Gypsum and Anhydrite

Oliver Vagt

The author is with the Minerals and Metals Sector, Natural Resources Canada.
Telephone: (613) 992-2667

GYPSUM

Canadian shipments of crude gypsum were 8.3 Mt valued at $93.1 million in 1996, compared to 8.0 Mt valued at $88.4 million in 1995. This increase of about 5% was mainly the result of stronger exports to the United States and higher demand in British Columbia. A gypsum plaster manufacturing plant formerly owned by Domtar Inc. in Windsor, Nova Scotia, closed in 1996.

A gypsum deposit situated at Murchyville in central Nova Scotia was outlined further in 1996 by Tusket Mining Limited. Possible reserves of more than 300 Mt have been delineated at the site, about 60 km from Sheet Harbour. Plans following development are to ship 0.25-0.50 Mt/y of gypsum to customers around the world.

The Canadian Industry

Georgia-Pacific Corporation (GPC) of Atlanta, Georgia, completed its purchase from Domtar Inc. of Montréal of the company's four remaining gypsum mines in Canada and its 18 wallboard plants in Canada and the United States. The purchase price was about $470 million.

Nova Scotia accounts for more than 75% of Canada's output and nearly all of its exports of natural gypsum (Table 1). Most gypsum deposits being mined in the Atlantic provinces are characterized by high quality, amenability to inexpensive mining methods, and close access to coastal bulk-shipping facilities. All of Ontario's production is now used on site since Westroc Industries Limited closed its mine at Drumbo in favour of synthetic gypsum for use in the company's Mississauga wallboard plant. Production from Amaranth in Manitoba, and from Windermere (Elkhorn II deposit) and Canal Flats in British Columbia serves the Prairie region and a portion of the B.C. market not served by imports. GPC meets most of the requirements of its wallboard plant in Surrey, British Columbia, with gypsum provided under a long-term contract by a 49%-owned Mexican affiliate. Canadian operations are mainly subsidiaries of U.S. and U.K. gypsum product manufacturers. In Nova Scotia, National Gypsum (Canada) Ltd. is owned by the National Gypsum Company, and both Fundy Gypsum Company and Little Narrows Gypsum Company are owned by USG Corporation, the leading manufacturer of gypsum products in the United States. Westroc Industries Limited, a subsidiary of BPB Industries PLC, which has worldwide interests and is the largest gypsum products manufacturer in Europe, operates mining and manufacturing facilities across most of Canada. CGC Inc., with wallboard operations at Montréal, Quebec, and Hagersville, Ontario, is 75% controlled by USG Corporation.

Westroc Industries Limited continued to use 100% synthetic gypsum at its Clarkson, Ontario, plant provided under a long-term contract with Ontario Hydro. This contract is for up to 200 000 t/y of desulphogypsum from Ontario Hydro's Lambton facility, the site of the first flue-gas desulphurization (FGD) system at a thermal-electric generating station in Ontario. In Quebec, CGC completed modifications at its Montréal wallboard plant to facilitate the use of 100% synthetic gypsum. In British Columbia, Westroc reviewed plans for a major expansion at its Vancouver plant; raw material will continue to be sourced from the company's mine in Windermere, British Columbia. All gypsum mining and related production plants are listed in Table 2.

Atlantic Gypsum Resources, Inc. of Newfoundland began the production of gypsum from the Fischells Brook property on the southeast side of St. Georges Bay, about 10 km south of the Flat Bay gypsum property formerly operated by Domtar. Major customers for the gypsum are expected to be Atlantic Gypsum Ltd. and North Star Cement Ltd. for wallboard and as a set regulator in cement, respectively. CGC continued to use synthetic gypsum at its Montréal wallboard plant, which is now capable of using desulphogypsum from its $11 million facility at Belledune, New Brunswick.

Louisiana-Pacific Corporation, a major Oregon-based wood products manufacturer, continued to produce

fibre-gypsum board at its relatively new $65 million fibre-gypsum board plant at Port Hawkesbury, Nova Scotia. Gypsum is purchased locally, perlite is imported, and large quantities of recycled paper are backhauled, mainly from the United States. This project was the first in Atlantic Canada to manufacture gypsum board products for both regional and export markets.

Several companies continue to use recycled gypsum wallboard in their production process. The former Domtar Inc. wallboard plant located in Surrey, British Columbia, was the first in North America to use large quantities. This was possible through arrangements with a reclaimer, New West Gypsum, now based in Oakville, Ontario. Up to one fifth of some plants' raw material needs include recycled material – a combination of about 75% scrap from new construction sites (post-construction material) and 25% waste from wallboard plants. Westroc currently recycles about 20 000 t and 30 000 t of board annually at its Vancouver and Mississauga plants, respectively.

World Developments and Trade

World reserves of gypsum are widespread and are conservatively estimated to be about 2.4 billion t. World production of gypsum in 1996 was an estimated 100.1 Mt, based on a revised estimate by the U.S. Geological Survey (Office of Minerals Information). The United States ranked number one with 16.6 Mt, followed by China (11.0 Mt) and Canada (8.3 Mt). Shipments of wallboard by U.S. producers were 2.3 billion m^2, based on estimates made in late l996.

International gypsum trade has become more important in North American markets in recent years as the result of low production costs and competitive shipping rates. In particular, U.S. imports of gypsum from Spain remain relatively high, amounting to several hundred thousand tonnes per year. Relatively low east-to-west backhaul freight rates are the main factors. Canada's imports of gypsum from Mexico, as described earlier, as well as those from the United States, are used by both wallboard and cement manufacturers. Imports from Spain, however, are used only by specific cement manufacturers.

Imports of gypsum wallboard from the United States into Canada increased substantially during the period 1986-92. Following a review in 1994 of an earlier ruling on anti-dumping, a bi-national panel concluded that the overall weighted average dumping margin of approximately 36% would stand. Revenue Canada's enforcement activities are ongoing until 1998.

National Gypsum Company, the second largest producer of gypsum products in the United States, was acquired by Delcor Inc. under a merger agreement. Delcor is a wholly owned subsidiary of Golden Eagle Industries Inc.

Growth in the demand for gypsum products is expected in the countries of Central and Eastern Europe. Gebr. Knauf, BPB Industries PLC and Groupe Lafarge Coppée either have established plants or are becoming involved in markets in these countries. Also, the German subsidiary of BPB Industries Plc. expects to complete a new wallboard plant in Berlin in 1996.

Processing and Markets

In general, the wallboard industry serves the residential, institutional and commercial building sectors. Housing starts have become a less reliable indicator of the demand for gypsum wallboard because its improved fire-retardant qualities and increased renovation activity have encouraged its broader use. In Canada, expenditures on major renovations in 1994, the most recent year for which data are available, reached $19.4 billion, accounting for 24% of total capital expenditures on construction, according to Statistics Canada (catalogue no. 61-223).

The Portland cement industry accounts for about 15% of the gypsum used in North America. Crushed, uncalcined gypsum, acting as a set regulator, in a proportion up to 5% by total weight, is ground with primary stage 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 about 550 000 t/y.

For agricultural purposes, specifications mainly relate to the degree of fineness. Gypsum combines with potassium-aluminum silicates in the soil, resulting in the release of potassium for use as a nutrient. Gypsum also serves to reduce sub-soil acidity, which is particularly beneficial in aluminum-rich lateritic soils. In addition, it provides a source of calcium and sulphur trioxide, and helps break up hard soils, allowing better aeration and water penetration and retention.

For filler uses, gypsum is dried and finely ground to a range of particle sizes for use in joint compounds (mainly with gypsum wallboard), plastics, paint and paper. Relatively pure uncalcined gypsum, depending on glass batch chemistry, may also substitute for salt cake (sodium sulphate) in glass manufacturing. Special high-purity gypsum may be used in foods and pharmaceutical products.

ORTECH Corporation will sponsor the "Fifth International Conference on Flue-Gas Desulphurization and Synthetic Gypsum" in Toronto in May 1997. The goals of the conference will be to facilitate communication and the dissemination of new information among power utilities and other synthetic gypsum producers, consumers and equipment suppliers.

In the United States, an estimated 1.3 Mt/y of FGD gypsum are consumed as a complete or partial substi-

tute for natural gypsum in the manufacture of wallboard. The United States Gypsum Company, a subsidiary of USG Corporation that operates 22 gypsum wallboard plants and 11 mines and quarries, is the largest consumer. (At present, this estimated consumption accounts for about 5% of total U.S. consumption of gypsum for all uses.)

Increased interest in flue-gas desulphurization (the most widely used sulphur dioxide control technology) and the related role of industrial minerals prompted a cooperative effort by Natural Resources Canada (NRCan) and the former U.S. Bureau of Mines to produce a bibliography on the subject. A free copy of *Flue Gas Desulfurization and Industrial Minerals: A Bibliography,* which has more than 4000 references covering the period 1982 through June 1993, can be obtained from NRCan or the U.S. Geological Survey.

Gypsum and Anhydrite is one of a series of 19 industrial mineral reports published by the Canada Centre for Mineral and Energy Technology (CANMET Summary Report No. 7). Each of these reports summarizes information on mineral occurrences, deposits of specific interest, product uses and specifications, and process technology.

Prices

Prices for gypsum in non-captive markets are negotiated, the only published figure being an approximate minimum price for crude material, ex-mine or c.i.f. United Kingdom, published in *Industrial Minerals.* In the United States, average prices for crude material, f.o.b. mine, were about US$7.00/t during the five-year period from 1992 to 1996, according to preliminary information from the U.S. Geological Survey.

Outlook

Canadian shipments of gypsum in 1997 are expected to increase about 3% based on an increase in construction activity. Housing starts in Canada were 155 300 in 1994, 112 000 in 1995, and about 125 000 in 1996. According to the Canada Mortgage and Housing Corporation, about 135 000 housing starts are forecast in 1997. With real economic growth expected to continue, the outlook continues to be positive in the office and industrial building sectors.

Housing starts in the United States are expected to increase about 2% in 1997 compared to 1996, based on relatively low inflation and interest rates. Total construction is expected to remain firm, based on relatively high consumer confidence and strength in repair and renovation work and office construction.

Although new construction materials are being introduced, demand for gypsum wallboard is expected to remain popular because of its low price, ease of installation, and well-recognized fire-retarding properties. The present structure of the industry in Canada is not expected to change greatly, although the future availability of synthetic gypsum resulting from more strenuous emission controls will likely influence developments in some areas. The recycling of scrap and waste gypsum from construction sites and wallboard manufacturing lines will continue to become more important in both Canada and the United States.

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 1995 were 204 300 t for all uses, based on final figures; similarly, shipments in 1996 were an estimated 188 000 t, according to the Nova Scotia Department of Natural Resources. Shipments were mainly to the United States for use as a peanut crop fertilizer and for manufacturing Portland cement. Lesser quantities were shipped to Quebec and Ontario for the manufacture of cement.

Test work on the use of anhydrite in floor screed and suspended floor systems, which had been carried out in the past as part of a Canada-Nova Scotia Cooperation Agreement for Mineral Development, was discontinued. The work had been undertaken as part of a cooperative project involving the private sector and NRCan's Canada Centre for Mineral and Energy Technology (CANMET).

Similarly, there has been no recent testing concerning anhydrite (in combination with water and special chemicals) as a mine "pack" construction material to improve underground support in coal mines. Earlier cooperative work involved CANMET and the Technical University of Nova Scotia.

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, 1997.

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	7.5%	Free	0.9%	0.2%
6809.11.90	Other	7.3%	Free	0.9%	0.2%
6809.19.00	Other	8.1%	4.0%	1.0%	0.6%
6809.90	Other articles				
6809.90.10	Models and casts, of a kind used in the manufacture of dental prosthesis	Free	Free	Free	0.4%
6809.90.90	Other	8.1%	4.0%	1.0%	0.4%

Sources: Customs Tariff, effective January 1997, Revenue Canada, Customs and Excise; Harmonized Tariff Schedule of the United States, 1997.

TABLE 1. CANADA, GYPSUM PRODUCTION AND TRADE, 1994-96

Item No.		1994		1995		1996p	
		(tonnes)	($000)	(tonnes)	($000)	(tonnes)	($000)
PRODUCTION (shipments)							
	Crude gypsum						
	Nova Scotia	6 815 077	67 603	6 656 754	66 645	6 878 486	70 908
	Ontario	1 071 267	18 831	899 422	14 517	887 687	13 920
	British Columbia	511 981	x	x	x	x	–
	Manitoba	x	x	x	x	x	x
	Newfoundland	x	x	–	–	x	x
	Total[1]	8 587 303	96 641	8 054 741	88 417	8 332 663	93 128
IMPORTS							
2520.10	Gypsum, anhydrite						
	United States	36 429	1 716	65 589	1 931	114 537	4 261
	Mexico	255 351	2 480	111 512	1 491	122 114	1 603
	United Kingdom	–	–	–	–	279	20
	Hong Kong	352	25	72	5	181	13
	People's Republic of China	24	2	85	6	29	2
	Other countries	–	–	69	5	19	1
	Total	292 156	4 223	177 327	3 438	237 159	5 900
2520.20	Gypsum; anhydrite; plasters						
	United States	36 915	8 655	34 897	8 854	32 932	8 819
	Germany	23	25	336	114	50	52
	Japan	19	20	46	47	34	36
	Italy	13	11	41	22	27	8
	Australia	195	15	21	10	18	8
	Other countries	20	18	34	9	16	12
	Total	37 185	8 744	35 375	9 056	33 077	8 935
		(square metres)		**(square metres)**		**(square metres)**	
6809.11	Plasterboards, etc., not ornamental; faced or reinforced with paper or paperboard						
	United States	. .	1 478	. .	136	. .	548
	United Kingdom	. .	203	. .	75	. .	124
	Mexico	. .	3	–	–	. .	13
	Other countries	. .	6	. .	13	. .	2
	Total	. .	1 690	. .	224	. .	687
6809.19	Plasterboards, etc., not ornamental; faced or reinforced, n.e.s.						
	United States	. .	2 371	. .	2 238	. .	3 469
	Taiwan	. .	21	. .	17	. .	11
	United Kingdom	–	–	. .	2	. .	5
	Total	. .	2 392	. .	2 257	. .	3 485

TABLE 1 (cont'd)

Item No.		1994		1995		1996p	
		(tonnes)	($000)	(tonnes)	($000)	(tonnes)	($000)
IMPORTS (cont'd)							
6809.90	Articles of plaster or compositions based on plaster, n.e.s.						
	United States	. .	4 956	. .	3 845	. .	3 864
	United Kingdom	. .	1 255	. .	1 274	. .	848
	People's Republic of China	. .	326	. .	411	. .	553
	Mexico	. .	313	. .	269	. .	326
	Thailand		46		75		193
	Philippines	. .	50	. .	85	. .	42
	Japan	. .	1	. .	3	. .	28
	Other countries	. .	107	. .	146	. .	98
	Total	. .	7 054	. .	6 108	. .	5 952
	Total imports of gypsum and gypsum products	. .	24 103	. .	21 083	. .	24 959
EXPORTS							
2520.10	Gypsum, anhydrite						
	United States	5 902 549	62 419	5 519 570	59 663	5 486 553	61 739
	Denmark	39 861	396	41 398	418	18 170	189
	Indonesia	–	–	–	–	26	25
	Germany	–	–	–	–	10	21
	Czech Republic	52	12	–	–	51	20
	United Arab Emirates	61	22	135	57	–	–
	Taiwan	–	–	431	48	–	–
	Other countries	49	29	3 893	59	23	17
	Total	5 942 572	62 878	5 565 427	60 245	5 504 833	62 011
2520.20	Gypsum; anhydrite; plasters						
	United States	1 165	700	2 325	965	2 567	1 209
	Japan	19	12	34	50	35	56
	Hong Kong	–	–	5	12	61	40
	Germany	21	4	17	21	25	27
	Indonesia	27	26	25	31	25	26
	Israel	17	20	29	41	17	20
	Thailand	222	221	100	85	24	19
	Other countries	569	280	335	220	138	62
	Total	2 040	1 263	2 870	1 425	2 892	1 459
		(square metres)		**(square metres)**		**(square metres)**	
6809.11	Plasterboards, etc., not ornamental; faced or reinforced with paper or paperboard						
	United States	59 495 785	61 101	65 694 439	103 729	78 135 664	139 989
	Cuba	–	–	2 220	9	59 234	147
	Portugal	26 308	52	10 060	30	73 425	74
	Czech Republic	60 494	22	98 196	58	42 237	63
	Germany	–	–	1 184	3	20 397	62
	Ukraine	–	–	–	–	15 954	38
	Barbados	–	–	53 701	26	13 100	36
	Singapore	575 458	462	–	–	–	–
	Other countries	180 121	156	454 749	381	121 563	158
	Total	60 338 166	61 793	66 314 549	104 236	78 481 574	140 567
6809.19	Plasterboards, etc., not ornamental; faced or reinforced, n.e.s.						
	United States	. .	14 287	. .	14 034	. .	13 462
	Switzerland	–	–	–	–	–	151
	United Kingdom	–	–	–	–	. .	74
	Czech Republic	. .	6	–	–	. .	50
	France	–	–	. .	10	. .	49
	Japan	. .	271	. .	1 109	–	–
	Other countries	. .	108	. .	285	. .	184
	Total	. .	14 672	. .	15 438	. .	13 970
6809.90	Articles of plaster or compositions based on plaster						
	United States	. .	4 716	. .	5 087	. .	10 284
	Japan	. .	59	. .	127	. .	1 243
	Hong Kong	. .	8	–	–	. .	339
	South Korea	–	–	–	–	. .	153
	United Kingdom	–	–	–	–	. .	124
	Thailand	–	–	. .	7	. .	40
	Australia	–	–	. .	227	. .	13
	Other countries	. .	77	. .	128	. .	140
	Total	. .	4 860	. .	5 576	. .	12 336
	Total exports of gypsum and gypsum products	. .	145 466	. .	186 920	. .	230 343

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, 1996

Company	Location	Operation
NEWFOUNDLAND		
Atlantic Gypsum Resources, Inc.	Fischells Brook	Open-pit mining
Atlantic Gypsum, Limited, a division of Atlantic Group Limited	Corner Brook	Wallboard manufacture
NOVA SCOTIA		
Georgia-Pacific Corporation	McKay Settlement	Open-pit mining
	Windsor	Plaster manufacture (closed November 1996)
Fundy Gypsum Company	Wentworth and Miller Creek	Open-pit mining of gypsum and anhydrite
Georgia-Pacific Corporation	Sugar Camp	Open-pit mining of gypsum
Little Narrows Gypsum Company	Little Narrows	Open pit mining of gypsum and anhydrite
National Gypsum (Canada) Ltd.	Milford	Open-pit mining of gypsum
Louisiana-Pacific Corporation	Port Hawkesbury	Fibre-gypsum board manufacture
NEW BRUNSWICK		
Westroc Industries Limited	McAdam	Wallboard manufacture
QUEBEC		
CGC Inc.	Montréal	Wallboard manufacture
	St-Jerome	Wallboard plant mothballed
Georgia-Pacific Corporation	Montréal	Distribution terminal only
Westroc Industries Limited	Montréal	Wallboard manufacture
ONTARIO		
CGC Inc.	Hagersville	Underground mining and wallboard manufacture
Georgia-Pacific Corporation	Caledonia	Underground mining and wallboard manufacture
Westroc Industries Limited	Drumbo	Underground mine, closed in 1995
	Clarkson	Wallboard manufacture
MANITOBA		
Georgia-Pacific Corporation	Amaranth	Open-pit mining
	Winnipeg	Wallboard manufacture
Westroc Industries Limited	Amaranth	Open-pit mining
	Winnipeg	Wallboard manufacture
ALBERTA		
Georgia-Pacific Corporation	Edmonton	Wallboard manufacture
Westroc Industries Limited	Calgary	Wallboard manufacture
BRITISH COLUMBIA		
Georgia-Pacific Corporation	Canal Flats	Open-pit mining
	Vancouver	Gypsum products manufacture
Westroc Industries Limited	Vancouver	Gypsum products manufacture
	Windermere	Open-pit mining

Source: Natural Resources Canada.

TABLE 3. CANADA, GYPSUM PRODUCTION, TRADE AND CONSUMPTION, 1975 AND 1980-96

	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
1981	7 025 000	143 500	5 094 873	2 073 627
1982	5 987 000	93 843	4 775 755	1 305 088
1983	7 507 000	100 939	5 187 032	2 420 907
1984	7 775 082	131 809	6 224 574	1 682 317
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[p]	8 332 663	237 159	5 504 833	3 064 989

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, crude gypsum. **2** Includes crude and ground, but not calcined. **3** Production plus imports minus exports.

TABLE 4. CANADA, HOUSE CONSTRUCTION, BY PROVINCE, 1995 AND 1996

	Starts			Completions			Under Construction		
	1995	1996	% Diff.	1995	1996	% Diff.	1995	1996	% Diff.
Newfoundland	1 712	2 034		1 749	1 958		1 928	2 003	
Prince Edward Island	422	554		467	525		163	194	
Nova Scotia	4 168	4 059		4 170	4 062		1 980	1 944	
New Brunswick	2 300	2 722		2 465	2 591		1 003	1 131	
Subtotal, Atlantic provinces	8 602	9 369	+9	8 851	9 136	+3	5 074	5 272	+4
Quebec	21 885	23 220	+6	23 363	22 194	–5	5 986	6 784	+13
Ontario	35 818	43 062	+20	36 278	40 729	+12	21 947	24 447	+11
Manitoba	1 963	2 318		2 153	1 588		808	1 538	
Saskatchewan	1 702	2 438		1 711	1 910		818	1 314	
Alberta	13 906	16 665		13 373	16 357		7 156	7 437	
Subtotal, Prairie provinces	17 571	21 421	+22	17 237	19 855	+15	8 782	10 289	+17
British Columbia	27 057	27 641	+2	33 772	25 920	–23	20 250	23 878	+18
Total Canada	110 933	124 713	+12	119 501	117 834	–1	62 039	70 760	+14

Source: Canada Mortgage and Housing Corporation.

TABLE 5. CANADA, VALUE OF CONSTRUCTION BY TYPE, 1992-94

	1992	1993[a]	1994[a]
	($ millions)		
BUILDING CONSTRUCTION			
Residential	33 676	32 577	34 922
Industrial	2 563	2 219	3 006
Commercial	9 331	8 479	6 251
Institutional	4 536	4 123	4 931
Other building	1 854	1 840	1 948
Subtotal	51 960	49 238	51 058
ENGINEERING CONSTRUCTION			
Marine	415	243	492
Transportation	5 113	5 340	6 032
Waterworks	903	793	904
Sewage, dams, sanitary systems	1 175	1 303	1 501
Electric power	5 944	5 347	3 965
Railway, telephones	1 561	1 587	1 446
Gas and oil facilities	7 291	9 503	13 721
Other engineering	2 055	2 188	2 325
Subtotal	24 457	26 304	30 386
Total construction	76 417	75 542	81 444

Sources: Natural Resources Canada; Statistics Canada, Catalogue no. 61-223.
[a] Expenditures include value of new as well as major renovation work purchased.
Note: Numbers may not add to totals due to rounding.

TABLE 6. WORLD PRODUCTION OF GYPSUM, 1995 AND 1996

	1995	1996[e]
	(000 tonnes)	
United States	16 600	17 000
People's Republic of China	11 000	12 000
Thailand	8 530	8 600
Iran	8 230	8 500
Canada	8 055	8 300
Spain	7 500	7 500
France	5 000	5 000
Mexico	4 920	5 000
Japan	3 900	4 000
United Kingdom	2 500	2 800
Australia	2 000	2 100
Other countries	19 950	19 300
Total world	98 185	100 100

Sources: Natural Resources Canada; U.S. Geological Survey Commodity Summaries, January 1997.
[e] Estimated.