

Gypsum and Anhydrite

Oliver Vagt

*The author is with the Minerals and Metals Sector, Natural Resources Canada.
Telephone: (613) 992-2667
E-mail: ovagt@nrcan.gc.ca*

GYPSUM

Canadian shipments of natural gypsum totaled 8.9 Mt valued at \$101.2 million in 1999, based on preliminary data (Table 1). This amount compares to 8.3 Mt valued at \$94.3 million in 1998, based on final data. The reported 7.5% increase in shipments resulted from higher levels of construction activity in Canada and from an increase in exports to the United States, according to preliminary statistics from Statistics Canada. In addition to shipments of natural gypsum, shipments of commercial-quality, synthetic flue-gas derived (FGD) gypsum from coal-fired generating stations are estimated to be about 350 000 t/y.

Canadian Industry

Most gypsum producers in Canada are closely integrated in both mining and wallboard manufacturing. Six companies operate 11 mines and 13 wallboard plants with an estimated total of more than 2000 employees. The major gypsum mining and related production plants are listed in Table 2.

In Atlantic Canada, Nova Scotia accounts for nearly 80% of Canada's output of natural gypsum and nearly all of its exports. Most gypsum deposits being mined in the Atlantic provinces are characterized by their high quality, amenability to inexpensive mining methods, and close access to coastal bulk-shipping facilities.

In Newfoundland, Lafarge Canada Inc. purchased, on January 1, 1999, the gypsum mine and wallboard manufacturing plant owned by affiliates of Atlantic Group Limited.

Georgia-Pacific Canada Inc., operating in Nova Scotia, received approval in early 2000 to develop

a new mine near Melfort in Cape Breton to replace its current operation in this region. Tusket Mining Limited, situated at Murchyville, Nova Scotia, studied the merits of developing its property.

In Quebec there is no production of natural or commercial-quality synthetic gypsum, and raw material is mainly shipped from Atlantic Canada.

In Ontario and western Canada, developments remained essentially the same as last year (refer to the Gypsum and Anhydrite chapter of the 1998 *Canadian Minerals Yearbook*).

World Developments and Trade

World reserves of gypsum are widespread and large; North American reserves are estimated to be more than 1.1 billion t. World production of gypsum in 1999 was an estimated 108 Mt, based mainly on an estimate by the U.S. Geological Survey (refer to the Office of Minerals Information's web site at <http://www.usgs.gov>). The United States ranked number one with production of 19.4 Mt, followed by China, Iran and Thailand, each with an estimated 9.0 Mt. Shipments of wallboard by U.S. producers were 2.7 billion m², based on estimates made in late 1999. (This amount is approximately 8% more than in 1998.)

Canada's imports of gypsum from the United States, as well as from Mexico (Table 1), are used by both wallboard and cement manufacturers. Imports from Spain, however, are reportedly for use only by specific cement manufacturers.

In the United States, the construction of several major new plants and expansions designed to use only synthetic gypsum continued during 1999.

Processing and Markets

In North America, wallboard manufacturing accounts for an estimated 75% of gypsum use, cement processing accounts for 10-15%, and agriculture and industrial processes account for the remainder. In general, the wallboard industry serves the residential, institutional and commercial building sectors. In the United States, an estimated 3.3 Mt/y

of synthetic gypsum is reported as being sold or used as a complete or partial substitute for natural gypsum, according to the U.S. Geological Survey. U.S. shipments of wallboard in 1999 were at near-full capacity, amounting to about 29 billion ft² (2.7 billion m²), a record for the industry, according to the Washington-based Gypsum Association (GA). (Canadian wallboard plants operated at a capacity of about 3.88 billion ft² (360 million m²), also according to the GA.)

The Portland cement industry requires crushed, non-calcined gypsum, acting as a set regulator in a proportion up to 5% by total weight, ground with the primary stage cement clinker to produce the final cement product. Based on this proportion of gypsum, the total amount required by cement producers in Canada is estimated to be more than 600 000 t/y.

Other uses for gypsum relate mainly to agriculture as a soil conditioner, as a mineral filler in joint compounds, plastics and paints, and in certain glass-making technologies.

Process Research Ortech Inc. will sponsor Gypsum 2000 – Sixth International Conference on FGD and Synthetic Gypsum in Toronto in May 2000. Conference goals will be to facilitate communication and the dissemination of new information among power utilities and other synthetic gypsum producers, consumers, product research groups, and equipment suppliers. It is expected that the seventh conference will be held again in Toronto in 2002.

Prices

Prices for gypsum in merchant markets are negotiated among buyers and sellers, and published figures are not always relevant. In Canada, the average reported value for crude gypsum, f.o.b. mine, is about \$11.00/t for the five-year period from 1995 to 1999, based on producer shipments.

Outlook

Canadian shipments of gypsum in 2000 are expected to increase moderately because of a projected increase in construction activity. Housing starts in Canada were 149 000 in 1997, 137 000 in 1998, and nearly 150 000 in 1999. Based on information from the Canada Mortgage and Housing Corporation, housing starts are forecast to be about 155 000 in 2000. With real economic growth in both Canada and the United States expected to continue, the outlook continues to be positive in the commercial and institutional building sectors. In addition, commercial vacancy rates are relatively low in several urban areas in Canada, suggesting that additional real estate space will be built in the near future.

Housing starts in the United States are expected to stabilize following a nearly 3% increase in 1999.

However, total construction is expected to remain firm based on relatively high consumer confidence and strength in repair and renovation work, as well as in office construction.

Diverse uses of gypsum related to building plasters, Portland cement, fillers and pigments, soil conditioners, and fertilizers as a diluent are important and tend to expand with overall economic growth. The present structure of the industry in Canada is not expected to change significantly, although the future availability of low-cost synthetic gypsum resulting from more strenuous emission controls may serve to increase the demand for this mineral.

ANHYDRITE

Production and trade statistics for anhydrite are included with gypsum. Anhydrite, the anhydrous form of gypsum (about twice as hard and also denser than gypsum), is produced by Fundy Gypsum Company at Wentworth, Nova Scotia, and by Little Narrows Gypsum Company at Little Narrows, Nova Scotia.

Shipments of anhydrite in 1998 were 139 800 t, mainly to the United States for use as a peanut crop fertilizer, and to Quebec and Ontario for final-stage processing of Portland cement. Similarly, shipments in 1999 were an estimated 163 000 t, according to the Nova Scotia Department of Natural Resources.

Test work on the use of anhydrite in floor screed and suspended floor systems, comprising part of a Canada-Nova Scotia cooperative mineral development project, showed promise as new uses for Canadian gypsum. Similarly, testing of anhydrite (in combination with water and special chemicals) as a mine "pack" construction material to improve underground support in coal mines has been encouraging.

Notes: (1) For definitions and valuation of mineral production, shipments and trade, please refer to Chapter 65. (2) Information in this review was current as of January 30, 2000. (3) This and other reviews, including previous editions, are available on the Internet at http://www.nrcan.gc.ca/mms/cmy/index_e.html.

NOTE TO READERS

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TARIFFS

Item No.	Description	Canada			United States
		MFN	GPT	USA	Canada
2520.10	Gypsum; anhydrite	Free	Free	Free	Free
68.09	Articles of plaster or of compositions based on plaster:				
	Boards, sheets, panels, tiles and similar articles, not ornamented				
6809.11	Faced or reinforced with paper or paperboard only				
6809.11.10	Gypsum wallboard	6%	Free	Free	Free
6809.11.90	Other	6%	Free	Free	Free
6809.19.00	Other	6.5%	3%	Free	Free
6809.90	Other articles				
6809.90.10	Models and casts, of a kind used in the manufacture of dental prosthesis	Free	Free	Free	Free
6809.90.90	Other	6.5%	3%	Free	Free

Sources: Customs Tariff, effective January 2000, Canada Customs and Revenue Agency; Harmonized Tariff Schedule of the United States, 2000.

TABLE 1. CANADA, GYPSUM PRODUCTION AND TRADE, 1997-99

Item No.	1997		1998		1999p	
	(tonnes)	(\$000)	(tonnes)	(\$000)	(tonnes)	(\$000)
PRODUCTION (shipments)						
Crude gypsum						
	x	x	x	x	x	x
Newfoundland						
Nova Scotia	6 851 977	74 108	6 545 537	72 857	7 209 372	78 945
Ontario	x	x	x	x	x	x
Manitoba	x	x	x	x	x	x
British Columbia	x	x	x	x	x	x
Total ¹	8 627 772	95 263	8 306 534	94 349	8 934 656	101 207
IMPORTS						
2520.10	Gypsum, anhydrite					
United States	111 472	6 736	82 405	5 269	83 334	9 219
Mexico	109 290	1 768	14 084	1 681	37 514	2 353
Brazil	-	-	-	-	89	127
United Kingdom	11	9	-	-	83	122
Other countries	141	26	104	39	26	21
Total	220 914	8 539	96 593	6 989	121 046	11 842
2520.20	Gypsum; anhydrite; plasters					
United States	31 540	8 981	38 218	12 345	28 599	9 615
Japan	30	25	60	43	73	64
China	8	5	4	3	69	40
Germany	21	18	8	9	31	24
Other countries	129	41	176	109	104	58
Total	31 728	9 070	38 466	12 509	28 876	9 801
	(square metres)		(square metres)		(square metres)	
6809.11	Plasterboards, etc., not ornamental; faced or reinforced with paper or paperboard					
United States	..	2 333r	..	3 039	..	5 150
United Kingdom	..	97	..	108	..	1 988
Poland	-	-	-	-	..	1 931
Other countries	..	34	..	4	..	10
Total	..	2 464r	..	3 151	..	9 079

TABLE 1 (cont'd)

Item No.	1997		1998		1999p	
	(tonnes)	(\$000)	(tonnes)	(\$000)	(tonnes)	(\$000)
IMPORTS (cont'd)						
6809.19	Plasterboards, etc., not ornamental; faced or reinforced, n.e.s.					
	United States	4 412 ^r	..	6 622	..	9 468
	Other countries	186	..	77	..	33
	Total	4 598^r	..	6 699	..	9 501
6809.90	Articles of plaster or compositions based on plaster, n.e.s.					
	United States	3 905 ^r	..	4 252	..	4 302
	United Kingdom	757	..	672	..	601
	Mexico	430	..	814	..	557
	China	655	..	683	..	439
	Thailand	70	..	112	..	85
	Italy	36	..	33	..	45
	Greece	28	..	31	..	24
	Hong Kong	49	..	11	..	23
	Germany	3	..	118	..	7
	Other countries	95 ^r	..	68	..	47
	Total	6 028^r	..	6 794	..	6 130
	Total imports of gypsum and gypsum products	30 699^r	..	36 142	..	46 353
EXPORTS						
2520.10	Gypsum, anhydrite					
	United States	5 934 326	75 489	5 530 117	70 726	6 224 766
	Denmark	20 892	528	22 029	477	-
	Venezuela	26 415	255	-	-	-
	Other countries	341	124	64
	Total	5 981 974	76 396	5 552 146	71 203	6 224 830
2520.20	Gypsum; anhydrite; plasters					
	United States	1 247	840	1 444	1 184	1 791
	Bermuda	-	-	40	27	21
	Germany	-	-	-	-	19
	Japan	24	12	23	21	4
	France	36	10	23	11	-
	South Korea	25	23	-	-	-
	Thailand	18	22	-	-	-
	Total	1 350	907	1 530	1 243	1 835
6809.11	Plasterboards, etc., not ornamental; faced or reinforced with paper or paperboard					
	United States	93 679 180	176 880	102 086 319	225 314	134 337 396
	Cuba	30 623	123	48 100	121	150 092
	Barbados	18 110	43	73 501	118	43 700
	Netherlands Antilles	-	-	3 982	10	42 160
	Venezuela	-	-	-	-	42 100
	Saint Kitts and Nevis	-	-	-	-	33 200
	Australia	9 599	93	-	-	24 300
	Trinidad and Tobago	10 610	27	29 405	85	10 600
	Croatia	-	-	-	-	12 400
	Saint Lucia	-	-	-	-	12 200
	United Kingdom	-	-	-	-	11 664
	Japan	13 813	23	-	-	11 100
	Germany	-	-	-	-	11 400
	Chile	98 000	198	17 500	44	10 600
	Portugal	37 765	76	10 600	27	10 400
	Saint Pierre and Miquelon	-	-	3 600	9	14 352
	Other countries	82 815	438	135 455	349	43 255
	Total	93 980 515	177 901	102 408 462	226 077	134 820 919
6809.19	Plasterboards, etc., not ornamental; faced or reinforced, n.e.s.					
	United States	..	15 148	..	21 338	..
	Chile	-	-	..	57	..
	Other countries	..	427	..	290	..
	Total	..	15 575	..	21 685	..

TABLE 1 (cont'd)

Item No.	1997		1998		1999 ^p	
	(tonnes)	(\$000)	(tonnes)	(\$000)	(tonnes)	(\$000)
EXPORTS (cont'd)						
6809.90	Articles of plaster or compositions based on plaster, n.e.s.					
	United States	.. 16 886	.. 20 190	.. 29 572	.. 29 572	.. 29 572
	Bahamas	.. —	.. 443	.. 432	.. 432	.. 432
	United Arab Emirates	.. 69	.. —	.. 136	.. 136	.. 136
	Finland	.. 102	.. —	.. 110	.. 110	.. 110
	Other countries	.. 1 095	.. 710	.. 318	.. 318	.. 318
	Total	.. 18 152	.. 21 343	.. 30 568	.. 30 568	.. 30 568
	Total exports of gypsum and gypsum products	.. 288 931	.. 341 551	.. 461 596	.. 461 596	.. 461 596

Sources: Natural Resources Canada; Statistics Canada.

— Nil; . . Not available; n.e.s. Not elsewhere specified; ^p Preliminary; x Confidential.¹ Totals do not include gypsum produced or shipped for use by Canadian Portland cement producers.

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

TABLE 2. CANADA, GYPSUM MINING AND GYPSUM PRODUCTS MANUFACTURING OPERATIONS, 1999

Company	Location	Operation
NEWFOUNDLAND		
Lafarge Gypsum Canada Inc.	Fischells Brook Corner Brook	Open-pit mining Wallboard manufacture
NOVA SCOTIA		
CGC Inc. Fundy Gypsum Company Georgia-Pacific Corporation Little Narrows Gypsum Company National Gypsum (Canada) Ltd.	Port Hawkesbury Wentworth and Miller Creek Sugar Camp Little Narrows Milford	Fibre-gypsum board manufacture Open-pit mining of gypsum and anhydrite Open-pit mining Open pit mining of gypsum and anhydrite Open-pit mining
NEW BRUNSWICK		
Westroc Industries Limited	McAdam	Wallboard manufacture
QUEBEC		
CGC Inc. Georgia-Pacific Corporation Westroc Industries Limited	Montréal St-Jerome Montréal Montréal	Wallboard manufacture Wallboard plant mothballed Distribution terminal only Wallboard manufacture
ONTARIO		
CGC Inc. Georgia-Pacific Corporation Westroc Industries Limited	Hagersville Caledonia Clarkson	Underground mining and wallboard manufacture Underground mining and wallboard manufacture Wallboard manufacture
MANITOBA		
Georgia-Pacific Corporation Westroc Industries Limited	Amaranth Winnipeg Amaranth Winnipeg	Open-pit mining Wallboard manufacture Open-pit mining Wallboard manufacture
ALBERTA		
Georgia-Pacific Corporation Westroc Industries Limited	Edmonton Calgary	Wallboard manufacture Wallboard manufacture
BRITISH COLUMBIA		
Georgia-Pacific Corporation Westroc Industries Limited	Canal Flats Vancouver Vancouver Windermere	Open-pit mining Gypsum products manufacture Gypsum products manufacture Open-pit mining

Source: Natural Resources Canada.

TABLE 3. CANADA, GYPSUM PRODUCTION, TRADE AND CONSUMPTION, 1975, 1980 AND 1985-99

	Production ¹	Imports ²	Exports	Apparent Consumption ³
	(tonnes)			
1975	5 719 451	553 338	3 691 676	2 581 113
1980	7 336 000	154 717	4 960 240	2 530 477
1985	7 760 783	121 802	5 879 664	2 002 921
1986	8 802 805	221 644	5 921 982	3 102 467
1987	9 093 926	217 625	5 704 853	3 606 698
1988 ^a	8 813 760	274 917	5 651 286	3 437 391
1989	8 179 588	291 373	5 357 055	3 113 906
1990	7 977 685	318 114	5 757 327	2 538 472
1991	6 727 221	259 863	4 940 193	2 046 891
1992	7 294 700	260 505	5 010 649	2 544 556
1993	7 563 369	280 581	5 315 618	2 528 332
1994	8 587 303	292 156	5 942 572	2 936 887
1995	8 054 741	177 327	5 565 427	2 666 641
1996	8 201 774	247 208	5 526 010	2 922 972
1997	8 627 772	220 914	5 981 974	2 866 712
1998	8 306 534	96 593	5 552 146	2 850 981
1999 ^P	8 934 656	121 046	6 224 830	2 830 872

Sources: Natural Resources Canada; Statistics Canada.

^P Preliminary.^a Beginning in 1988, imports and exports are based on the new Harmonized System and may not be in complete accordance with previous method of reporting. Imports and exports include HS class 2520.10.00 (gypsum, anhydrite).¹ Producers' shipments of crude gypsum. ² Includes crude and ground, but not calcined. ³ Production plus imports minus exports.**TABLE 4. CANADA, VALUE OF CONSTRUCTION BY TYPE, 1994-97**

	1994	1995	1996	1997
	(\$ millions)			
BUILDING CONSTRUCTION				
Residential	34 922	29 186	32 575	37 407
Industrial	3 006	3 243	4 236	4 057
Commercial	6 251	6 265	6 936	7 210
Institutional	4 931	4 982	4 955	4 792
Other	1 948	2 095	2 293	2 349
Total building	51 058	45 770	50 995	55 815
ENGINEERING CONSTRUCTION				
Marine	492	445	449	454
Transportation	6 032	6 436	6 158	5 758
Waterworks	904	1 140	1 360	1 672
Sewage, dams, sanitary systems	1 501	1 585	1 390	1 449
Electric power	3 965	3 441	2 935	2 412
Communications	1 446	1 298	1 880	2 064
Gas and oil facilities	13 721	13 474	12 891	17 187
Other	2 325	2 803	2 491	2 869
Total engineering	30 386	30 621	29 554	33 865
Total construction	81 444	76 391	80 549	89 680

Sources: Natural Resources Canada; Statistics Canada, catalogue no. 61-223-XIB, *Capital Expenditures by Type of Asset* (additional information is also available on the Internet at <http://www.statcan.ca/english/Pgdb/Economy/Manufacturing/manuf18.htm> or <http://www.cmhc-schl.gc.ca/MkInfo/store/#nho>).

Notes: Numbers may not add to totals due to rounding. Expenditures include value of new construction as well as major renovation work purchased.

TABLE 5. WORLD PRODUCTION OF GYPSUM, 1998 AND 1999

Country	1998	1999 ^e
	(000 tonnes)	
Canada	8 300	8 900
Australia	2 100	2 200
China	9 000	9 200
France	4 500	4 500
Iran	9 000	9 000
Japan	5 300	5 300
Mexico	7 000	7 100
Spain	7 400	7 400
Thailand	9 000	9 000
United Kingdom	2 000	2 000
United States	19 000	19 400
Other countries	24 600	25 000
Total world	107 200	109 000

Sources: Natural Resources Canada; U.S. Geological Survey, January 2000.

^e Estimated.