

Dimension and ornamental stone in BC – An overview

by George J. Simandl and Donald F. Gunning

INTRODUCTION

At the beginning of this century, British Columbia produced a wide variety of quality dimension stone products for both domestic and foreign markets. The industry flourished until the 1930's when most of the producing quarries closed as a result of the depression. During the 1990's, British Columbia experienced the resurgent North American dimensional stone production trend. The industry benefited from increased prospecting activity and from substantive new investment in processing equipment, particularly in the granite sector. These activities resulted in new quarry developments, the reopening of abandoned quarries such as on Granite and Fox (www.quadrastone.com) islands, and a renaissance in downstream value-added activities. British Columbia has re-established itself as an important, reliable and innovative source of high quality stone products.

MARKET

A 1989 market study concluded that British Columbia's traditional stone markets were in the states of Washington, Oregon and California as well as in Alberta and British Columbia itself. California was, and still is, the largest single market, estimated at more than \$80 million per year. The Washington-Oregon market was valued at about \$10 million annually, while the combined British Columbia - Alberta market was also about \$10 million. Since 1989, these markets have grown substantially and interest in B.C. stone has surfaced from Southeast Asia and other foreign countries with a need for quality dimension stone products.

KNOWN DEPOSITS AND GEOLOGICAL POTENTIAL

British Columbia is richly endowed with dimension stone deposits, many of which are located near tide water or established transportation routes.

Currently there are 114 known dimension stone occurrences, including granite, marble, quartzite, volcanic rocks and gneiss deposits. In 27 of these occurrences, dimension stone is a primary commodity. There are at least 5 prospects and past producers of slate, four flagstone producers and a number of flagstone prospects. Besides these traditional materials, a variety of ornamental stones, including jade and rhodonite, occur in the province. There are over 40 known rhodonite occurrences, and some of these have been exploited on a commercial scale. Several of the 50 jade (nephrite) occurrences are past producers and at least two were producing in 1999. British Columbia prospectors and junior exploration companies are reporting several new discoveries every year and the B.C. Geological Survey does its best to track the activity to put any potential investors or buyers in contact with the B.C. granite industry. Selected occurrences are shown on Figure 1. Many of the sites are listed by rock type and displayed on location maps.

All of the localities shown in Figure 1 and some of the recently discovered dimension or ornamental occurrences are documented in "B.C. MINFILE", a computerised database of the British Columbia Geological Survey.

There are also a number of geological reports published by the British Columbia Geological Survey and other organisations (see bibliography).

OPERATING PROCESSING FACILITIES

Margranite Industry Ltd.

Margranite Industry Ltd. and a related group of companies (www.ceramstone.com), continues to expand the production and sales of granite tiles from its state-of-the-art plant in Surrey, B.C. (Figure 2), the only facility of its kind in Western North America.

The company has installed a third block-cutter, a Simec model NT2505, more than doubling its primary cutting capability, and increasing its current overall finished tile output to more than a million square feet per year. Further capacity is available through added operating shifts, as and when required.

YUKON

BRITISH

COLUMBIA

ALBERTA

Dimension Stone

Granite Quarries

1. Three Mile Point
2. Ymir
3. Beaverdell
4. Okanagan Sunset
5. Vernon
6. Nelson Island
7. Hardy Island
8. Fox Island
9. Granite Island
10. Knight Inlet
11. Haddington Island
33. Squamish
37. Skagit
38. Hope

Marble Quarries

12. Marblehead
13. Kaslo
14. Texada Island
15. Nootka Sound
34. Bonanza Lake
35. Gordon River

Prospects

16. Babbette
17. Duffy Lake Road
18. Bugaboo
19. Dome Creek
20. Vancouver Island "Flower Porphyry"
36. Boston Bar
39. Elaho River
40. Little White Mountain
41. McNulty Creek
42. Agassiz
43. Sechelt
44. Beaver Cove
45. Princess Royal

Flagstone

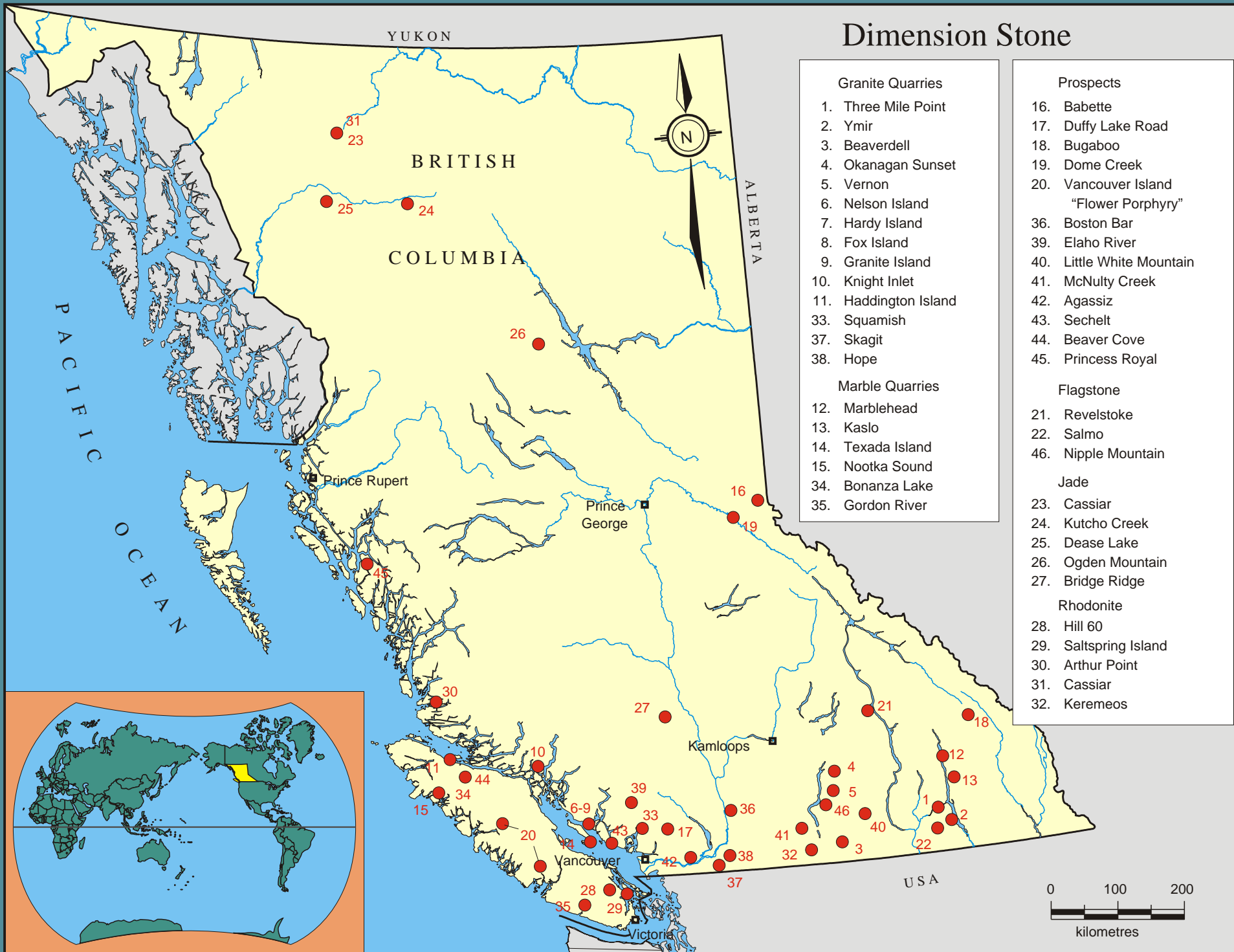
21. Revelstoke
22. Salmo
46. Nipple Mountain

Jade

23. Cassiar
24. Kutcho Creek
25. Dease Lake
26. Ogden Mountain
27. Bridge Ridge

Rhodonite

28. Hill 60
29. Saltspring Island
30. Arthur Point
31. Cassiar
32. Keremeos



To keep pace on the polishing line, the Simec 310NT11M multiblade table saw has been enlarged to cut 10 tiles simultaneously (from seven) and the Terzago polishing heads have been upgraded to achieve higher quality standards.

The new Park Hydrasplit machine continues to provide attractive exterior split-face granite blocks, and the Pellegrini F2000 wire saw facilitates the preparation of speciality thick slabs and shapes to customer order.

Margranite's tiles (12" x 12", 12"x 24", 16" x 16", and 16" x 24") are marketed throughout North America in polished and flamed finishes (honed on request), in 3/8", 1/2" and 3/4" thickness. Custom metric sizes such as 30 cm square are also available.

The Margranite stone product line has grown to 36 different colours sourced from all over the world, including several exclusive British Columbia granites quarried by a sister company at several locations in south-western B.C..

A notable major project supported by Margranite and its related fabricating company Atlas Stone Products of Burnaby (www.atlasstone.ca), is the magnificent new St. Helen's Catholic Church in Vancouver. It features both internal and external split face granite facing in Cascade Coral, which it quarries near Kelowna, B.C., and polished interior floor tiles and mosaics utilising Aqua Mist, another south-western B.C. granite quarried and processed by Margranite (Figure 3). Phase II of the Margranite's operations, is underway. This expansion involves the latest granite slabbing technology.

Garibaldi Granite

Garibaldi Granite Group, Inc., based in Squamish, B.C., is 50 percent owned by Pender Capital Corporation of Vancouver. It has realized significant growth and development of its production capabilities and sales activity since it commenced operations in August of 1996. It has recently added a 6' diameter Park Industries automated trim saw to its production line, which also includes an 11'6" diameter block saw, a 4' diameter trim saw and a Hydrasplit hydraulic splitter.

Management estimates that its production facility is now capable of processing up to 11,000 tons of finished and semi-finished stone products annually. The company is proudly concentrating on processing high quality Canadian stones and is continuing to expand its product line, utilising the three strong and attractive granites quarried in and around Squamish, namely Glacier White, Garibaldi Grey and Garibaldi Golden.

In addition to its core product line of various split face sawn granite blocks, the company manufactures tumbled blocks and tiles, landscaping rock, and custom fabricated products such as benches, columns, beams, mantels, fireplaces, countertops, tables, and monuments. Basalt and rhyolite raw materials are also used for other applications by the company.

Sales have grown consistently. One highlight has been the completion of one of the largest granite installations for the Mont Blanc Hotel in Whistler, B.C., which required over 25,000 square feet of split face Glacier White. Examples of other finished products from Garibaldi are shown in Figures 4 and 5.

Westcoast Granite Mfg.



Figure 5: Granite table and benches (photo courtesy of Garibaldi Granite Group. Inc.)

Westcoast Granite Mfg. Inc. of Delta, B.C. operates the only granite slabbing gangsaws on the West Coast of North America. Two years ago, Westcoast installed a second gangsaw, a Master Breton HG375350 which doubled its capacity and provided much needed increased flexibility to service the challenging demands of the local stone fabricating sector (Figure 5). Westcoast recently replaced its existing polishing line with a LeviBreton 2000, 17 head machine to give the company more finishing capacity. Westcoast does custom slab cutting for local block producers and makes polished slabs from over 60 different imported and local granites for the domestic fabrication market. Westcoast has succeeded in maintaining a strong niche market based on prompt, reliable service and high quality.

Matrix Marble Co

Matrix Marble Co. (www.matrixmarble.com) is based on Southern Vancouver Island. It produces a line of "Antique Pavers", marble and granite slabs, shippable marble fireplaces and custom made marble pieces. The company quarries black, blue and white marble, as required, from its own deposits on Vancouver Island.

Flagstone Producers

There are a number of relatively small flagstone producers with aesthetically outstanding products for domestic and export markets. The best known is the Kootenay Stone Center in Salmo, B.C. (www.naturalstonesite.com). Others include Gerex Development Ltd. of Nelson, Revelstoke Flagstone Quarry of Revelstoke, L&D Petch Contracting Ltd. of Kelowna (www.kettlevalleystone.com) and [K2 Stone Quarries](#) of Nanaimo.

Jade West Resources Ltd.



Figure 7: An early experiment with British Columbia jade and marble tiles (photo courtesy of Jade West Resources Ltd.)

Jade West (www.jademine.com) controls a large number of in situ nephrite deposits and boulder fields in the province. The company operates from its warehouse and plant in South Surrey. Currently, most of the nephrite produced is for carving purposes and the best materials are of gem-quality (Figure 6). Jade West also produces table tops, fireplaces and a variety of custom products. The industrial grade nephrite has been stockpiled for many years, and the company is now looking for joint venture partners to enter the speciality tile market. An early example of tile pattern incorporating B.C. jade is shown on (Figure 7). Jade tile would not compete with the mainstream granite or marble tiles in terms of cost per unit, but will be an upscale, exclusive niche product. Market surveys have indicated a strong interest for such products by North American designers. In the past, some nephrite was recovered from the Cassiar Mine, and marketed by Jedway Resources Ltd.

SUMMARY

Recent market research and the successes of current producers indicate that British Columbia dimension stone is competitive in price and quality with other North American and offshore sources. Besides the active producers, British Columbia has a number of dormant quarries and prospects, as well as an outstanding geological potential to provide new resources. Given the favourable geographic location of many of the deposits at or near tidewater, there is a distinct competitive advantage in transportation costs, particularly in servicing Pacific Rim markets.

British Columbia is establishing a prominent position in the North American natural stone industry. Based on recent commercial developments, a high level of exploration activity for dimension stone, excellent geological potential, and the overall demand for natural stone products throughout the region, this trend should continue.

British Columbia's renowned jade deposits and related value-added processing is well established to serve the needs of carvers, designers and jewellers and may extend into jade tile making. Some of the rhodonite deposits of British Columbia also have development potential.

FIGURES

Figure 2: Margranite Industries Ltd. block inventory at the tile plant, Surrey, B.C.

Figure 3: St. Helen's Catholic Church in Vancouver; Split-face "Cascade Coral" granite; a project supported by Margranite Industries Ltd. and Atlas Stone Products of Burnaby (www.atlasstone.ca).

Figure 4: Mont Blanc Hotel in Whistler, B.C.; "Glacier White" granite from British Columbia; by Garibaldi Granite Group. Inc.

Figure 6: A translucent slab of B.C. jade with its characteristic deep green colours. (photo courtesy of Jade West Resources Ltd.)



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British Columbia Natural Stone Association: <http://www.amebc.ca/Home.aspx>

Canada Stone: www.canadastone.net

Findstone.com Marketplace for Building Stones: www.findstone.com

Jade West: www.jademine.com

K2 Stone: www.k2stone.ca

Kettle Valley Stone Company: www.kettlevalleystone.com

Kootenay Stone Centre: www.naturalstonesite.com

Margranite Industry Ltd.: www.ceramstone.com

Matrix Marble & Stone: www.matrixmarble.com

Natural Stone Information Center: www.natural-stone.com

Northwest Landscape and Stone Supply: www.landscapesupply.ca

Quarry Pacific Industries Ltd.: www.ceramstone.com

Natural Stone - Stone Products

Currently Available: Granite:

Aqua Mist MINFILE # : 092HNW075



Magnification: Full size
Stone Type: Granite
Petrographic: Quartz monzonite
Composition:
Quarry Location: Boston Bar, B.C.
Products: Blocks, slabs, tiles
Suppliers: Margranite Industry Ltd.
www.ceramstone.com
Compressive Strength: -
Flexural Strength: -
Water Absorption: -
Specific Gravity: 2.61

Cascade Coral MINFILE # : 082ESW169



Magnification: Full size
Stone Type: Granite
Petrographic
Composition: Porphyritic-biotite granite
Quarry Location: Beaverdell, B.C.
Products: Blocks, split-face, slabs, tiles
Quadra Stone Company Ltd.
www.quadrastone.com
Margranite Industry Ltd.
www.ceramstone.com
Suppliers:
Compressive Strength: 20,630 psi
Flexural Strength: 1,450 psi
Water Absorption: 0.58%
Specific Gravity: 2.59

Fox Island MINFILE # : 092F 378



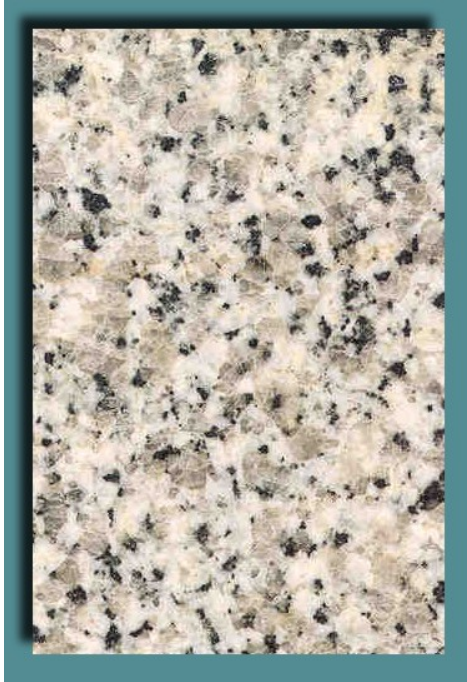
Magnification: Full size
Stone Type: Granite
Petrographic
Composition: Biotite-hornblende granodiorite
Quarry Location: Fox Island, B.C.
Products: Blocks, split-face, slabs, tiles
Quadra Stone Company Ltd.
www.quadrastone.com
Adera Natural Stone Supply Ltd.
www.aderastone.com
Suppliers:
Compressive
Strength: 28,600 psi
Flexural Strength: 1,810 psi
Water Absorption: 0.14%
Specific Gravity: 2.66

Garibaldi Grey MINFILE # : 092GNW070



Magnification: Full size
Stone Type: Granite
Petrographic
Composition: Quartz diorite
Quarry Location: Squamish, B.C.
Products: Blocks, split-face
Garibaldi Granite Corp.
www.garibaldigranite.ca
Suppliers:
Compressive
Strength: -
Flexural Strength: -
Water Absorption: -
Specific Gravity: 2.75

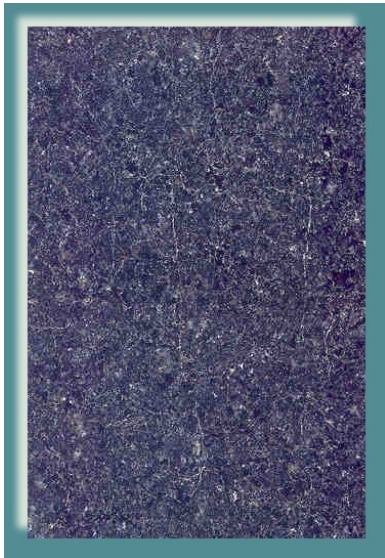
Glacier White MINFILE # : 092GNW067



Magnification: Full size
Stone Type: Granite
Petrographic
Composition: Biotite granodiorite
Quarry Location: Squamish, B.C.
Products: Blocks, split-face
Suppliers: Garibaldi Granite Corp.
www.garibaldigranite.ca

Compressive
Strength: -
Flexural Strength: -
Water Absorption: -
Specific Gravity: 2.65

Pedro Black MINFILE# : 082ESE240



Magnification: Full size
Stone Type: Black Granite
Petrographic
Composition: Biotite gabbro
Quarry Location: Grand Forks, B.C.
Products: Blocks, slabs
Suppliers: San Pedro Stone Inc.
www.garibaldigranite.ca

Compressive
Strength: 18,600 psi
Flexural Strength: 1,300 psi
Water Absorption: 0.25%
Specific Gravity: 2.95

Raven Black MINFILE # : 092HNW078



Magnification: Full size
Stone Type: Black Granite
Petrographic: Pyroxene gabbro
Composition:
Quarry Location: Harrison Lake, B.C.
Products: Development Prospect
Suppliers: Granite Creations & Stonework

Compressive Strength: -
Flexural Strength: -
Water Absorption: -
Specific Gravity: 3.08

Robson Rose MINFILE# : 092HSW159



Magnification: Full size
Stone Type: Granite
Petrographic: Biotite granite
Composition:
Quarry Location: Skagit, B.C.
Products: Blocks, slabs, tiles
Suppliers: Margranite Industry Ltd.
www.ceramstone.com

Compressive Strength: 13,900 psi
Flexural Strength: 1,210 psi
Water Absorption: 0.46%
Specific Gravity: 2.61

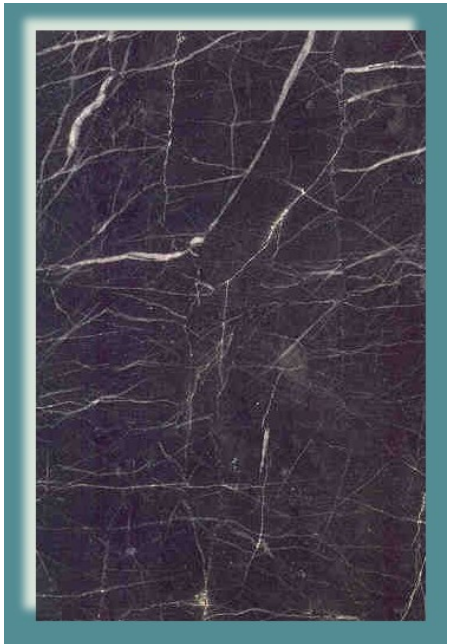
Valley Rose MINFILE# : 092HSW159



Magnification: Full size
Stone Type: Granite
Petrographic Composition: Hornblende-biotite granodiorite
Quarry Location: Skagit, B.C.
Products: Blocks, slabs, tiles
Margranite Industry Ltd.
Suppliers: www.ceramstone.com
Compressive Strength: -
Flexural Strength: -
Water Absorption: -
Specific Gravity: -

Marble:

Black Carmanah MINFILE# : 092C 086



Magnification: Full size
Stone Type: Marble
Petrographic Composition: Calcitic limestone
Quarry Location: Gordon River, B.C.
Products: Blocks, tiles
Matrix Marble & Stone
Suppliers: www.matrixmarble.com
Compressive Strength: -
Flexural Strength: -
Water Absorption: -
Specific Gravity: 2.71

Ornamental:

Jade MINFILE # : 1041 078, 083



Magnification: Full size
Stone Type: Jade
Petrographic
Composition: Nephrite Jade
Quarry Location: Kutcho Creek, B.C.
Products: Blocks, tiles, shapes
Jade West Resources Inc.
Suppliers: www.jademine.com
Compressive
Strength: min. 23,000 psi
Flexural Strength: min. 4,524 psi
Water Absorption: max. 0.27%
Specific Gravity: 2.99

Past Produced & Prospects

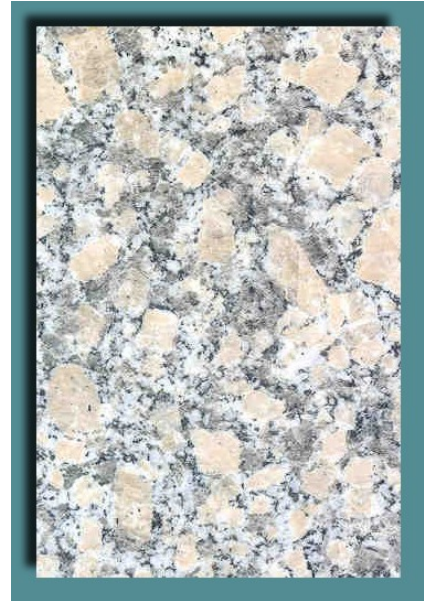
Granite:

Alpine Summer MINFILE # : 092HNW074



Magnification: Full size
Stone Type: Granite
Petrographic Composition: Quartz monzonite
Quarry Location: Boston Bar, B.C.
Products: Blocks, slabs, tiles
Suppliers: Margranite Industry Ltd.
www.ceramstone.com
Compressive Strength: 15,100 psi
Flexural Strength: 630 psi
Water Absorption: 0.40%
Specific Gravity: 2.62

Pacific Pearl MINFILE# : 082ENW083



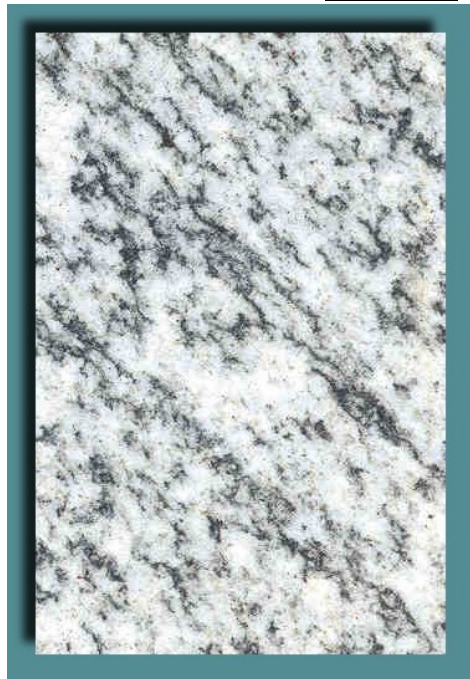
Magnification: Full size
Stone Type: Granite
Petrographic Composition: Porphyritic biotite syenite
Quarry Location: Kelowna, B.C.
Products: Blocks, slabs
Westcoast Granite Manufacturing
Suppliers:
Compressive Strength: -
Flexural Strength: -
Water Absorption: -
Specific Gravity: 2.63

Sable Black MINFILE# : 103H 074



Magnification: Full size
Stone Type: Black Granite
Petrographic
Composition: Melanocratic anorthosite
Quarry Location: Princess Royal Island, B.C.
Products: Development Prospect
Sable Black Granite
Suppliers:
Compressive
Strength: 31,755 psi
Flexural Strength: 2,250 psi
Water Absorption: 0.18%
Specific Gravity: 2.97

Whistle White MINFILE # : 092JW 041



Magnification: Full size
Stone Type: Granite
Petrographic
Composition: Biotite granodiorite
Quarry Location: Squamish, B.C.
Products: Blocks, slabs, tiles
Margranite Industry
Ltd.
Suppliers: www.ceramstone.com
Compressive
Strength: -
Flexural Strength: -
Water Absorption: -
Specific Gravity: 2.66

Marble:

Island White

MINFILE#: 092E 020, 070



Magnification: Full size

Stone Type: Marble

Petrographic

Composition:

Quarry Location:

Products:

Matrix Marble & Stone

Suppliers: www.matrixmarble.com

Compressive

Strength:

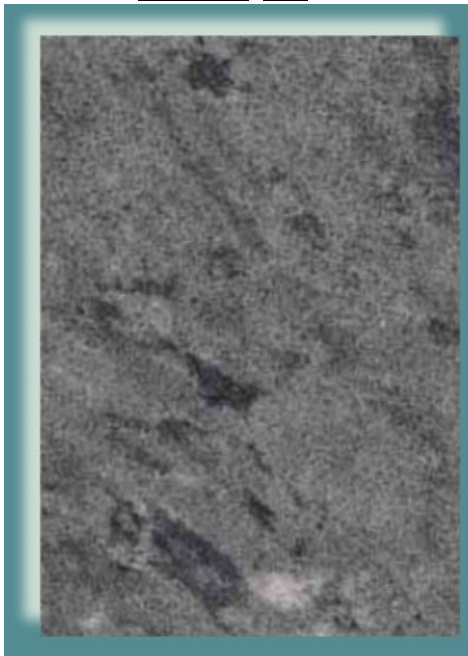
Flexural Strength:

Water Absorption:

Specific Gravity:

Tlupana Blue

MINFILE# : 092E 020, 070



Magnification: Full size

Stone Type: Marble

Petrographic

Composition:

Quarry Location:

Products:

Matrix Marble & Stone

Suppliers: www.matrixmarble.com

Compressive

Strength:

Flexural Strength:

Water Absorption:

Specific Gravity: