

Stone

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The volume of all types of stone shipped in Canada in 1995 was about 92 Mt, essentially the same as in 1994, based on preliminary figures. Similarly, the reported value of total shipments in 1995 remained about the same at \$559 million, based on a comparison with final figures for 1994. Shipments served a very wide range of end uses relating to dimension stone, chemical and metallurgical grades of stone, pulverized stone, and crushed stone.

Additional detailed information, particularly on regular aggregates including crushed stone and sand and gravel, as well as on numerous lightweight aggregates, is included in a separate chapter entitled *Mineral Aggregates*.

Dimension or ornamental stone relates to a variety of rock types that may be cut, shaped or simply selected for a broad range of construction/engineering, architectural or monumental requirements. The types of stone available are dependent on local geology, but mainly include granite, limestone, marble, sandstone and slate, as summarized in Tables 3 to 8 inclusive. The term "granite," as commercially applied, includes true granite, granodiorite, gneiss, and other medium- to coarse-grained igneous rocks. However, "black granite" includes anorthosite and other dark-coloured igneous rocks. Limestone and marble are often confused, marble being the metamorphosed equivalent of the former and usually including both dolomitic and calcitic varieties. As an industrial term, marble is used for recrystallized calcareous rock capable of taking a polish.

Slate is becoming more important in world markets for its natural unpolished appearance, its non-slippery and multi-coloured durable surfaces, and its relatively low price.

CANADIAN DEVELOPMENTS

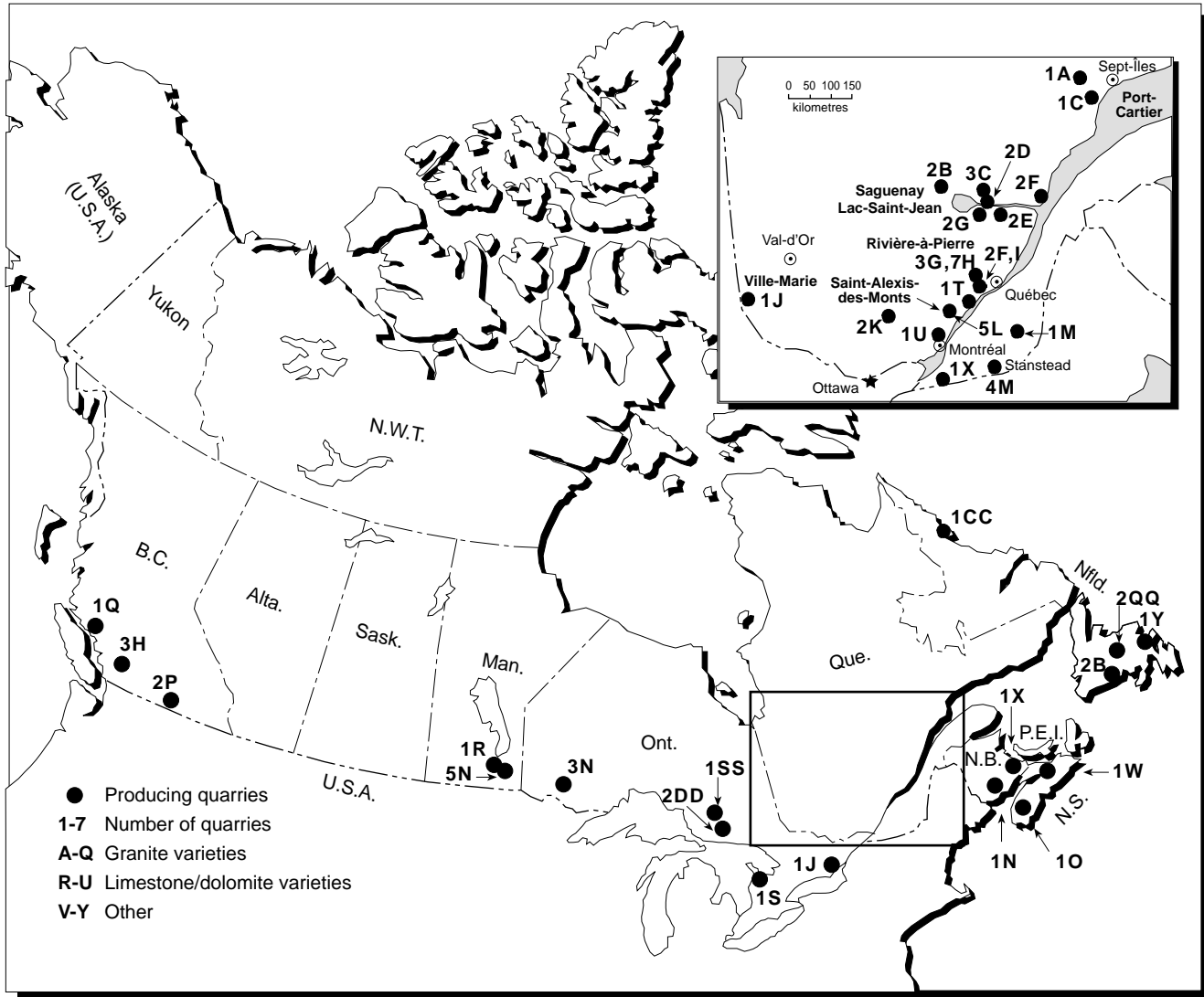
Canadian companies, with up-to-date technology and aggressive marketing, remain an important part of the international stone industry. Granite, particularly for a wide variety of construction uses in domestic and international markets, continued to be important with most output centred in Quebec (80-90%). Limestone/marble, sandstone and slate were also important in several parts of Canada.

There has been considerable growth in the volume and value of rough granite produced in Canada for use in the construction sector, rising from 27 000 t valued at less than \$1.2 million in 1978 to 73 000 t valued at \$11.6 million in 1994 (Table 5). The peak production for rough construction granite was 108 000 t valued at \$19.6 million in 1990, all based on values f.o.b. quarry site.

The value added by further processing in the Canadian granite industry is substantial; for example, the total value of all granite shipped in 1993 was about \$120 million.¹ In terms of their known uses, the values of granite shipped were as follows: for construction, approximately \$55 million; for monuments, about \$30 million; and for engineering, landscaping and ornamental needs, about \$10 million. The remainder was exported as lower-valued rough block, or as cut or sawn stone. Quebec produces 80-90% of this output. Many provincial authorities continued assessments of their stone resources and, with the rejuvenated interest in much of the historical record, early works such as those by W.A. Parks² and M.F. Goudge³ have proven to be classics on the subject.

The Canada Centre for Mineral and Energy Technology (CANMET) completed in 1993 the final report in a series of summary reports on industrial minerals entitled, *Summary Report No. 20: Limestone, Calcite and Lime*.⁴ Processing and analytical data for the subject rocks and minerals from several provinces are reported in tabular format; detailed assessments of individual testwork are presented in an appendix.

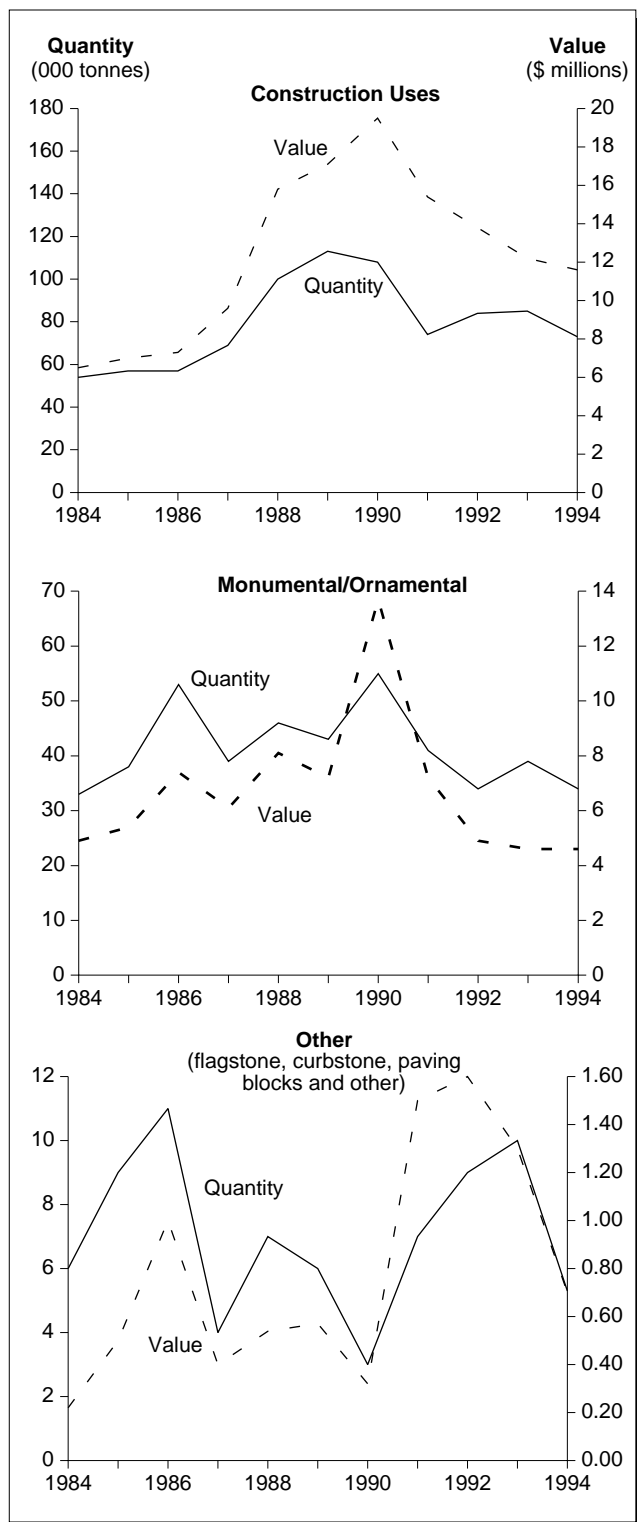
Figure 1
Canada, Architectural and Monumental/Ornamental Stone-Producing Centres, 1994



- | | | | |
|----|--|----|---|
| A | Fine-grained pinkish-grey banded gneiss | P | Coarse coral pink granite |
| B | Medium-grained pink granite | Q | Medium-grained blue-grey granite |
| C | Coarse-grained black anorthosite | QQ | Medium-grained gabbro |
| CC | Medium-grained "Reflect blue" anorthosite | R | Light-coloured mottled dolomitic limestone (Tyndall) |
| D | Medium-grained black gabbroic anorthosite | S | Fine-medium crystalline blue-grey to buff marble/dolostone (Arriscraft) |
| DD | Blue-grey, and black and white anorthosite | SS | Fine-grained, multicoloured pre-Cambrian marble |
| E | Medium-grained pinkish-grey quartz monzonite | T | Medium-grained light brownish-grey limestone (Deschambault) |
| F | Fine-grained pink granitic gneiss | U | Medium-grained blue-grey limestone (Chazy) |
| G | Coarse-grained green charnockite | V | Medium-grained olive sandstone |
| H | Coarse-grained pink-grey or brown-grey granite | W | Fine-medium-grained olive-brown and blue-grey sandstone |
| I | Medium-grained grey dioritic gneiss | X | Fine-medium-grained white to buff sandstone (Potsdam) |
| J | Medium-grained red granite | Y | Very fine-grained varicoloured slate |
| K | Fine-grained pink aplite | | |
| L | Coarse-grained brown or red quartz monzonite | | |
| M | Medium-grained grey granite | | |
| N | Medium-grained pink, brown or gold granites | | |
| O | Fine-grained blue-grey granite | | |

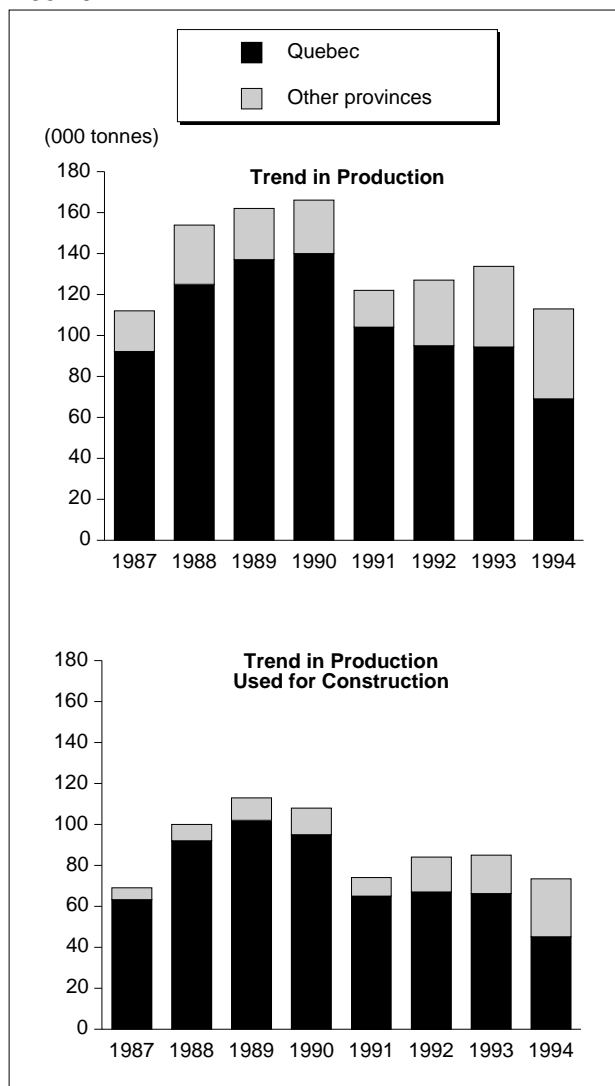
Source: Mainly provincial departments of Mines and Energy.

Figure 2
Canada, Production of Rough Granite
(Sold and Used by Producers), 1984-94



Sources: Natural Resources Canada; Statistics Canada.

Figure 3
Canada, Trends in Production of Rough Granite,
1987-94



Sources: Natural Resources Canada; Quebec Ministry of Natural Resources.

Atlantic Provinces

Limestone

In Newfoundland, production is mainly related to the output of cement by North Star Cement Limited at Corner Brook, large-volume aggregate and high-purity carbonate quarries formerly operated by Newfoundland Resources & Mining Company Limited (NRMC) at Lower Cove on the Port au Port Peninsula, and an agricultural limestone quarry at Cormack. The NRMC quarry was purchased in late 1995 by an affiliate of North Star Cement Limited and is expected to operate under a new company, Atlantic Minerals Limited. In Nova Scotia, Atlantic

Industrial Minerals Inc. continued to supply limestone from its Glen Morrison, Cape Breton, deposit to Nova Scotia Power Corporation's Point Aconi thermal-electric station. Lafarge Canada Inc. continued to operate a new quarry site in Colchester County to produce high-quality limestone for specialty cements needed for the Prince Edward Island fixed link project. In New Brunswick, quarries operate at four locations: Brookville; Havelock; east of Havelock, in Westmoreland County; and Elm Tree, north of Bathurst.

Granite and Marble

Earlier activity relating to granite in Nova Scotia, as well as to other types of stone, has been summarized in two publications.^{5,6} An up-to-date list of producers in Nova Scotia, and elsewhere in Canada, is included in the *Stone Industry in Canada: 1995 Directory*.⁷ Construction Aggregates Ltd., owned by Lone Star Industries, Inc. of Greenwich, Connecticut, continued shipping high-quality granite aggregate from the company's Porcupine Mountain quarry on the Strait of Canso. Plans to develop a granite aggregate quarry at Kelly's Mountain on Cape Breton Island remained on hold pending an environmental review.

Granite is quarried intermittently for uses that include building stone and monumental stone at a number of sites in New Brunswick.⁸ A red, fine-to-medium-grained granite is available near St. Stephen, and fine-grained pink, grey and blue-grey granites are available in the Hampstead (Spoon Island) district. Other stone is available on demand.

In addition to intermittent quarrying at several sites, exploration and assessment continued on a variety of granite and marble in Newfoundland and Labrador. Some of this work represented a continuation of activities that were reported earlier.⁹ In Buchans, North Atlantic Stone Inc. completed a \$2.3 million integrated fabrication plant for granite monuments and other granite products in 1995. Initial shipments were made to domestic markets as well as to the United States; some of the rough granite blocks were provided by Classic Stone Inc., a quarrier situated in the region.

On the northern Labrador coast, work concentrated on a large complex that hosts a uniform medium-grained light-grey anorthosite containing up to 20% labradorite crystals exhibiting flashes of blue chatoyance on cut surfaces. Rough blocks continued to be produced at a deposit being developed under the direction of the Torngait Ujaganniavingit Corp. (TUC). A second quarry is planned for production in 1996.

Sandstone and Slate

Newfoundland Slate Inc. continued to expand markets served by a new slate production plant at Nut

Cove, Trinity Bay, Newfoundland. More than \$9 million was invested to bring the former Newfoundland Slate Quarries site into production. The company operates as a joint venture with The Miller Group of Companies; distribution networks have been established in Canada, the United States and Europe.

In Nova Scotia, a medium-grained buff sandstone known as "Wallace sandstone" is quarried on demand for use as heavy riprap and for dimension stone. This stone enjoyed widespread architectural use in the past in central and Atlantic Canada and, as a result, is seeing growing use for renovation and restoration work.

In New Brunswick, a red fine-to-medium-grained sandstone has been quarried in Sackville for use in construction. Deposits are exploited on demand throughout Kent and Westmoreland counties.

Quebec

Limestone

Limestone occurs in the St. Lawrence and Ottawa River valleys and in the Eastern Townships. St. Marc-des-Carières is one of the few locations where blocks and other shapes are produced from time to time.

A high-purity dolomite deposit at Portage-du-Fort has been developed to serve the Glaverbec glass plant in Saint-Augustin, near Québec City. A similar high-purity deposit is being evaluated in the Havre-Saint Pierre area for use in iron ore pelletizing.

Granite

Development mainly associated with granite continues to be important. Quarries have been opened from near Rouyn-Noranda in the west to Magpie, about 100 km east of Sept-Îles. About 20 companies now account for approximately 60 quarries classified as producers of granite for construction, monuments and/or furniture. In an earlier survey, there were 46 fabricating plants involved in processing granite for monumental and construction uses, according to a recent poster map and listing by the Quebec Ministry of Energy and Resources.¹⁰

Granitor Inc./Columbia Granite Inc. quarries numerous types of rough granite for its fabricating plants as well as for export markets. In 1995, members of the Association des Industries de pierres naturelles changed the name of their association to the Canadian Stone Association (CSA).

Dumas & Voyer Ltée, a quarrier of Caledonia granite since 1885 and a major fabricator of curbstones, is now owned by Groupe Polycor. Groupe Polycor's other quarrying divisions include Société Minière Polycor Inc. and also Carières Norgranit Inc., which is owned jointly with Rock of Ages. In addition to

Dumas & Voyer Ltée, Groupe Polycor's manufacturing division includes Granite Bussière Inc. Detailed activity throughout Quebec, as well as in other provinces where applicable, has been highlighted in a directory published by Natural Resources Canada entitled *Stone Industry in Canada: 1995 Directory*.

Ancor Granite Tile Inc. and Tuiles Grani-Décor Tiles Inc. operate modern fabricating plants in Lachine and Saint-Sébastien, respectively. A wide range of thin-cut granite tiles serve the domestic and international markets; new stones continue to be introduced to the market.

Sandstone and Slate

Les Carrières Ducharme Inc. in Hemmingford, Huntingdon County, produces flagstone and construction blocks. This operation is the only company in Quebec producing this type of dimensional stone.

Les Carrières Glendyne inc. opened a slate quarry in 1995 at Saint-Marc-du-Lac-Long in Témiscouata. It is expected that markets will develop in Europe as well as in North America for the company's grey roofing slates.

Ontario

Limestone

Major production is from deposits of Paleozoic age. A three-volume study entitled *Limestone Industries of Ontario* is a thorough assessment of the geological resources, economic factors and related industries associated with limestone, dolostone and marble.¹¹

Arriscraft Corporation quarries a blue-grey-to-buff coloured dolostone from the Wiarton/Colpoy Bay member of the Middle Silurian Amabel formation near Wiarton. Sold under the name of Adair marble, this attractive stone has increasingly been used for up-scale construction projects, including the Canadian Chancery in Washington, D.C.

Marble

In the past, only a few uses for local construction-quality marble have been reported.

Jarvis Resources Ltd., a Canadian-controlled public company, continued to develop markets for marble produced from its new \$2 million slab and tile manufacturing plant near Sudbury. The plant is designed to produce a total of about 400 m² per day of material (two shifts per day). Rough blocks of multi-coloured marble are quarried approximately 35 km north of Sudbury where extensive reserves have been defined.

In the Bruce Peninsula region, Owen Sound Ledgerrock Limited and Ebel Quarries Limited produce polished marble products on demand from rough stone as part of their quarrying and cutting opera-

tions. Other products produced by these and other companies in the region mainly relate to flagstone, landscaping stone and masonry stone using light-to-dark-brown-coloured dolostone from the Eramosa Member of the Amabel formation, locally referred to as Wiarton Dolostone.

Granite

Granite occurs in northern, northwestern and south-eastern Ontario. The Sudbury area in particular has attracted much activity in recent years. In northwestern Ontario, Nelson Granite Limited continued to expand access to granite to complement its needs, mainly for the manufacture of monuments by affiliates in Ontario and New Brunswick. Canital Granite Ltd. of Winnipeg has quarried granite north of Kenora in northwestern Ontario. Current exploration and development work carried out by an associated group, Manex Granit Inc. of Winnipeg, extends into adjacent regions of Manitoba and also throughout the Sudbury area. Palin Granite (Canada) Inc., owned by the largest private stone producer in Finland, quarried granite from sites near Kenora, Ontario. Its production serves both domestic and export markets. Eastern Stone Products Ltd. and its subsidiary, Belmont Rose Granite Corporation, re-opened the Belmont Rose quarry in 1993. Monument-quality blocks were quarried for finishing and distribution by processing companies. Several other companies are active in Ontario and quarry mainly on demand. These include Vior Inc.; Positano Granite, a division of Poscan Ltd.; Granite Quarriers (G.Q.I.) Inc.; Granimar Quarries Ltd.; and Les Granites Gibson. Granits Malette Granite Inc. opened a new granite-processing plant in Iroquois Falls. A range of products, including flooring, monuments, counter tops and slabs, are being manufactured. Detailed activity relating to all types of dimension stone in the province has been highlighted in a directory published by the Ontario Ministry of Northern Development and Mines.¹²

Sandstone

Sandstone quarried near Toronto, Ottawa and Kingston has been widely used in Ontario as building stone. Medina sandstone is fine-to-medium-grained and varies from grey, through buff and brown to red, with some mottled units. Potsdam stone is medium-grained and varies from grey-white through salmon-red to purple, and is mottled. Current uses are as rough building stone, mill blocks from which sawn pieces are obtained, ashlar, flagstone, and as a source of silica for ferrosilicon and glass.

Western Provinces

Limestone

From east to west through the southern half of Manitoba, rocks of Precambrian, Paleozoic and Cretaceous ages occur. Tyndall Stone, a mottled

dolomitic limestone often referred to as "tapestry" stone, is the best-known Manitoba limestone. It is quarried by Gillis Quarries, Limited at Garson, about 50 km northeast of Winnipeg. Limestone from Moosehorn, 160 km northwest of Winnipeg, and from Mafeking, 40 km east of the Saskatchewan border and 160 km south of The Pas, has been used in several industries.

The eastern ranges of the Rocky Mountains contain Cambrian to Triassic limestones. Their development is based on accessibility and quarriability, and extensive recent work has been conducted on Alberta limestones in selected areas.¹³ Most recently, focus has been on the potential use of the limestone for precipitated calcium carbonate (PCC). In southwestern Alberta, high-calcium limestone is mined at Exshaw, Kananaskis and Crowsnest, chiefly for the production of cement and lime, for metallurgical and chemical uses, and for use as crushed stone. Similar uses are made of limestone quarried at Cadomin, near Jasper.

In British Columbia, large volumes of limestone are mined each year for cement and lime manufacture, for use by the pulp and paper industry, and for various construction applications. Quarries on Texada Island, British Columbia, have for many years provided limestone to markets in Vancouver and Washington State by virtue of their quality and location relative to tidewater shipping facilities.

Granite

In Manitoba, several companies quarry pink-to-reddish granite. Canital Granite Ltd., along with associate Manex Granit Inc., obtains granite from several sites to serve Canital's large tile manufacturing plant in Winnipeg. Exports of manufactured products vary considerably depending on construction activity, with the United States accounting for most of the demand. Cold Spring Granite (Canada) Limited, situated 14 km south of Lac du Bonnet, continues to produce about five "colours" of granite, mainly as large blocks for cutting and polishing in the United States. Some of the most recent work by the provincial government has been concentrated in southeastern Manitoba.¹⁴

In Saskatchewan and Alberta, granite is not quarried on a regular basis. Some detailed work to evaluate potential reserves in Saskatchewan has been undertaken by the Saskatchewan Geological Survey and is highlighted in one of several reports.¹⁵

In British Columbia, Quarry Pacific Industries Ltd., along with Margranite Industries Ltd. and C&S Ceramic Tile Distributors, the related processing and distribution companies respectively, produced a range of granite tile at a new manufacturing plant in Burnaby. West Coast Granite Manufacturing Inc. (formerly Pacific Granistone Mfg. Inc.) of Delta started up in 1993 and operates a fully equipped plant to produce granite slabs. A recent publication by the B.C. Ministry of Energy, Mines and Petroleum

Resources describes some properties that are attracting attention.¹⁶

Sandstone

Sandstone for building and ornamental uses quarried near Banff, Alberta, is referred to as "Rundle Stone." This stone is very popular locally and is best known for its use in the Banff Springs Hotel. Two companies are active, Thunderstone Quarries Ltd. and Rundle Rock Building Stone (1980) Ltd., both situated outside of the national park near Canmore.

Yukon and the Northwest Territories

Sidroc Ltd., a Whitehorse-based processor of architectural stone, has evaluated several sites to produce granite for construction uses. Preliminary work concentrated on grey-white and beige-coloured granites that are expected to attract outside interest given the favourable backhaul rates to Vancouver and Edmonton.

A large, unique occurrence of limestone has been recognized in the Arctic at Bear Island, about 12 km south of the community of Coral Harbour. Preliminary work suggests that this fine-grained, attractively veined stone will be excellent for sculptural and architectural uses, and possibly for some ornamental uses. A permit to quarry at the site is held by the Keewatin Inuit Association for the community of Coral Harbour.

SPECIFICATIONS

Several test methods apply to dimension stone, but generally begin with compressive strength (ASTM C170) and absorption (ASTM C97). The compressive strength is defined as the maximum load per unit area that can be applied before the rock fails, reported in pounds per square inch (psi) and in megapascals (MPa). Absorption is defined as the percentage of water by weight that is absorbed over a 48-hour period.

CONSUMPTION AND MARKETS

The very wide range of uses for several types of stone, including granite, limestone, marble, sandstone and slate, is highlighted in Tables 3 to 7, inclusive. Limestone in particular has chemical-related uses, along with its large-scale use in the cement, lime, glass and metal-smelting industries.

Detailed consumption data for rough and finished granite, as well as for other types of stone, are not available. However, trends can be established based on production, imports, and less well-defined export data. During the 1980-90 period, Canada's production of rough granite approximately doubled, and

then weakened during the recession. Imports of roughly trimmed and cut granite block (codes 2516.11 and 2516.12) more than doubled during the interval and then remained relatively stable as the domestic industry strengthened (Table 9). Exports of rough granite have increased about 7.5 times in terms of volume since 1986 in response to demand in Japan, the United States and Italy.

Dolomite is the source of magnesium metal produced by Haley Industries Limited at Haley Station, Ontario; the company also uses a high-calcium lime from southeastern Ontario in the production of calcium metal. Dead-burned dolomitic limestone for use as a refractory is produced at Dundas, Ontario, by Redland Quarries Inc.

WORLD TRENDS, TRADE AND TARIFFS

World annual production of raw dimension stone is estimated to be about 35 Mt (about 13.0 million m³), with Europe accounting for approximately two thirds of total output. About 50% of world production comes from six leading countries: Italy, Spain, Greece, the United States, France and China. Italy has traditionally been the world's leading producer, accounting for 7-8 Mt. Italy was also the world's leading exporter of rough stone, accounting for an estimated 3.5 Mt in 1994; China ranked second with an estimated 15% of the world's exports of about 11 Mt.

Along with China, India and Brazil have become important producers of granite and are expanding production rapidly. These producers, together with the Republic of South Africa, Spain and the Scandinavian countries, account for approximately 70% of the world's exports of granite. Interest in developing stone resources and technology is worldwide, as partially indicated by several relatively new international stone exhibitions which include: (1) the International Granite, Marble and Decorative Stones Fair, to be held in Sao Paulo, Brazil, in March 1996; (2) Piedra '96, National Stone Fair, to be held in Madrid, Spain, in May 1996; and (3) Chinastone '96, a biannual international stone fair to be held in early December 1996. At the annual Carrera International Stone Fair, held for many years in Carrera, Italy, very large delegations attended from countries including the Czech Republic, the Slovakian Republic, Vietnam, Argentina, Hong Kong, China and India. Also, there was major participation by companies from South Africa, the Pacific area, and the Caribbean, all organized by the Centre for the Development of Industry, an important international agency supported by the European Union.

Japan continued to be Canada's major customer for rough granite in 1995 accounting (by value) for about 50% of total exports. In the case of processed products (represented as granite monumental or building stone, as described), the United States is by far the

leading customer. Tariffs between Canada and the United States relating to other types of worked stone, simply cut or sawn, as well as to tiles and similar articles, were phased out in 1993. Some natural stone products classified as millstones or grindstones are subject to a later phase-out in 1998.

The impact of the North American Free Trade Agreement (NAFTA) is uncertain; however, in the longer term, it is expected that there will be an expansion of markets for Canadian granite in Mexico, and possibly for Mexican marble in Canada.

An independent investigation by Revenue Canada, beginning in December 1993, determined that imports of black granite memorials and black granite slabs originating in, or exported from, India were being dumped and subsidized. A ruling, still in effect, indicated that 34.5% of the imports were dumped by a weighted dumping margin of 27.9%; the weighted average percentage of subsidy for exporters was from 27.8% to 50.4%.

OUTLOOK

The demand for structural stone products in North America in 1996/97 is expected to increase because of the improved outlook for office and industrial building construction. Also, a U.S.-based survey of equipment purchasing plans in the dimension stone industry indicated a positive outlook for 1996, based on a survey by *Stone World* magazine. Throughout the construction industry, the trend is continuing toward the use of more natural materials in renovation and in up-scale housing. Although the most rapid expansion has been associated with new quarries and fabricating plants in Quebec, modernization by several producers across Canada has increased the availability of high-quality finished products at competitive prices. Producers continue to emphasize import replacement and the penetration of foreign markets; the relatively large Japanese market for high-quality rough granite blocks is expected to remain firm. It is expected that annual shipments of all construction-related granite products for domestic as well as international markets will soon be maintained at about \$100 million, the level reached in 1991/92. Although new entrants are joining international stone markets, the Canadian dimension stone industry is expected to remain competitive because of its advanced quarrying, processing and installation technology.

REFERENCES

- 1 Bergeron, Michel, *The Canadian Granite Industry*, Litos, No. 17, pp. 38-48, March 1995.
- 2 Parks, W.A., *Building and Ornamental Stones of Canada*, Canada Department of Mines, Mines Branch, Ottawa, Nos. 100, 203, 279, 388 and 452, Volume 1 (1912) to Volume V (1971), OUT OF PRINT.

- 3** Goudge, M.F., *Limestones of Canada*, Canada Department of Mines, Mines Branch, Ottawa, Nos. 733, 742, 755, 781 and 811, Part 1 (1934) to Part V (1946), OUT OF PRINT.
- 4** Andrews, P.R.A. and Vagt, G.O., *Summary Report No. 20: Limestone, Calcite and Lime*, Energy Mines and Resources Canada, Ottawa, CANMET report MSL93-53 (R), 1993.
- 5** Dickie, G.B., *Building Stone in Nova Scotia*, Nova Scotia Department of Mines and Energy, Halifax, Information Circular 12, 1988.
- 6** Nova Scotia Department of Mines and Energy, *Nova Scotia Dimension Stone - for Designers, Developers and Quarriers*, p. 24, 1989.
- 7** Natural Resources Canada, *Stone Industry in Canada: 1995 Directory*, Minerals and Metals Sector, 1995.
- 8** New Brunswick Department of Natural Resources and Energy, Minerals Division, *New Brunswick Stone - Decorative and Architectural*, Miscellaneous Report No. 7, p. 23, 1989.
- 9** Meyer, J.R., *Dimensional Stone: 1991 Update - in Report of Activities*, Newfoundland Department of Mines and Energy, Geological Survey Branch, pp. 93-95, 1991.
- 10** Quebec Ministry of Energy and Resources, Mining Development Service, *Quebec's Dimensional Granites*, a colour poster, 1992.
- 11** Ontario Ministry of Natural Resources, *Limestone Industries of Ontario - A Three-Volume Study of the Geology, Resources and Related Industries*, 1989.
- 12** Ministry of Northern Development and Mines, Mines and Minerals Division, *Ontario Dimension Stone*, 1995.
- 13** Holter, M.E. and Hamilton, W.N., *An Evaluation of Alberta Limestones for Use as Paper Filler Materials*, Alberta Research Council, Open File Report 1990-11, 89 pp.
- 14** Schmidtke, B.E., *Granitic Dimension Stone Potential in Southeast Manitoba*, Manitoba Energy and Mines, Mineral Resources Division, Report ER93-1, 1994.
- 15** Saskatchewan Energy and Mines, Geology Division, *Stone in Saskatchewan*, 25 pp., 1989.
- 16** Hora, Z.D. and Hancock, K.D., *Some New Dimension Stone Properties in British Columbia; in Exploration in British Columbia, Part B*, British Columbia Ministry of Energy, Mines and Petroleum Resources, pp. 107-116, 1992.

Notes: (1) For definitions and valuation of mineral production, shipments and trade, please refer to Chapter 70. (2) Information in this review was current as of February 1, 1996.

TARIFFS

Item No.	Description	Canada			United States
		MFN	GPT	USA	Canada
2514.00	Slate, whether or not roughly trimmed or merely cut, by sawing or otherwise, into blocks or slabs of a rectangular (including square) shape				
2514.00.10	Crude or roughly trimmed	Free	Free	Free	Free
2514.00.20	Merely cut, by sawing or otherwise, into blocks or slabs of a rectangular (including square) shape	4.8%	2%	Free	Free
2514.00.90	Other, including powder and waste	2.1%	1%	Free	Free
25.15	Marble, travertine, ecaussine and other calcareous monumental or building stone of an apparent specific gravity of 2.5 or more, and alabaster, whether or not roughly trimmed or merely cut, by sawing or otherwise, into blocks or slabs of a rectangular (including square) shape				
2515.11.00	Marble and travertine: Crude or roughly trimmed	Free	Free	Free	Free
2515.12.00	Merely cut, by sawing or otherwise, into blocks or slabs of a rectangular (including square) shape	1.5%	Free	Free	Free
2515.20	Ecaussine and other calcareous monumental or building stone; alabaster				
2515.20.10	Crude or roughly trimmed	Free	Free	Free	Free
2515.20.20	Merely cut, by sawing or otherwise, into blocks or slabs of a rectangular (including square) shape	4.8%	2%	Free	Free
25.16	Granite, porphyry, basalt, sandstone and other monumental or building stone, whether or not roughly trimmed or merely cut, by sawing or otherwise, into blocks or slabs of a rectangular (including square) shape				
2516.11.00	Granite: Crude or roughly trimmed	Free	Free	Free	Free
2516.12	Merely cut, by sawing or otherwise, into blocks or slabs of a rectangular (including square) shape	Free-4.8%	Free	Free	Free
2516.21.00	Sandstone: Crude or roughly trimmed	Free	Free	Free	Free
2516.22.00	Merely cut, by sawing or otherwise, into blocks or slabs of a rectangular (including square) shape	4.8%	2%	Free	Free
2516.90	Other monumental or building stone				
2516.90.10	Crude or roughly trimmed	Free	Free	Free	Free
2516.90.20	Merely cut, by sawing or otherwise, into blocks or slabs of a rectangular (including square) shape	4.8%	2%	Free	Free
25.17	Pebbles, gravel, broken or crushed stone, of a kind commonly used for concrete aggregates, for road metalling or for railway or other ballast, shingle and flint, whether or not heat-treated; macadam of slag, dross or similar industrial waste, whether or not incorporating the materials cited in the first part of the heading; tarred macadam, granules, chippings and powder, of stones of heading nos. 25.15 or 25.16, whether or not heat-treated				
2517.10.00	Pebbles, gravel, broken or crushed stone, of a kind commonly used for concrete aggregates for road metalling or for railway or other ballast, shingle and flint, whether or not heat-treated	Free	Free	Free	Free
2517.20.00	Macadam of slag, dross or similar industrial waste, whether or not incorporating the materials cited in subheading no. 2517.10	Free	Free	Free	Free

TARIFFS (cont'd)

Item No.	Description	Canada		USA	United States Canada
		MFN	GPT		
2517.30.00	Tarred macadam Granules, chippings and powder, of stones of heading nos. 25.15 or 25.16, whether or not heat-treated:	8.8%	5%	Free	Free
2517.41.00	Of marble	Free	Free	Free	Free
2517.49	Other	Free	Free	Free	Free
2517.49.10	Limestone roofing granules	Free	Free	Free	Free
2517.49.90	Other	Free	Free	Free	Free
6801.00.00	Setts, curbstones and flagstones of natural stone (except slate)	5.1%	Free	Free	Free
68.02	Worked monumental or building stone (except slate) and articles thereof, other than goods of heading no. 68.01; mosaic cubes and the like, of natural stone (including slate), whether or not on a backing; artificially coloured granules, chippings and powder, of natural stone (including slate)				
6802.10	Tiles, cubes and similar articles, whether or not rectangular (including square), the largest surface area of which is capable of being enclosed in a square which is less than 7 cm; artificially coloured granules, chippings and powder				
6802.10.10	Roofing granules, artificially coloured	Free	Free	Free	Free
6802.10.90	Other	10.8%	7%	Free	Free
	Other monumental or building stone and articles thereof, simply cut or sawn, with a flat or even surface:				
6802.21.00	Marble, travertine and alabaster	4.9%	2%	Free	Free
6802.22.00	Other calcareous stone	6.9%	4%	Free	Free
6802.23.00	Granite	4.8%	Free	Free	Free
6802.29.00	Other stone	6.9%	4%	Free	Free
	Other:				
6802.91.00	Marble, travertine and alabaster	7.8%	Free	Free	Free
6802.92.00	Other calcareous stone	8.5%	5%	Free	Free
6802.93.00	Granite	8.8%	6.5%	Free	Free
6802.99.00	Other stone	8.8%	6.5%	Free	Free
6803.00	Worked slate and articles of slate or of agglomerated slate				
6803.00.10	Roofing slate	Free	Free	Free	Free
6803.00.90	Other	8.8%	6.5%	Free	Free
68.04	Millstones, grindstones, grinding wheels and the like, without frameworks, for grinding, sharpening, polishing, trueing or cutting, hand sharpening or polishing stones, and parts thereof, of natural stone, of agglomerated natural or artificial abrasives, or of ceramics, with or without parts of other materials				
6804.10.00	Millstones and grindstones for milling, grinding or pulping	8.8%	Free	2%	Free
6804.23.00	Of natural stone	8.8%	Free	2%	Free

Sources: Customs Tariff, effective January 1996, Revenue Canada; Harmonized Tariff Schedule of the United States, 1996.

TABLE 1. CANADA, STONE EXPORTS AND IMPORTS, 1993-95

Item No.		1993		1994		1995p	
		(tonnes)	(\$000)	(tonnes)	(\$000)	(tonnes)	(\$000)
EXPORTS							
2514.00	Slate, whether or not roughly trimmed or merely cut, etc.	3	11	173	220	112	124
2515.11	Marble and travertine, crude or roughly trimmed	230	127	—	—	134	61
2515.12	Marble and travertine, merely cut, by sawing or otherwise, into blocks, etc.	80	61	86	74	74	40
		(cubic metres)		(cubic metres)		(cubic metres)	
2516.11	Granite, crude or roughly trimmed	49 238	18 743	41 265	18 083	33 145	16 640
		(tonnes)		(tonnes)		(tonnes)	
2516.12	Granite, merely cut, by sawing or otherwise, into blocks, etc.	3 898	1 599	4 748	1 941	4 563	1 259
		(cubic metres)		(cubic metres)		(cubic metres)	
2516.21	Sandstone, crude or roughly trimmed	738	10	1	7	237	123
		(tonnes)		(tonnes)		(tonnes)	
2516.22	Sandstone, merely cut, by sawing or otherwise, into blocks, etc.	43	9	28	84	4	15
2516.90	Monumental or building stone, n.e.s.	3 391	893	2 543	595	2 508	336
2517.10	Pebbles, gravel, broken or crushed stone used for aggregates, etc.	2 009 014	14 656	1 993 850	17 651	2 612 093	21 171
2517.41	Marble granules, chipping and powder of 25.15 or 25.16, heat-treated or not	33 673	4 361	50 401	6 496	80 406	8 824
2517.49	Granules, chippings and powder n.e.s. of 25.15 or 25.16, heat-treated or not	27 545	174	3 014	180	180 397	655
6801.00	Setts, curbstones and flagstones of natural stone (except slate)	..	126	..	445	..	183
6802.10	Tiles, etc., rectangular or square not more than 7 cm, etc., artificially coloured granules, chippings and powder	..	233	..	228	..	275
6802.21	Monumental or building stone, cut or even, marble, travertine and alabaster	..	114	..	222	..	32
6802.22	Monumental or building stone, cut or sawn, flat or even, other calcareous stone	..	89	..	42	..	28
6802.23	Monumental or building stone, cut or sawn, flat or even, granite	..	3 593	..	2 342	..	3 001
6802.29	Monumental or building stone, cut or sawn, flat or even, n.e.s.	..	186	..	139	..	292
6802.91	Worked monumental or building stone, n.e.s., marble, travertine or alabaster	..	910	..	622	..	2 521
6802.92	Worked monumental or building stone, n.e.s., calcareous stone, n.e.s.	..	97	..	103	..	111
6802.93	Worked monumental or building stone, n.e.s., granite	..	16 506	..	19 445	..	27 989
6802.99	Worked monumental or building stone, n.e.s.	..	6 678	..	7 365	..	8 231
6803.00	Worked slate and articles of slate or agglomerated slate	..	512	..	1 853	..	3 707
6804.10	Millstones and grindstones for milling, grinding or pulping	..	5 087	..	4 882	..	5 513
6804.23	Millstones, grindstones, etc., of natural stone	..	2 632	..	3 312	..	2 775
IMPORTS							
2514.00	Slate, whether or not roughly trimmed or merely cut, etc.	4 462	832	3 287	983	3 713	851
2515.11	Marble and travertine, crude or roughly trimmed	2 024	653	1 436	570	1 863	623

TABLE 1 (cont'd)

Item No.		1993		1994		1995 ^P	
		(tonnes)	(\$000)	(tonnes)	(\$000)	(tonnes)	(\$000)
IMPORTS (cont'd)							
2515.12	Marble and travertine, merely cut, by sawing or otherwise, into blocks, etc.	2 720	1 725	1 489	1 099	1 345	1 255
2516.11	Granite, crude or roughly trimmed	36 920	8 672	29 257	7 096	38 228	9 491
2516.12	Granite, merely cut, by sawing or otherwise, into blocks, etc.	4 564	2 173	6 362	3 008	2 871	1 893
2516.21	Sandstone, crude or roughly trimmed	1 928	325	1 679	248	2 467	473
2516.22	Sandstone, merely cut, by sawing or otherwise, into blocks, etc.	6 343	1 447	5 873	1 419	4 990	1 158
2516.90	Monumental or building stone, n.e.s.	7 958	1 413	7 049	1 237	6 627	1 279
2517.10	Pebbles, gravel, broken or crushed stone used for aggregates, etc.	950 009	7 455	638 800	6 870	1 217 167	10 992
2517.41	Marble granules, chipping and powder of 25.15 or 25.16, heat-treated or not	55 677	7 362	51 138	7 346	77 847	10 513
2517.49	Granules, chippings and powder n.e.s. of 25.15 or 25.16, heat-treated or not	176 476	2 237	221 692	3 588	266 064	3 533
6801.00	Setts, curbstones and flagstones of natural stone (except slate)	..	410	..	403	..	484
6802.10	Tiles, etc., rectangular or square not more than 7 cm, etc., artificially coloured granules, chippings and powder	..	4 281	..	5 951	..	4 540
6802.21	Monumental or building stone, cut or sawn, flat or even, marble, travertine and alabaster	..	5 895	..	4 873	..	5 718
6802.22	Monumental or building stone, cut or sawn, flat or even, other calcareous stone	..	114	..	104	..	272
6802.23	Monumental or building stone, cut or sawn, flat or even, granite	..	9 124	10 111	9 080	9 128	8 882
6802.29	Monumental or building stone, cut or sawn, flat or even, n.e.s.	..	519	..	285	..	358
6802.91	Worked monumental or building stone, n.e.s., marble, travertine or alabaster	..	15 181	..	14 391	..	13 916
6802.92	Worked monumental or building stone, n.e.s., calcareous stone, n.e.s.	..	435	..	311	..	302
6802.93	Worked monumental or building stone, n.e.s., granite	..	13 122	42 902	13 572	11 574	12 218
6802.99	Worked monumental or building stone, n.e.s.	..	1 043	..	1 110	..	889
6803.00	Worked slate and articles of slate or agglomerated slate	..	5 118	..	5 596	..	6 019
6804.10	Millstones and grindstones for milling, grinding or pulping	..	1 321	..	1 494	..	1 718
6804.23	Millstones, grindstones, etc., of natural stone	..	13 117	..	14 805	..	12 947

Sources: Natural Resources Canada; Statistics Canada.

- Nil; .. Not available or not applicable; n.e.s. Not elsewhere specified; ^P Preliminary.

TABLE 2. CANADA, TOTAL PRODUCTION OF STONE, 1993-95

	1993		1994		1995P	
	(000 t)	(\$000)	(000 t)	(\$000)	(000 t)	(\$000)
BY PROVINCE¹						
Newfoundland	1 871	7 186	1 416	11 924	1 178	12 357
Nova Scotia	5 179	24 563	5 454	29 271	5 681	31 761
New Brunswick	3 217	18 553	3 057	19 195	3 416	17 910
Quebec	33 294	202 708	34 069	208 128	32 413	195 400
Ontario	37 934 ^r	221 984 ^r	39 445	236 483	39 303	247 694
Manitoba	2 476	10 948	2 861	12 032	2 453	9 547
Alberta	325	3 176	382	3 996	201	1 112
British Columbia	4 253	32 265	4 904	35 530	6 318	37 806
Northwest Territories and Yukon	821	4 560	913	3 332	1 261	4 991
Total	89 370 ^r	525 942 ^r	92 502	559 890	92 224	558 577
BY USE²						
Dimensional stone						
Rough	196	19 855	199	22 924	..	..
Monumental and ornamental stone (n.f.)	42	4 724	45	4 900	..	..
Other (flagstone, curbstone, paving blocks, etc.)	33	3 336	69	3 699	..	..
Lining open-hearth furnaces	5	46	-	-	..	..
Chemical and metallurgical						
Cement plants, Canada	11 472	35 993	13 321	42 044	..	..
Cement plants, foreign	1 329	5 643	1 654	7 274	..	..
Flux in iron and steel furnaces	198	1 446	190	1 359	..	..
Flux in nonferrous smelters	230	1 601	154	956	..	..
Clay plants, Canada	623	1 951	-	-	..	..
Glass factories	184	3 491	158	3 158	..	..
Lime plants, Canada	2 893	21 897	2 367	20 565	..	..
Lime plants, foreign	420	2 474	1 124	4 541	..	..
Pulp and paper mills	224	2 355	234	1 900	..	..
Sugar refineries	14	64	16	75	..	..
Other chemical uses	244	1 810	1 400	8 290	..	..
Pulverized stone						
Whiting	41	2 909	41	3 122	..	..
Asphalt filler	54	205	124	484	..	..
Dusting coal mines	7	321	57	1 171	..	..
Agricultural purposes and fertilizer plants	844	13 006	1 002	14 141	..	..
Other uses	999	14 612	1 125	21 888	..	..
Miscellaneous stone						
Manufacture of artificial stone	18	185	21	184	..	..
Roofing granules	388	8 048	450	11 169	..	..
Poultry grit	48	954	57	1 163	..	..
Stucco dash	15	1 147	24	1 475	..	..
Terrazzo chips	2	308	3	279	..	..
Rock wool	18	440	13	125	..	..
Rubble and riprap	997	7 035	827	4 137	..	..
Other uses	1 357	9 162	1 247	8 934	..	..
Crushed stone for						
Concrete aggregate	10 253	57 962	9 592	55 842	..	..
Asphalt aggregate	10 130	57 070	8 025	47 200	..	..
Road metal	32 928	162 634	33 974	170 880	..	..
Railroad ballast (includes traprock)	1 876	14 243	2 390	20 209	..	..
Other uses	26 280	127 919	29 101	141 668	..	..
Total	104 359	587 295	109 003	625 756	..	..

Sources: Natural Resources Canada; Statistics Canada.

.. Not available; n.f. Not finished or dressed; P Preliminary; r Revised.

¹ Data exclude stone used in the Canadian cement and lime industries. ² Data include stone used in the Canadian cement and lime industries.

Note: Numbers may not add to totals due to rounding.

TABLE 3. CANADA, PRODUCTION OF LIMESTONE, 1993-95

	1993		1994		1995	
	(000 t)	(\$000)	(000 t)	(\$000)	(000 t)	(\$000)
BY PROVINCE¹						
Newfoundland	1 489	3 826	1 184	6 618	879	5 250
Nova Scotia	207	2 968	215	3 829	159	3 272
New Brunswick	506	6 509	564	7 018	383	5 480
Quebec	22 686	119 180	24 832	133 401	22 197	116 504
Ontario	36 138	193 071	37 521	198 032	37 101	202 348
Manitoba	2 018	8 318	2 556	10 170	2 133	8 000
Alberta	247	2 561	317	3 309	131	370
British Columbia	2 559	18 732	3 015	20 038	4 124	19 669
Northwest Territories and Yukon	586	2 722	102	447	85	373
Total	66 437	357 887	70 305	382 861	67 192	361 265
BY USE²						
Dimensional stone						
Rough	57	3 160	63	3 302	..	..
Monumental and ornamental stone (n.f.)	2	56	8	231	..	..
Other (flagstone, curbstone, paving blocks, etc.)	12	1 343	51	2 379	..	..
Lining, open-hearth furnaces	5	46	-	-	..	..
Chemical and metallurgical						
Cement plants, Canada	11 154	35 115	13 039	41 080	..	..
Cement plants, foreign	1 329	5 643	1 654	7 274	..	..
Flux in iron and steel furnaces	198	1 446	190	1 359	..	..
Flux in nonferrous smelters	176	1 001	154	956	..	..
Glass factories	161	2 830	146	2 870	..	..
Lime plants, Canada	2 893	21 897	2 367	20 565	..	..
Lime plants, foreign	420	2 474	1 124	4 541	..	..
Pulp and paper mills	224	2 355	234	1 900	..	..
Sugar refineries	14	64	16	75	..	..
Other chemical uses	244	1 810	587	5 033	..	..
Pulverized stone						
Whiting (substitute)	41	2 909	41	3 122	..	..
Asphalt filler	20	112	85	376	..	..
Dusting, coal mines	7	321	57	1 171	..	..
Agricultural purposes and fertilizer plants	820	12 486	963	13 671	..	..
Other uses	709	3 448	739	4 617	..	..
Miscellaneous stone						
Manufacture of artificial stone	18	185	19	168	..	..
Roofing granules	118	1 211	145	1 434	..	..
Poultry grit	47	835	56	1 031	..	..
Stucco dash	11	743	22	1 135	..	..
Rock wool			4	10		
Rubble and riprap	469	3 375	499	3 562	..	..
Other uses	742	6 468	631	6 782	..	..
Crushed stone for						
Concrete aggregate	9 297	51 653	7 276	42 031	..	..
Asphalt aggregate	6 395	34 446	5 453	29 876	..	..
Road metal	27 921	137 890	28 393	140 396	..	..
Railroad ballast	707	3 329	730	3 408	..	..
Other uses	16 277	76 247	20 966	100 152	..	..
Total	80 484	414 900	85 711	444 506	..	..

Sources: Natural Resources Canada; Statistics Canada.

- Nil; .. Not available; n.f. Not finished or dressed.

¹ Data exclude stone used in Canadian cement and lime industries. ² Data include stone used in the Canadian cement and lime industries.

Note: Numbers may not add to totals due to rounding.

TABLE 4. CANADA, PRODUCTION OF MARBLE,¹ 1993-95

	1993		1994		1995	
	(000 t)	(\$000)	(000 t)	(\$000)	(000 t)	(\$000)
BY PROVINCE						
Nova Scotia	—	—	—	—		
Quebec	393	8 433	467	9 397	502	8 761
Ontario	321 ^r	9 263 ^r	340	13 402	412	18 059
Total	714 ^r	17 696 ^r	808	22 799	914	26 820
BY USE						
Dimensional stone						
Rough	15	804	9	499	..	..
Monumental and ornamental stone (n.f.)	...	1	—	—	..	..
Other (flagstone, curbstone, paving, blocks, etc.)	—	—	—	—	..	..
Chemical process stone						
Glass factories	23	661	12	288	..	..
Pulverized stone						
Agricultural purposes and fertilizer plants	24	519	39	468	..	..
Other uses	289	11 164	387	17 259	..	..
Miscellaneous stone						
Roofing granules	—	—	...	15	..	..
Poultry grit	...	5	...	9	..	..
Stucco dash	4	404	2	295	..	..
Terrazzo chips	1	185	3	279	..	..
Rubble and riprap	12	399	...	15	..	..
Other uses	11	701	2	33	..	..
Crushed stone for						
Concrete aggregate	102	927	159	1 969	..	..
Asphalt aggregate	1	5	1	7	..	..
Road metal	2	9	13	59	..	..
Other uses	231	1 913	182	1 603	..	..
Total	714	17 697	807	22 799	..	..

Sources: Natural Resources Canada; Statistics Canada.

— Nil; .. Not available; ... Amount too small to be expressed; n.f. Not finished or dressed; r Revised.

¹ Marble refers to a commercial definition that may also include limestone, travertine and greenstone (serpentinite or amphibole).

Note: Numbers may not add to totals due to rounding.

TABLE 5. CANADA, PRODUCTION OF GRANITE, 1993-95

	1993		1994		1995	
	(000 t)	(\$000)	(000 t)	(\$000)	(000 t)	(\$000)
BY PROVINCE						
Newfoundland	296	2 118	104	1 339	244	1 907
Nova Scotia	3 878	17 046	3 867	19 766	4 515	22 766
New Brunswick	2 507	11 299	2 313	11 539	2 926	11 908
Quebec	7 497	59 049	6 182	49 548	7 876	57 487
Ontario	1 469	18 583 ^r	1 574	23 661	1 780	25 842
Manitoba	366	2 597	157	1 775	153	1 444
Alberta	8	461	—	—	—	—
British Columbia	1 693	13 533	1 865	15 252	2 103	17 227
Northwest Territories and Yukon	195	1 761	263	2 372	551	4 005
Total	17 909	126 447 ^r	16 325	125 252	20 148	142 585
BY USE						
Dimensional stone						
Rough	85	12 158	73	11 596	..	..
Monumental and ornamental stone (n.f.)	39	4 603	34	4 622	..	..
Other (flagstone, curbstone, paving blocks, etc.)	10	1 304	5	688	..	..
Chemical and metallurgical						
Flux in nonferrous smelters	54	600	—	—	..	..
Pulverized stone						
Asphalt filler	34	93	39	108	..	..
Agricultural purposes and fertilizer plants	..	1	..	2	..	..
Other	—	—	..	12	..	..
Miscellaneous stone						
Artificial stone	—	—	2	16	..	..
Roofing granules	271	6 837	305	9 718	..	..
Poultry grit	1	115	1	123	..	..
Stucco dash	—	—	..	45	..	..
Terrazzo chips	1	123	—	—	..	..
Rock wool	18	440	9	100	..	..
Rubble and riprap	334	2 485	68	350	..	..
Other uses	378	1 737	356	1 848	..	..
Crushed stone for						
Concrete aggregate	758	4 766	1 750	9 834	..	..
Asphalt aggregate	3 340	20 247	2 232	14 975	..	..
Road metal	4 001	20 833	4 703	26 288	..	..
Traprock	1 111	10 594	1 590	16 380	..	..
Other uses	7 476	39 512	5 157	28 546	..	..
Total	17 909	126 447	16 325	125 252	..	..

Sources: Natural Resources Canada; Statistics Canada.

— Nil; .. Not available; . . . Amount too small to be expressed; n.f. Not finished or dressed; r Revised.

Notes: Numbers may not add to totals due to rounding. Data includes shipments by producers regardless of industrial classification. Granite includes all igneous rock; limestone includes dolomite; stone used in the Canadian cement and lime industries is included.

TABLE 6. CANADA, PRODUCTION OF SANDSTONE, 1993-95

	1993		1994		1995	
	(000 t)	(\$000)	(000 t)	(\$000)	(000 t)	(\$000)
BY PROVINCE¹						
Newfoundland	84	408	124	566	50	200
Nova Scotia	1 067	4 436	1 340	5 547	975	5 595
New Brunswick	95	147	101	243	5	11
Quebec	1 930	12 819	1 782	12 654	1 484	11 121
Ontario	5	1 066	11	1 388	10	1 445
Alberta	. . .	24	6	587	10	640
Total	3 183	18 900	3 363	20 986	2 534	19 012
BY USE²						
Dimensional stone						
Rough	39	2 994	50	4 126	..	..
Monumental and ornamental stone (n.f.)	1	64	3	47	..	..
Other (flagstone, curbstone, paving blocks, etc.)	12	593	12	632	..	..
Chemical process stone						
Cement plants, Canadian	24	83	49	231	..	..
Miscellaneous stone						
Rubble and riprap	172	746	258	217	..	..
Other	90	135	95	143	..	..
Crushed stone for						
Concrete aggregate	95	615	407	2 009	..	..
Asphalt aggregate	345	2 096	309	2 191	..	..
Road metal	747	3 838	713	3 499	..	..
Railroad ballast	-	-	21	178	..	..
Other uses	1 681	7 820	1 494	7 945	..	..
Total	3 207	18 983	3 412	21 217	..	..

Sources: Natural Resources Canada; Statistics Canada.

- Nil; .. Not available; . . . Amount too small to be expressed; n.f. Not finished or dressed.

¹ Data exclude stone used in Canadian cement and lime industries. ² Data include stone used in Canadian cement and lime industries.

Note: Numbers may not add to totals due to rounding.

TABLE 7. CANADA, PRODUCTION OF SHALE,¹ 1993-95

	1993		1994		1995	
	(000 t)	(\$000)	(000 t)	(\$000)	(000 t)	(\$000)
BY PROVINCE²						
Newfoundland	1	833	4	3 400	5	5 000
Nova Scotia	26	113	32	129	32	128
New Brunswick	108	598	79	395	102	511
Quebec	788	3 227	806	3 129	354	1 527
Ontario	—	—	—	—	—	—
Manitoba	93	32	148	87	167	104
Alberta	70	130	59	100	60	102
British Columbia	—	—	24	240	91	910
Northwest Territories and Yukon	41	77	549	513	624	614
Total	1 128	5 011	1 701	7 993	1 436	8 896
BY USE³						
Dimensional stone	1	833	4	3 400	..	..
Chemical and metallurgical						
Cement plants, Canadian	295	795	234	733	..	..
Clay plants, Canadian	623	1 951	813	3 257	..	..
Miscellaneous stone						
Rubble and riprap	10	29	2	9	..	..
Other uses	136	122	163	130	..	..
Crushed stone for						
Asphalt aggregate	50	277	30	152	..	..
Road metal	257	1 001	152	638	..	..
Railway ballast	58	321	49	244	..	..
Other uses	614	2 428	1 302	3 420	..	..
Total	2 044	7 756	2 748	11 983	..	..

Sources: Natural Resources Canada; Statistics Canada.

— Nil; .. Not available; . . . Amount too small to be expressed.

¹ May include slate. ² Data exclude stone used in the Canadian cement and lime industries. ³ Data include stone used in the Canadian cement and lime industries.

Note: Numbers may not add to totals due to rounding.

TABLE 8. CANADA, PRODUCTION OF STONE BY TYPES,¹ 1980, 1985 AND 1993-95

	1980		1985		1993		1994		1995 ^p	
	(000 t)	(\$000)	(000 t)	(\$000)	(000 t)	(\$000)	(000 t)	(\$000)	(000 t)	(\$000)
Granite	39 983	140 914	17 219	95 424	17 909	126 447 ^r	16 325	125 252	20 148	142 585
Limestone	58 191	185 085	77 874	317 862	66 437	357 887	70 305	382 861	67 192	361 265
Marble	316	1 807	571	13 966	714 ^r	17 696 ^r	808	22 799	914	26 820
Sandstone	3 064	11 540	3 011	15 310	3 183	18 900	3 363	20 986	2 534	19 012
Shale ²	1 812	1 810	1 561	3 059	1 128	5 011	1 701	7 993	1 436	8 896
Total	103 366	341 156	100 236	445 622	89 371	525 942	92 502	559 890	92 224	558 577

Sources: Natural Resources Canada; Statistics Canada.

^p Preliminary; ^r Revised.¹ Data exclude stone used in the Canadian cement and lime industries. ² May include slate.

Note: Numbers may not add to totals due to rounding.

TABLE 9. CANADA, ROUGH GRANITE, SUMMARY OF PRODUCTION AND TRADE, 1980 AND 1985-95

	Quantity Value	Production ¹	Imports ²	Exports ²
1980	t	81 000	24 130	5 019 ^a
	\$ millions	5.6	1.9	0.7
1985	t	104 000	34 468	12 511 ^a
	\$ millions	12.8	6.2	1.7
1986	t	121 000	33 994	18 450 ^a
	\$ millions	15.7	6.6	2.7
1987	t	112 000	46 370	37 450 ^a
	\$ millions	16.1	7.9	6.0
1988	t	153 000	46 282	86 940
	\$ millions	24.4	11.2	16.2 ^r
1989	t	162 000	52 337	107 105
	\$ millions	24.8	11.7	17.3
1990	t	166 000	46 163	88 775
	\$ millions	33.6	11.2	19.4
1991	t	122 000	35 038	94 529
	\$ millions	24.0	8.5	22.6
1992	t	127 000	44 951	101 957
	\$ millions	20.3	10.5	21.4
1993	t	146 000 ^r	41 484	117 600 ^b
	\$ millions	25.0 ^r	10.8	20.3
1994	t	146 000 ^r	35 624	113 500 ^b
	\$ millions	25.0 ^r	10.1	20.0
1995	t	175 000 ^e	41 099	104 400 ^b
	\$ millions	30.0	11.4	17.9

Sources: Natural Resources Canada; Statistics Canada.

^e Estimated; ^r Revised, based on industry estimate.

^a Coded as building stone, rough (90% is considered to be granite). ^b Assumes a factor of 3.5 for converting cubic metres to tonnes.

¹ Includes rough stone for construction, monumental/ornamental and other uses.

² Includes codes 2516.11 (roughly trimmed block) and 2516.12 (cut block by sawing or otherwise). Some re-exports to the United States may also be involved.