CANADA

DEPARTMENT OF TRADE AND COMMERCE

DOMINION BUREAU OF STATISTICS

THE SALT INDUSTRY

IN

CANADA

1934

(including production data for first six months 1935)

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MINING, METALLURGICAL AND CHEMICAL BRANCH
OTTAWA - CANADA

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SALT, 1934.

The shipments of salt in Canada during 1934 totalled 321,753 tons valued at $1,954,953 as compared with 280,115 tons worth $1,939,874 in 1933 and 263,543 tons at $1,947,551 in 1932, according to finally revised statistics issued by the Mining, Metallurgical and Chemical Branch of the Dominion Bureau of Statistics at Ottawa. The 1934 output represents the second largest in the history of Canadian salt production, being surpassed only by that of 1929, and the total quantity of sales amounting to 163,464 tons during the first six months of 1935 as compared with 153,641 tons for the first half of 1934 would indicate a continuation of the almost steady upward trend in production as experienced since 1931. In 1934 gains in quantity over 1933 were recorded for sales of all grades as listed under the classification employed by the Bureau. It is especially interesting to note the rapidly increasing shipments of salt for consumption in the chemical industry; the quantity of this Canadian mineral reported for such purposes rising from 96,242 tons in 1932 to 124,132 tons in 1934, an increase of 28.9 per cent within three years. Salt was produced during 1934 in Nova Scotia, Ontario, Manitoba and Saskatchewan and gains in output over the preceding year were realized in each of these provinces.

The salt industry of Canada is one of the oldest non-metallic industries of the country, dating back to the early years of the last century when the Hudson's Bay Company obtained their local supplies from the brine springs of the MacKenzie basin. The discovery of salt in Ontario in 1866 was, however, the real beginning of the industry on a substantial basis, and production from the Ontario field has been continuous since that time. The opening of the Malagash deposits in Nova Scotia in 1918 inaugurated the first rock salt mine in the country, and has materially assisted in supplying the demands for salt in the Maritimes, while in the Prairie Provinces salt has been produced since 1933 in both Saskatchewan and Manitoba. No commercial production of the mineral has been reported in Alberta since 1927.

In Nova Scotia the mine of the Malagash Salt Company, Limited, was worked steadily throughout the year and the slope has been extended to the 20th level on the Lucas seam, a length of about 1,500 feet on the slope and 950 feet vertical below the surface. All evaporated salt is derived from brine obtained underground on No. 4 level, at which point fresh water is sprayed on the surface of the salt until the underground reservoir is filled, the supply of fresh water is then cut off and the brine circulated until it reaches 100 per cent saturation, after which it is pumped to the evaporator on the surface. The solid white salt mined is sold in all sizes to meet the trade requirements from large lumps down to very fine mesh. All equipment, both on surface and underground, is operated by electric power generated by the company's own diesel electric plant.

In Anderdon township, Essex county, Ontario, the plants of Brunner, Mond Canada, Limited, were active during 1934. This company employs a saturated brine solution, obtained by forcing water into wells, for the manufacture of chemicals; a plant to recover calcium chloride from their waste material resulting from the manufacture of soda ash is being erected by this company. At Sarnia, Ontario, the Dominion Salt Company, Limited, was in continuous operation employing vacuum pans and grainers in the production of table, dairy, and other grades of salt. The Goderich Salt Company, located at Goderich, Ontario, operated without interruption during 1934 and installed a new and modern triple-effect vacuum evaporator. At Goderich also the Western Canada Flour Mills Company, Limited, produced various grades of salt throughout the year; exhaust steam is employed in the recovery of salt by this company. Production by Canadian Industries Limited at Sandwich, Ontario, was steady throughout the twelve months of 1934. Triple effect vacuum pans were employed for fine salt and grainers for coarse grades; this company also employs large quantities of brine in the manufacture of chemicals and at Cornwall, Ontario, recently erected and placed in operation a plant for the manufacture of caustic soda and chlorine; salt produced at Sandwich will be utilized at Cornwall. The Warwick Pure Salt Company, Limited, one of Canada's newer salt producers, was in continuous production during 1934; this company operates in Warwick township, Lambton county, and uses open pans. The Walker Salt Corporation drilled a new well for salt at Port Franks, Ontario, and brought its open pan plant into operation in May, 1935.

At Neepawa, Manitoba, the Neepawa Salt Company, Limited, utilizing the grainer system, was in steady operation in 1934. It is reported that this company has been absorbed by Canadian Industries Limited.

In Saskatchewan, the Simpson Oil Company, Limited, maintained normal production at its plant located at Simpson; salt is recovered here by open pan evaporation.

Several years ago the Alberta Salt Company produced an excellent grade of salt at McMurray, Alberta, and efforts have recently been made to recommence salt production in this district.

The Department of Mines, Ottawa, reports that experiments have been carried on with encouraging results in Nova Scotia and elsewhere for the past few years to determine the effect of salt with a mixture of clay as a surface veneer on gravel highways, in order to decrease, if not entirely eliminate, the dust nuisance and heavy maintenance cost of such roads. Considerable research work has also been conducted on this same application of salt in the laboratories of the National Research Council, Ottawa, and it has also been taken up quite vigorously in the United States. The mineral appears to possess considerable potentialities as a highway material and would, if used to any extent on secondary roads, increase very largely the salt output of the Dominion.

GENERAL NOTES

The chairman of I.C.I. Alkali Ltd. (United Kingdom) states that "rationalisation within the group, containing six factories in all, has gradually brought about an arrangement whereby all our heavy soda ash is made at one factory, all our caustic at another, and the bulk of the output of soda crystals at two plants, one at Silvertown and one at Winnington. The main supplies of light soda ash come from two Cheshire works and from Fleetwood, where calcium chloride, our chief by-product, is also made, while the manufacture of all sundry other alkali products is centred at Winnington."

A review of the current position of the United States as a potash producer appearing in "Engineering and Mining Journal", New York, states that on the discovery of sylvite, potassium chloride in New Mexico, in 1925, sufficient financial interest was aroused to bring about a new era in American potash production by 1932. Today private enterprise has developed the deposits in the Carlsbad area for a production of more than one million tons of crude salts annually .... The United States Potash Company has two shafts about 1,000 feet deep. The refinery can produce 400 tons of refined muriate per day. The Potash Company of America has one shaft completed to a depth of 1,100 feet, a concentrating plant for the separation of sylvite from halite by ore dressing methods will use a process developed co-operatively with the United States Bureau of Mines.

In Canada potash occurs in small quantities in rock salt strata at Malagash, Cumberland county, Nova Scotia, and at Gautreau, Westmoreland county, New Brunswick. A search for beds of economic importance has been made and results so far obtained have been sufficiently promising to warrant future investigation. Potassium chloride so far opened up at Malagash occurs in a number of definite bands in the salt mass in the form of crystalline beds of pink and yellowish green sylvite in the matrix of halite.

According to the "Chemical Trade Journal and Chemical Engineer," London, German sales of potash in 1934 increased by 30.2 per cent to 1,220,272 metric tons of pure potash; of the 1934 sales 70.4 per cent were taken by domestic consumers while export sales advanced from 23.6 per cent to 29.6 per cent; the average value of sales fell substantially last year and has now reached a low record for many years. Under the increasing competition of Spanish and American producers, export prices in 1934 declined by another 32 per cent, following a fall of around 40 per cent from 1929 to the end of 1933. It is also reported that the Franco-German Potash Cartel have made considerable progress towards the exploitation of the potash deposits which they possess in Catalonia in Spain; wells are being sunk at the Fordina and the Minerva mines, but the crude salts from both mines will be dealt with at one concentration plant.

Palestine Potash Limited which began to produce bromine in 1931 from the Dead Sea is now reported to be supplying 74 per cent of the total consumption of the United Kingdom market; in 1933 an extension of the area of evaporating pans and of the refinery was undertaken and has now been completed in order to raise capacity to 25,000 - 30,000 tons of potash per annum. The company intends, in due course, to construct or co-operate with others in the construction of an aerial ropeway some 19 miles in length from the north end of the Dead Sea to Jerusalem, whence the products will be transported by rail to Jaffa, Haifa and Port Said.

In March, 1935, it was announced that Imperial Chemical Industries Limited had decided upon the manufacture of soda ash in Australia and since the salt, which is the principal raw material, will be obtained by the solar evaporation of sea water, some time must, of course, elapse before the required area of evaporating surfaces can be prepared and put into operation. Operations will be conducted in the Port Adelaide district of South Australia. In 1934 out of a total exportation of 4,004,208 cwts. of soda ash, soda crystals, and sodium bicarbonate from the United Kingdom, 436,648 cwts. went to Australia and in addition Australia took 108,746 cwts. of caustic soda out of a total British export in 1934 of 1,952,086 cwts.

Investigations have been made at the Low Temperature Research Station, Cambridge, England, as to the possibilities of using iodized coverings for fruit when placed in storage. The iodized wraps are made by treating tissue paper with a definite volume of iodine solution; laboratory tests are reported to show that

storage rots of fruit can be considerably reduced by this kind of wrapping. In this regard it is interesting to note that iodine has been detected in some of the brines occurring in Western Canada.

Production of bromine in the United States in 1934 amounted to 15,344,290 pounds valued at $3,227,425, an increase of 51 per cent in quantity and 58 per cent in value over 1933. The increase in output was from the plant recently erected at Wilmington, N.C., and represents the first commercial production of bromine directly from sea water. Bromine is used principally in the form of ethylene dibromide for the manufacture of ethyl gasoline.

It was reported early in 1935 that the ammonia-soda plant constructed at Maiquetia, Venezuela, had commenced operations. It expects to find a market for its soda ash and caustic soda within the country, although a small export trade to contiguous countries may be developed. The new electrolytic alkali plant of the Companhia Electro-Chemica Fluminense, located at Rio de Janiero, is reported to possess an annual capacity of 2,500 tons of caustic soda; the initial manufacture of bleaching powder will be 700 tons per year; other products will include 300 tons of hydrochloric acid and 1,200 tons of liquid chlorine.

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PRODUCTION OF SALT IN CANADA, BY GRADES, 1933 and 1934.

	Manufactured tons	Sold tons	Value of salt sold
			$
1933			
Table, dairy and pressed blocks	63,894	61,231	1,120,698
Common, fine	67,414	63,786	395,609
Common, coarse	18,472	18,118	179,891
Land salt	493	305	952
Other grades	34,396	31,935	137,984
Brine for chemical works (salt equivalent sold or used)	104,740	104,740	104,740
TOTAL	289,409	280,115	1,939,874
Value of containers	...	...	591,182
GRAND TOTAL	289,409	280,115	2,531,056
1934			
Table, dairy and pressed blocks	71,249	69,779	1,098,817
Common, fine	66,194	67,777	384,873
Common, coarse	20,224	20,488	185,926
Land salt	403	402	1,320
Other grades	41,835	39,175	159,885
Brine for chemical works (salt equivalent sold or used)	124,132	124,132	124,132
TOTAL	324,037	321,753	1,954,953
Value of containers	...	...	603,369
GRAND TOTAL	324,037	321,753	2,558,322

PRODUCTION OF SALT BY PROVINCES(x), 1925 - 1934.

Year	NOVA SCOTIA Tons	NOVA SCOTIA $	ONTARIO Tons	ONTARIO $	MANITOBA Tons	MANITOBA $	SASKATCHEWAN Tons	SASKATCHEWAN $
1925	6,598	49,889	226,315	1,352,504	...	...	...	...
1926	8,165	68,781	252,345	1,388,672	...	...	...	...
1927	14,391	102,590	254,181	1,510,777	...	...	...	...
1928	19,604	118,342	279,841	1,377,629	...	...	...	...
1929	27,819	157,662	302,445	1,420,424	...	...	...	...
1930	23,058	136,226	248,637	1,558,405	...	...	...	...
1931	27,718	143,761	231,329	1,760,388	...	...	...	...
1932	31,897	150,708	231,138	1,789,751	508	7,092	...	...
1933	34,278	161,889	244,107	1,755,087	1,499	18,388	231	4,510
1934	42,886	191,917	276,751	1,734,196	1,664	20,137	452	8,703

(x) In addition, Alberta produced salt as follows:- 1925 ... 833 tons value $8,304; 1926 ... 2,037 tons value $22,696; 1927 ... 100 tons value $1,300

TOTAL PRODUCTION OF SALT IN CANADA FOR YEARS SPECIFIED, 1886-1934.

Year	Tons	$
1886	62,359	227,195
1890	43,754	198,857
1895	52,376	160,455
1900	62,055	279,458
1905	67,340	320,858
1910	84,092	409,624
1915	119,900	600,226
1917	138,909	1,047,792
1921	164,658	1,673,685
1926	262,547	1,480,149
1927	268,672	1,614,667
1928	299,445	1,495,971
1929	330,264	1,578,086
1930	271,695	1,694,631
1931	259,047	1,904,149
1932	263,543	1,947,551
1933	280,115	1,939,874
1934	321,753	1,954,953

PRODUCTION OF SALT IN CANADA, BY GRADES, JANUARY 1 to JUNE 30, 1934 and 1935.

	1934 Manufactured	1934 Sold	1934 Value of salt sold	1935 Manufactured	1935 Sold	1935 Value of salt sold
	Tons	Tons	$	Tons	Tons	$
Table, dairy and pressed blocks	33,828	33,467	570,269	32,731	33,719	414,066
Common, fine	30,708	32,275	193,776	41,037	39,135	193,368
Common, coarse	10,145	10,514	92,931	10,088	9,748	74,293
Land salt	31	26	131	...	...	...
Other grades	16,541	16,541	75,399	14,593	15,094	59,664

PRODUCTION OF SALT IN CANADA, BY GRADES, JANUARY 1 to JUNE 30, 1934 and 1935. (concluded)

	1934			1935		
	Manufactured	Sold	Value of salt sold	Manufactured	Sold	Value of salt sold
	Tons	Tons	$	Tons	Tons	$
Brine for chemical works (salt equivalent sold or used)	80,818	80,818	80,818	65,768	65,768	65,768
TOTAL	152,071	153,641	993,324	164,217	163,464	807,159
Value of containers	...	...	276,410	...	...	284,133
GRAND TOTAL	...	...	1,269,734	...	...	1,091,292

IMPORTS INTO CANADA AND EXPORTS OF SALT, JANUARY 1 to JUNE 30, 1934 and 1935.

	1934		1935	
	Tons	$	Tons	$
IMPORTS -				
Salt for use of the sea or gulf fisheries ..	25,558	82,351	19,948	80,859
Salt in bulk, n.o.p.	18,554	72,888	20,989	88,042
Salt, n.o.p., in bags, barrels, etc.	9,193	65,687	9,443	63,285
Salt, table, made by an admixture of other ingredients, when containing not less than 90 per cent pure salt	30	2,354	49	1,734
EXPORTS	1,456	17,344	3,613	18,807

The Imperial Institute, London, reports the world production of salt at 26,000,000 long tons in 1933 as compared with 25,000,000 long tons in 1932 and for the same years the output in the British Empire totalled 4,500,000 long tons and 4,200,000 long tons, respectively. Canada is the third largest salt producer in the Empire, being surpassed in 1933 by the United Kingdom with an output of brine and rock salt amounting to 2,364,175 long tons and India with a production of 1,712,384 long tons of rock and other salt. The largest producer of salt in the world is the United States; other of the more important salt producing countries include Germany, France, China, Russia, Italy and Japan.

AVAILABLE STATISTICS ON CONSUMPTION OF SALT BY CANADIAN INDUSTRIES, 1932 and 1933.

Industries	Quantity used	Cost at works	Quantity used	Cost at works
	Pounds	$	Pounds	$
Fish canning and curing (factories only) ...	32,193,600	170,335	43,551,200	216,618
Slaughtering and meat packing	...	252,918	52,289,204	268,232
Acids, alkalies and salts - Brine (salt content).	192,484,000	38,696	209,442,000	104,721
Dry	19,521,609	50,363	21,964,916	54,605
Soaps	3,974,693	24,653	4,989,624	32,832
Bread and other bakery products	13,114,360	130,696	11,845,400	127,861
Fruit and vegetable preparations	5,842,599	40,337	5,589,322	39,515
Biscuits, confectionery, etc.	949,200	11,761	1,004,360	11,745
Foods, breakfast	918,200	6,248	1,186,055	8,046
Other food industries	1,273,839	12,042	1,125,175	11,817
Dyeing, cleaning and laundry work	4,755,013	41,996	3,827,163	34,516
Dyeing and finishing of textiles	1,015,600	6,068	1,217,811	9,493

AVAILABLE FIGURES ON THE CONSUMPTION OF CAUSTIC SODA IN CANADA, BY INDUSTRIES, 1932 and 1933.

Industries	1932 Quantity Pounds	1932 Cost at works $	1933 Quantity Pounds	1933 Cost at works $
Soaps	15,043,341	469,691	14,473,502	461,022
Washing compounds	555,147	19,550	487,573	16,931
Cleaning preparations	460,300	16,560	634,723	23,061
Acids, alkalies and salts	1,030,000	33,650	844,836	28,167
Boiler compounds	114,472	4,678	161,957	6,558
Miscellaneous chemicals	206,977	8,263	284,668	11,014
Petroleum refining	3,079,914	99,852	3,291,438	104,992
Dyeing, cleaning and laundry work	344,308	16,419	260,163	14,949
Cellulose products	820,723	28,480	1,238,978	42,942

AVAILABLE FIGURES ON THE CONSUMPTION OF SODA ASH IN CANADA, BY INDUSTRIES, 1932 and 1933.

Industries	1932 Pounds	1933 Pounds
Glass	43,212,000	37,986,000
Soaps	6,226,089	5,737,960
Pulp and paper	5,096,000	3,524,000
Washing compounds	799,059	1,075,998
Cleaning preparations	1,625,613	1,403,926
Boiler compounds	1,010,384	1,153,560
Acids, alkalies and salts	398,698	3,320,902
Petroleum refining	323,840	284,761
Explosives	127,812	125,420
Adhesives	525,400	528,750
Insecticides	330,522	263,960
Miscellaneous chemicals	367,402	501,327
Dyeing, cleaning and laundry work	517,182	580,596
Municipal waterworks	355,081	350,000

POTASH SALTS USED IN THE MANUFACTURE OF CANADIAN MIXED FERTILIZERS, 1932 and 1933.

	1932 Tons	1932 Cost at Works $	1933 Tons	1933 Cost at Works $
Kainite and potash manure salts	4,152	74,711	4,914	92,422
Muriate of potash	7,876	287,443	8,320	322,439
Sulphate of potash	1,366	54,821	1,515	63,184

SALES OF POTASH SALTS FOR FERTILIZER PURPOSES, OTHER THAN FOR MANUFACTURE OF MIXED FERTILIZERS, YEARS ENDED JUNE 30, 1933 and 1934.

	1933 Tons	1934 Tons
Muriate of potash	7,328	8,231
Sulphate of potash	478	369

In 1932, 31,069 pounds of crude iodine valued at $81,741 and in 1933, 43,607 pounds worth $92,011 were used in the manufacture of chemicals and allied products in Canada.

PRINCIPAL STATISTICS OF THE SALT INDUSTRY IN CANADA, 1932, 1933 and 1934.

	1932	1933	1934
Number of firms	7	9	9
Capital employed $	3,805,008	3,708,358	3,711,598
Number of employees - On salaries	62	63	71
On wages	283	337	398
Total	345	400	469
Salaries and wages - Salaries $	133,449	144,454	164,685
Wages $	321,600	328,966	387,313
Total $	455,049	473,420	551,998
Cost of fuel and electricity $	176,836	191,373	236,257
Selling value of products $	2,507,964	2,531,056	2,558,322

NUMBER OF WAGE-EARNERS ON PAYROLL ON THE 15th OF EACH MONTH, 1932, 1933 and 1934.

	1932		1933		1934	
Month	Male	Female	Male	Female	Male	Female
January	230	36	248	37	325	32
February	239	34	258	37	322	38
March	244	37	276	38	327	38
April	252	37	281	36	340	39
May	257	37	288	36	371	37
June	265	37	318	37	361	37
July	260	39	342	37	352	37
August	256	39	363	37	375	37
September	260	38	333	37	408	39
October	238	37	316	38	375	39
November	238	40	317	40	395	38
December	216	39	287	39	379	38

FUEL AND ELECTRICITY USED, 1933 and 1934.

Kind	Unit of measure	1933 Quantity	1933 $	1934 Quantity	1934 $
Bituminous coal - Canadian	short ton	2,420	10,827	4,221	17,795
Imported	short ton	38,096	156,940	39,767	192,352
Gasoline (not for vehicles)	Imp. gal.	200	62	3,695	899
Fuel oil	Imp. gal.	89,369	8,043	113,098	10,881
Wood	cords	1,258	7,548	2,774	7,920
Electricity purchased	K.W.H.	685,840	7,916	595,420	6,090
Other	xxx	...	37	...	320
TOTAL	xxx	...	191,373	...	236,257
Electricity generated for own use	K.W.H.	5,968,524	...	6,269,620	...

LIST OF FIRMS IN CANADIAN SALT INDUSTRY, 1935.

Name of Firm	Head Office	Location of Plant
NOVA SCOTIA -		
Malagash Salt Co. Ltd.	204 Provost St., New Glasgow	Malagash
ONTARIO -		
Brunner, Mond Canada, Ltd.	Canadian Bank of Commerce Bldg., Toronto	Amherstburg.
Canadian Industries Ltd.	P. O. Box 1260, Montreal, P.Q.	Sandwich
The Dominion Salt Co. Ltd.	Sarnia	Sarnia
Goderich Salt Co. Ltd.	Box 577, Goderich	Goderich
The Walker Salt Corp. Ltd.(x)	Port Franks	Port Franks
Warwick Pure Salt Co. Ltd.	R. R. 5, Watford	Lambton county
Western Canada Flour Mills Co. Ltd.	287 MacPherson Ave., Toronto	Goderich
MANITOBA -		
Neepawa Salt Co. Ltd.	Neepawa	Neepawa
SASKATCHEWAN -		
Simpson Oil Co. Ltd.	Simpson	Simpson

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(x) First produced in 1935.