and value. (See table 6.)

**Slate.**—Slate is a fine-grained metamorphic rock derived from shale or siltstone that readily breaks or splits into thin layers along micaceous surfaces parallel to bedding planes and is composed mostly of quartz, chlorite, mica, and clay minerals. In 1997 production of 25,000 tons was practically the same as in 1996, but the approximately \$14 million value was 18% lower. The survey is based on 14 companies operating 18 quarries versus 15 companies and 19 quarries in 1996. The leading companies, together producing roughly two-thirds of the total tonnage and value, were Anthony Dally & Sons Inc., Le Sueur-Richmond Slate Co., Alfred McAlpine Inc., and Ritchie Bros. Slate Co. Six States had production. Additional data are withheld to avoid disclosing company proprietary information.

## Consumption

Apparent consumption of dimension stone is calculated as production plus imports for consumption less exports, because no separate accounting of changes in industry stocks is available. Since only value data are available for all three components, on that basis apparent consumption in 1997 was \$718 million. Reported and estimated data for 1997 on quantity of material sold or used by producers, including exports, indicates rough stone represented 55% of the total U.S. tonnage and 41% of the value. The largest uses for tonnage of rough stone were in construction (47%) and monumental (20%). Dressed stone represented 45% by tonnage and 59% by value of the total stone sold or used. By tonnage, the largest uses of dressed stone were in flagging (25%), curbing (23%), and ashlar and partially squared pieces (22%). (See table 7.)

Primary uses of granite sold or used in 1997, by tonnage, were in monumental applications (rough stone, 27%, and dressed stone 7%), curbing 28%, and rough blocks for construction 17%. Primary uses of limestone, by weight, were in rough blocks for building and construction (58%), and dressed stone ashlar and partially squared pieces (14%). Publishable data on uses of marble are limited to avoid disclosing company confidential information. Primary uses of sandstone, by weight, were in dressed stone for flagging (57%) and dressed stone for ashlar and partially squared pieces (18%). Dimension slate sold or used by

producers in the United States in 1997 was principally for roofing (44%), by weight. (See tables 8, 9, 10, 11, and 12.)

### Prices

The average 1997 value for dimension stone of \$191 per ton, based on the USGS survey, was a decrease of almost 6% from that of 1996. However, price data that are available show considerable variation. Prices are substantially different, not only for the kind of stone, but also for appearance of the same kind of stone. Color, grain structure, and finish contribute significantly to price and marketability.

### Foreign Trade

**Exports.**—Total exports of dimension stone types included in table 13 increased in value by about 11% from that of 1996 to \$55 million; 64% of that total was for granite. The largest share of granite (35%) went to Italy. (See table 13.)

**Imports.**—The value of imports for consumption of dimension stone types covered in tables 14, 15, and 16 increased about 19% from 1996 to \$548 million. Italy continued to be the major single source of granite with 43% of total granite imports listed. Brazil, Canada, and India each accounted for about 14% of granite imports. Italy is also a significant source of a number of other dimension stone imports. (See tables 14 - 16.)

### Outlook

Demand is expected to grow for dimension stone during the next 5 or more years because of improved technology and variety and the increased costs of alternate construction materials. Additionally, for residential and office building construction, growth in use of dimension stone is expected in new prestige markets as well as in renovations to attract and keep tenants.

### Reference Cited

Napoli, Silvana, 1998, Stone sector 1997: Marina di Carrara, Italy, Internazionale

## SOURCES OF INFORMATION

### U.S. Geological Survey Publications

Stone (dimension). Ch. in Mineral Commodity Summaries, annual.<sup>2</sup>

Stone, dimension. Ch. in Minerals Yearbook, annual.<sup>1</sup>

Construction stone. Ch. in United States mineral resources, U.S. Geological Survey Professional Paper 820, 1973.

### Other

American Monument Association, Columbus, OH.

Barre Granite Association, Barre, VT.

Building Stone Magazine (Quarterly), Building Stone Institute, Purdys, NY.

Dimension stone. Ch. in Mineral facts and problems, U.S. Bureau of Mines Bulletin 675, 1985.

Dimension stone, U.S. Bureau of Mines Information Circular 8391, 1986.

Dimensional Stone (monthly), Ashlee Publishing Co., Inc., New York, NY. (monthly import data).

Elberton Granite Association, Inc., Elberton, GA.

Indiana Institute of America Inc., Bedford, IN.

Industrial Minerals (monthly), Metal Bulletin plc, London (with particular references in July 1984, February 1991, November 1991, and February 1996).

Marble Institute of America, Columbus, OH.

Stone, Decorative. Ch. in Industrial minerals and rocks, Society of Mining Engineers, Littleton, CO, 1994.

Stone, Dimension. Ch. in Industrial minerals and rocks, Society of Mining Engineers, Littleton, CO, 1994.

Stone World (monthly), Business News Publishing Co., Troy, MI. (monthly import/export data).

<sup>2</sup>Prior to January 1996, published by the U.S. Bureau of Mines.

TABLE 1  
SALIENT U.S. DIMENSION STONE STATISTICS 1/

(Thousand metric tons and thousand dollars)

	1993	1994	1995	1996	1997
Sold or used by producers:					
Quantity 2/	1,280	1,190	1,160	1,150	1,180
Value 2/	\$226,000	\$218,000	\$233,000	\$234,000	\$225,000
Exports (value)	\$52,700	\$53,000	\$51,800	\$49,500	\$54,800
Imports for consumption (value)	\$398,000	\$440,000	\$478,000	\$462,000	\$548,000

1/ Data are rounded to three significant digits.

2/ Includes Puerto Rico.

TABLE 2  
U.S. IMPORT DUTIES ON DIMENSION STONE

Tariff item	HTS. No.	Most favored nation (MFN) January 1, 1997	Non-MFN January 1, 1997
Slate: Rough blocks or slabs	2514.00.0000	2.2% ad valorem	25% ad valorem.
Rough blocks or slabs of marble, travertine, other calcareous monumental or building stone	2515.00.0000		
Marble and travertine:			
Crude or roughly trimmed	2515.11.0000	\$2.08 per cubic meter	\$22.95 per cubic meter.
Marble, merely cut	2515.12.1000	1.3% ad valorem	13% ad valorem.
Travertine, merely cut	2515.12.2000	4.8% ad valorem	50% ad valorem.
Other calcareous stone alabaster	2515.20.0000	do.	Do.
Rough blocks or slabs of granite, porphyry, basalt, sandstone, other monumental or building stone	2516.00.0000		
Granite:			
Crude or roughly trimmed	2516.11.0000	Free	\$8.83 per cubic meter.
Merely cut	2516.12.0000	3.6% ad valorem	60% ad valorem.
Sandstone:			
Crude or roughly trimmed	2516.21.0000	Free	\$5.30 per cubic meter.
Merely cut	2516.22.0000	4.8% ad valorem	50% ad valorem.
Other monumental or building stone	2516.90.0000	do.	Do.
Setts, curbstones, and flagstones	6801.00.0000	3.6% ad valorem	60% ad valorem.
Worked monumental or building stone	6802.00.0000		
Tiles and cubes under 7 centimeters square, granules	6802.10.0000	6.1% ad valorem	40% ad valorem.
Other stone and articles with a flat or even surface:			
Marble, travertine, alabaster:			
Travertine	6802.21.1000	5.3% ad valorem	50% ad valorem.
Other	6802.21.5000	2% ad valorem	13% ad valorem.
Other calcareous stone	6802.22.0000	5.6% ad valorem	50% ad valorem.
Granite	6802.23.0000	4% ad valorem	60% ad valorem.
Other stone	6802.29.0000	6.9% ad valorem	30% ad valorem.
Other:			
Marble, travertine, alabaster:	6802.91.0000		
Marble:			
Slabs	6802.91.0500	2.7% ad valorem	15% ad valorem.
Other	6802.91.1500	5.6% ad valorem	50% ad valorem.
Travertine:			
Articles of subheading 6802.21.1000 that have been dressed or polished, but not further worked	6802.91.2000	5.3% ad valorem	50% ad valorem.
Other	6802.91.2500	4.7% ad valorem	40% ad valorem.
Alabaster	6802.91.3000	5.1% ad valorem	50% ad valorem.
Other calcareous stone	6802.92.0000	5.6% ad valorem	Do.
Granite	6802.93.0000	4% ad valorem	60% ad valorem.
Other stone	6802.99.0000	6.5% ad valorem	40% ad valorem.
Worked slate and articles:			
Roofing slate	6803.00.1000	5.3% ad valorem	25% ad valorem.
Other	6803.00.5000	2.2% ad valorem	Do.

TABLE 3  
DIMENSION STONE SOLD OR USED BY PRODUCERS IN THE UNITED STATES, BY STATE 1/ 2/

State	1996		1997	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
California	28,600	\$7,020	26,200	\$4,300
Colorado	23,900	3,330	10,800	3,250
Georgia 3/	89,600	10,300	68,700	9,810
Indiana 3/	156,000	24,500	190,000	24,900
Kansas 3/	21,400	2,100	21,000	1,710
Maryland	19,800	2,210	21,500	2,440
Massachusetts	79,600	15,000	101,000	18,200
Minnesota	25,400	10,700	35,000	18,300
New Hampshire	29,000	6,500	W	W
New York	34,400	8,120	54,700	9,380
North Carolina	37,300	14,300	39,300	15,300
Ohio	19,800	2,060	24,600	3,240
Oklahoma	9,710	2,220	5,770	995
Pennsylvania	54,300	11,800	53,900	10,800
Texas	86,600	21,100	35,300	11,300
Vermont	99,600	27,900	105,000	23,200
Wisconsin	143,000	16,600	100,000	13,100
Other 4/	196,000	48,000	286,000	55,300
Total	1,150,000	234,000	1,180,000	225,000

W Withheld to avoid disclosing company proprietary data; included with " Other."

1/ Includes Puerto Rico.

2/ Data are rounded to three significant digits; may not add to totals shown.

3/ Totals only include granite for Georgia, limestone for Indiana, and limestone for Kansas; other stone for Georgia, Indiana, and Kansas included with "Other."

4/ Includes data for Alabama, Arizona, Arkansas, Connecticut, Idaho, Maine, Michigan, Missouri, Montana, New Mexico, Puerto Rico, South Carolina, South Dakota, Tennessee, Utah (1996), Virginia, Washington, and West Virginia.

TABLE 4  
DIMENSION GRANITE SOLD OR USED BY PRODUCERS  
IN THE UNITED STATES, BY STATE 1/

State	1996		1997	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Georgia	89,600	\$10,300	68,700	\$9,810
Massachusetts	79,600	15,000	101,000	18,200
New Hampshire	29,000	6,500	W	W
North Carolina	34,700	13,800	W	W
Oklahoma	5,760	1,990	3,330	813
Pennsylvania	6,140	2,040	6,400	495
Other 2/	256,000	58,500	264,000	81,000
Total	501,000	108,000	444,000	110,000

W Withheld to avoid disclosing company proprietary data; included with " Other."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes California, Colorado (1996), Connecticut (1996), Maine, Michigan (1997), Minnesota, Missouri, New Mexico (1996), New York, South Carolina, South Dakota, Texas, Vermont, Virginia, and Wisconsin.

TABLE 5  
DIMENSION LIMESTONE SOLD OR USED BY PRODUCERS IN THE  
UNITED STATES, BY STATE 1/

State	1996		1997	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Indiana	156,000	\$24,500	190,000	\$24,900
Kansas	21,400	2,100	21,000	1,710
Oklahoma	2,220	176	--	--
Texas	W	W	17,900	6,730
Wisconsin	133,000	13,500	88,700	10,300
Other 2/	38,100	17,100	27,300	8,620
Total	350,000	57,300	345,000	52,300

W Withheld to avoid disclosing company proprietary data; included with " Other."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes Alabama, Arkansas, California, Minnesota, Ohio, Pennsylvania (1996), and Vermont.

TABLE 6  
DIMENSION SANDSTONE SOLD OR USED BY PRODUCERS IN THE  
UNITED STATES, BY STATE 1/

State	1996		1997	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
California	W	W	15,000	\$1,820
New York	28,200	\$6,730	49,800	7,490
Pennsylvania	23,700	3,390	23,100	3,350
Other 2/	99,000	9,950	99,300	11,300
Total	151,000	20,100	187,000	24,000

W Withheld to avoid disclosing company proprietary data; included with " Other."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes Alabama, Arizona, Arkansas, Colorado, Idaho, Kansas, Michigan, North Carolina, Ohio, Oklahoma, Utah (1996), West Virginia, and Wisconsin.

TABLE 7  
DIMENSION STONE SOLD OR USED BY PRODUCERS IN THE  
UNITED STATES, BY USE 1/ 2/

Use	1996		1997	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
<b>Rough stone:</b>				
Rough blocks for building and construction	295,000	\$36,900	301,000	\$42,100
Irregular-shaped stone	74,500	8,300	89,300	9,440
Monumental	143,000	23,000	127,000	20,700
Other 3/	68,100	17,200	125,000	20,800
<b>Dressed stone:</b>				
Ashlars and partially squared pieces	142,000	25,700	120,000	23,500
Slabs and blocks for building and construction	29,400	10,700	35,100	6,950
Monumental	44,400	28,100	37,400	19,100
Curbing	106,000	22,600	123,000	25,600
Flagging	121,000	11,900	129,000	11,700
Flagging (slate)	4,340	747	4,850	882
Roofing slate	10,600	10,200	11,300	6,880
Structural and sanitary	1,430	2,080	1,550	2,040
Flooring slate	3,610	1,950	3,730	2,070
Other 4/	107,000	34,900	71,200	33,700
Total	1,150,000	234,000	1,180,000	225,000

1/ Includes Puerto Rico.

2/ Data are rounded to three significant digits; may not add to totals shown.

3/ Includes flagging, exports, uses not specified, and uses not listed (1997).

4/ Includes panels and veneer, tile, blackboards (1997), exports, uses not specified, and uses not listed (1997).

TABLE 8  
DIMENSION GRANITE SOLD OR USED BY PRODUCERS IN THE  
UNITED STATES, BY USE 1/

Use	1996		1997	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Rough stone:				
Rough blocks for building and construction	128,000	\$18,400	73,700	\$14,300
Irregular-shaped stone	1,050	355	5,590	770
Monumental	140,000	20,400	120,000	19,100
Other 2/	23,500	7,650	43,200	10,100
Dressed stone:				
Ashlars and partially squared pieces	35,600	9,750	24,700	9,620
Slabs and blocks for building and construction	2,470	634	2,390	1,030
Monumental	39,700	19,000	32,500	17,700
Curbing	102,000	22,100	122,000	25,600
Other 3/	29,100	9,810	19,100	12,000
Total	501,000	108,000	444,000	110,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes exports, uses not specified (1996), and uses not listed (1997).

3/ Includes panels and veneer, tile, flagging, exports (1997), uses not specified, and uses not listed (1997).

TABLE 9  
DIMENSION LIMESTONE SOLD OR USED BY PRODUCERS IN THE  
UNITED STATES, BY USE 1/

Use	1996		1997	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Rough stone:				
Rough blocks for building and construction	143,000	\$15,100	202,000	\$24,400
Irregular-shaped stone	27,300	2,090	26,500	2,010
Other 2/	23,100	8,910	21,600	4,120
Dressed stone:				
Ashlars and partially squared pieces	64,700	10,200	48,100	7,690
Slabs and blocks for building and construction	19,300	3,370	25,300	3,010
Flagging	24,600	2,080	8,330	700
Other 3/	48,200	15,600	13,500	10,400
Total	350,000	57,300	345,000	52,300

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes exports, uses not specified (1996), and uses not listed (1997).

3/ Includes panels and veneer, tile (1996), curbing (1996), uses not specified, and uses not listed (1997).

TABLE 10  
DIMENSION MARBLE SOLD OR USED BY PRODUCERS IN THE  
UNITED STATES, BY USE 1/ 2/

Use	1996		1997	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Rough stone:				
Rough blocks for building and construction	W	W	W	W
Irregular-shaped stone	W	W	--	--
Monumental	W	W	W	W
Other 3/	13,200	\$2,360	17,400	\$3,790
Dressed stone:				
Ashlars and partially squared pieces	3,110	517	2,940	487
Slabs and blocks for building and construction	2,490	5,750	4,930	2,140
Other 4/	9,120	11,300	15,600	3,820
Total	27,900	19,900	40,800	10,200

W Withheld to avoid disclosing company proprietary data; included with "Other."

1/ Includes Puerto Rico.

2/ Data are rounded to three significant digits; may not add to totals shown.

3/ Includes uses not specified and uses not listed (1997).

4/ Includes panels and veneer, tile, monumental, curbing (1996), flagging, uses not specified (1996), and uses not listed (1997).

TABLE 11  
DIMENSION SANDSTONE SOLD OR USED BY PRODUCERS IN THE  
UNITED STATES, BY USE 1/

Use	1996		1997	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Rough stone:				
Rough blocks for building and construction	W	W	9,810	\$1,070
Irregular-shaped stone	19,800	\$3,040	12,400	1,750
Other 2/	1,460	247	911	41
Dressed stone:				
Ashlars and partially squared pieces	27,700	2,820	32,900	3,850
Slabs and blocks for building and construction	3,350	799	2,360	631
Flagging	79,200	8,330	106,000	9,760
Other 3/	19,500	4,840	23,300	6,880
Total	151,000	20,100	187,000	24,000

W Withheld to avoid disclosing company proprietary data.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes flagging (1997), uses not specified (1996), and uses not listed (1997).

3/ Includes panels and veneer, tile (1997), curbing, exports, uses not specified, and uses not listed (1997).

TABLE 12  
DIMENSION SLATE SOLD OR USED BY PRODUCERS IN THE  
UNITED STATES, BY USE 1/

Use	1996		1997	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Flagging	4,340	\$747	4,850	\$883
Roofing	10,600	10,200	11,300	6,880
Structural and sanitary purposes	1,430	2,080	1,550	2,040
Flooring	3,610	1,950	3,730	2,070
Other 2/	4,740	1,490	3,610	1,780
Total	24,700	16,500	25,000	13,600

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes billiard tabletops (1996), blackboards, uses not specified, and uses not listed (1997).

TABLE 13  
U.S. EXPORTS OF DIMENSION STONE, BY TYPE 1/

(Thousand metric tons and thousand dollars)

Type	1996		1997		Major destination 2/ in 1997, (percent)
	Quantity	Value	Quantity	Value	
Marble, travertine, alabaster worked	24	3,390	34	4,120	Canada, 26%.
Marble, travertine--crude or roughly trimmed	2	782	2	716	Canada, 52%.
Marble, travertine--merely cut, by sawing or otherwise	2	1,520	2	1,980	Turkey, 30%
Granite, crude or roughly trimmed	114	28,500	133	27,400	Italy, 35%.
Granite, merely cut by sawing or otherwise	23	3,840	33	7,780	Taiwan, 49%.
Sandstone, crude or roughly trimmed	3	437	4	599	Canada, 75%.
Sandstone, merely cut, by sawing or otherwise	5	879	5	1,030	Canada, 96%.
Slate, worked and articles of slate	NA	5,710	NA	7,660	Belize, 32%.
Slate, whether or not roughly trimmed or merely cut	NA	280	NA	592	Canada, 45%.
Other calcareous monumental or building stone; alabaster	8	1,370	5	1,060	Canada, 67%.
Other monumental or building stone	16	2,810	7	1,850	Canada, 44%.
Total	XX	49,500	XX	54,800	

NA Not available. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown. Selected types only as shown.

2/ By value.

Source: Bureau of the Census.



TABLE 14  
U.S. IMPORTS FOR CONSUMPTION OF DIMENSION GRANITE, BY COUNTRY 1/

(Thousand dollars)

Country	Dressed worked granite									Total worked	Total dressed
	Rough granite 2/	Dressed granite articles	Not cut to size	Cut to size					Other		
				Max 1.5 centimeters	1.5-7.5 centimeters	Monumental min 7.5 centimeters	Building min 7.5 centimeters				
1996:											
Argentina	33	286	83	25	141	22	28	97	396	682	
Brazil	327	1,820	4,410	1,310	6,400	1,180	1,140	4,860	19,300	21,100	
Canada	4,220	938	1,330	1,040	2,250	6,120	3,830	8,580	23,100	24,100	
China	243	404	461	794	737	292	637	1,430	4,350	4,760	
Finland	6	--	--	--	--	--	67	169	236	236	
India	1,510	3,260	1,620	2,370	6,410	3,090	1,510	4,220	19,200	22,500	
Italy	1,780	6,150	13,600	4,890	16,200	2,540	5,100	19,300	61,600	67,700	
Japan	4	136	--	--	14	13	4	9	40	176	
Mexico	173	6	26	116	1,280	10	312	39	1,780	1,790	
Norway	14	--	--	--	--	--	--	--	--	--	
Portugal	3	104	25	--	12	--	58	8	103	207	
Saudi Arabia	19	40	187	21	117	58	4	41	428	468	
South Africa	721	183	--	--	16	23	20	107	166	349	
Spain	65	576	1,250	492	3,610	1,200	804	981	8,320	8,900	
Other	790	225	89	252	350	159	565	773	2,190	2,410	
Total	9,910	14,100	23,000	11,300	37,500	14,700	14,100	40,600	141,000	155,000	
1997:											
Argentina	--	200	83	19	162	14	34	29	341	541	
Brazil	323	2,070	4,990	1,080	12,100	328	1,420	6,140	26,000	28,100	
Canada	3,910	893	741	2,490	8,910	5,980	7,270	3,020	28,400	29,300	
China	125	323	806	1,520	1,470	335	1,120	2,360	7,620	7,940	
Finland	51	--	--	--	--	--	--	126	126	126	
India	300	3,850	1,600	3,550	8,860	3,740	1,450	4,370	23,600	27,400	
Italy	1,270	6,370	15,600	6,640	28,900	950	8,150	21,600	81,900	88,200	
Japan	--	2	--	--	19	--	--	7	26	28	
Mexico	183	28	25	55	1,360	2	293	25	1,760	1,790	
Norway	26	33	22	--	43	--	--	--	65	98	
Portugal	27	13	19	--	94	--	7	--	120	133	
Saudi Arabia	--	140	451	2	1,270	--	--	49	1,780	1,920	
South Africa	374	91	4	--	89	--	72	212	377	468	
Spain	288	639	1,520	395	5,420	110	587	1,530	9,560	10,200	
Other	504	79	127	554	578	278	317	493	2,350	2,430	
Total	7,380	14,700	26,000	16,300	69,300	11,700	20,700	39,900	184,000	199,000	

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes crude or roughly trimmed, and merely cut by sawing or otherwise.

Source: Bureau of the Census.

TABLE 15  
U.S. IMPORTS FOR CONSUMPTION OF MAJOR CATEGORIES OF DIMENSION MARBLE AND OTHER CALCAREOUS STONE,  
BY COUNTRY 1/

Country	Dressed marble slabs		Dressed marble--other		Dressed marble and other calcareous stone 2/		Rough marble 3/	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
1996:								
China	847	\$703	3,690	\$3,140	7,530	\$2,330	51	\$60
France	74	65	38	77	29,900	12,900	275	95
Greece	4,380	5,270	4,350	4,670	4,050	3,870	281	268
India	598	588	710	837	1,310	499	12	13
Italy	24,200	25,200	38,800	37,200	42,000	35,700	2,920	1,640
Mexico	353	483	4,870	4,670	5,580	5,230	489	309
Portugal	1,280	1,180	1,330	1,270	12,800	9,450	92	12
Spain	2,880	2,490	9,360	9,680	30,100	27,300	287	218
Other	9,180	7,470	10,900	13,600	17,200	12,900	438	597
Total	43,700	43,400	74,100	75,200	150,000	110,000	4,850	3,210
1997:								
China	1,310	967	4,220	4,340	3,280	2,530	27	35
France	384	172	118	302	13,100	14,000	481	660
Greece	4,760	5,900	4,700	4,780	2,080	2,670	518	621
India	819	784	764	893	870	715	18	16
Italy	30,900	32,200	41,800	42,700	48,800	40,100	1,360	1,220
Mexico	459	419	6,840	6,250	7,070	6,120	1,420	836
Portugal	1,980	2,010	1,960	2,100	11,600	6,790	132	75
Spain	4,430	3,630	11,400	10,800	35,400	28,800	444	342
Other	10,900	8,020	13,900	15,900	77,400	15,500	268	218
Total	55,900	54,100	85,700	88,000	200,000	117,000	4,660	4,020

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ HTS No. 6802.92.0000: The material from Italy is almost all marble; from France, is limestone and marble; from Spain, is almost all marble; and from Mexico, is limestone and marble.

3/ Merely cut by sawing or otherwise.

Source: Bureau of the Census as modified by the U.S. Geological Survey.

TABLE 16  
U.S. IMPORTS FOR CONSUMPTION OF DIMENSION STONE, BY TYPE 1/

Type		1996		1997		Major source 2/ for 1997, (percent)
		Quantity	Value (thousands)	Quantity	Value (thousands)	
Calcareous stone-other 3/	metric tons	32,200	\$7,030	24,600	\$6,160	Mexico, 20%.
Marble, travertine, alabaster, and other	do.	7,030	5,180	8,810	6,200	Mexico, 33%.
Sandstone, merely cut, by sawing or otherwise	do.	593	182	342	213	India, 25%.
Slate, roofing	million square feet	7	3,560	9	5,350	China, 37%.
Slate, whether or not roughly trimmed or merely cut	do.	1,880	755	2,040	961	Italy, 40%.
Slate, worked and articles of slate, and other	do.	NA	27,700	NA	31,800	Italy, 40%.
Stone, worked monumental or building stone-other	metric tons	NA	NA	NA	NA	Italy, NA.
Travertine, monumental or building stone and articles thereof	do.	5,100	3,430	14,500	7,310	Italy, 66%.
Travertine, worked monumental or building stone	do.	49,900	15,600	28,100	18,000	Italy, 66%.
Other monumental or building stone	do.	NA	NA	NA	NA	Italy, NA.
Other stone-monumental or building stone-articles thereof	do.	4,890	1,410	5,890	2,280	Mexico, 40%.

NA Not available.

1/ Data are rounded to three significant digits; may not add to totals shown. Does not include data shown in Tables 14 and 15. Selected types only.

2/ By value.

3/ HTS No. 6802.22.0000.

Source: Bureau of the Census.