

68 Salt (Rock)

Salt (rock) occurrences in India are very limited. The only producer which obtains salt (rock) in meagre quantities, is the Hindustan Salt Ltd, Jaipur from its mines located in Mandi district of Himachal Pradesh. Sea water is the main source of common salt. It is obtained from water of salt lakes, seas, or subsoil brines after evaporation due to solar heat.

Common salt, when pure, is the mineral halite (NaCl), which is being an essential need of human beings. It is being produced from the beginning of human history. Halite is mainly an evaporite deposit that is found in two main forms - bedded salt and salt domes. Generally, Halite is colourless or white but may contain various tints when impure.

RESOURCES

As per UNFC system, the total resources of salt (rock) as on 1.4.2005 are estimated at 13.5 million tonnes in Mandi district of Himachal Pradesh only. Out of the total resources, about 8.5 million tonnes are proved reserves and 5 million tonnes are probable reserves.

PRODUCTION, STOCKS AND PRICES

The production of salt (rock) in 2007-08 at 1,197 tonnes decreased by 30% as compared to that in the previous year due to less demand. The only reporting mine of salt (rock) was in the public sector, located in Mandi district of Himachal Pradesh. (Tables - 1 to 3).

Mine-head stocks of salt (rock) at the end of 2007-08 was 3 tonnes as against 66 tonnes in the beginning of the year (Table-4).

The average daily employment of labours in 2007-08 was 18 as against 34 in the preceding year.

Table - 1 : Producer of Salt (Rock), 2007-08

Name and address of producer	Location of mine	
	State	District
Hindustan Salts Ltd. B-427, Pradhan Marg Malviya Nagar Jaipur - 302 017 Rajasthan.	Himachal Pradesh	Mandi

**Table - 2 : Production of Salt (Rock)
2005-06 to 2007-08**

(Quantity in tonnes; value in Rs. '000)

State	2005-06		2006-07		2007-08(p)	
	Qty.	Value	Qty.	Value	Qty.	Value
India	1871	2954	1714	2706	1197	2479
Himachal Pradesh	1871	2954	1714	2706	1197	2479

**Table - 3 : Production of Salt (Rock)
2006-07 and 2007-08
(By Sector/State/District)**

(Quantity in tonnes; value in Rs. '000)

State / District	2006-07			2007-08(p)		
	No.of mines	Qty.	Value	No.of mines	Qty.	Value
India	1	1714	2706	1	1197	2479
Public sector	1	1714	2706	1	1197	2479
Himachal Pradesh	1	1714	2706	1	1197	2479
Mandi	1	1714	2706	1	1197	2479

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Table - 4 : Mine-head Stocks of Salt (Rock) , 2007-08 (p)
(By State)

(In tonnes)

State	At the beginning of the year	At the end of the year
India	66	3
Himachal Pradesh	66	3

Table - 5 : Prices of Rock Salt, 2005-06 - 2007-08
(Domestic Market)

(In Rs. per tonne)

Grade	Market	2005-06	2006-07	2007-08(p)
Small size	Ex-mine Guma / Drang (Himachal Pradesh)	1296.5	1296.5	1496.5
Medium size	Ex-mine Guma / Drang (Himachal Pradesh)	1796.5	1796.5	2696.5
Large size	Ex-mine Guma / Drang (Himachal Pradesh)	2496.5	2496.5	3096.5

MINING

The board-and-pillar underground method of mining was adopted in Guma rock salt mine of Hindustan Salts Ltd. The salt deposit in Drang & Mandi mountain ranges along with Joginder Nagar-Mandi Road can be exploited commercially through 'Solution Mining' process and fed directly to the industry producing caustic soda besides other plants. Hindustan Salts Ltd, is in the process of appointing consultant for the said Solution Mining Project. The project involves two stages, namely, financial evaluation of the project based on the techno-feasibility report prepared earlier for feeding a 60,000 tpy caustic soda plant with required quality of brine at Mandi. The second phase will involve formation of a new joint venture, etc. This project, if implemented, is likely to be highly profitable. There is a proposal to convert Drang salt mines to health resort by Hindusthan Salts Ltd as these 225 m deep mines are free from viruses and bacteria. The proposal is subject to economic viability and approval from DGMS and other departments concerned.

USES

Salt, in addition to its culinary and domestic uses, is employed in meat packing, fish curing and its preservation, dairying, preservation & processing of hides, manufacturing of soaps and dyestuff, dyeing and finishing of fabrics, refrigeration, glazing earthenware, explosives, bakery products, for soil stabilisation, in manufacture of artificial rubber and as a wood preservative. In agriculture, salt is used for treating hay and as a fertilizer for certain crops. In countries with cold weather conditions, salt is used in controlling ice and snow on streets and highways.

Industrial Applications

Salt is an important raw material for chemical industry. It is used in the production of basic chemicals like sodium carbonate (soda ash), caustic soda, hydrochloric acid, chlorine, bleaching powders, chlorates, sodium sulphate (salt cake) and sodium metal. These basic chemicals, in turn, are used in the preparation of

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various end products, such as soaps, detergents, chlorinated hydrocarbons like DDT and carbon tetrachloride. Other important uses are in food processing and as freezing-point depressant in refineries and milk supply schemes, for the treatment of industrial wastes, in the manufacture of synthetic indigo, explosives, papers, purification of drinking water, etc.

The rock salt produced from Mandi mines contains 67.81% NaCl and it is not suitable for human consumption as the content of sodium chloride should be 96% NaCl (min). It is generally used to feed cattle.

The production of salt (other than rock salt) in 2007-08 was at 17.8 million tonnes. Private sector contributes 98% of salt production in the country, whereas remaining 2% is contributed by public sector. During the recovery of salt from marine sources, a variety of by-products mainly, gypsum, magnesium chloride, magnesium sulphate and liquid bromine are recovered.

A portion of salt produced is iodised in order to meet the requirements of goitre-endemic areas in the country. Iodised salt is produced by mixing potassium iodate with salt using spray, drip feed, dry mixing and submersion processes. Iodisation of salt is carried out in plants operated by Sambhar Salts Ltd (a subsidiary of Hindustan Salts Ltd in public sector), Kharagodah, Gujarat. About 805 plants including 52 refineries in private sector with an annual capacity of 12.42 million tpy produced iodised salt. The Hindustan Salts Ltd has also set up an iodisation plant at Ramnagar in Nainital district, Uttarakhand.

CONSUMPTION

Industrial consumption of salt is steadily increasing and has registered a record high of 9.35 million tonnes in 2007-08. During the same period,

human consumption of salt was reported at 5.06 million tonnes. Consumption of rock salt is also reported by a few petroleum refineries of Indian Oil Corporation and Hindustan Petroleum Corporation. The industrial consumption of salt is given in Table - 6.

**Table - 6 : Industrial Consumption of Salt
2005-06 to 2007-08
(By Industries)**

(In '000 tonne)

Industry	2005-06	2006-07	2007-08
Total	8736	8618	9350
Cauxtic soda/soda ash	7074	6868	7252
Misc. Industries (Papers/Dye, foods, steel, oil etc.)	1662	1750	2098

Source : Salt Commissioner, Govt. of India, Jaipur.

FOREIGN TRADE

Exports

Exports of salt (other than common salt) decreased to 0.69 million tonnes in 2007-08 from 1.36 million tonnes in 2006-07. Exports were mainly to Japan (43%), Qatar (19%), Kenya (10%), Indonesia (9%) and Vietnam (6%) (Table-7).

Imports

In 2007-08, imports of salts (other than common salt) increased to 28,679 tonnes from 27,668 tonnes in 2006-07. Imports were mainly from Pakistan (99%) (Table-8).

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**Table - 7 : Exports of Salt (Other than common salt)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	1363821	878262	686078	728436
Japan	688044	242440	294050	219244
Qatar	166820	100419	128307	99014
UAE	61589	133014	26555	90853
Kenya	26547	11829	66198	61549
Vietnam	84077	61620	43273	58415
Indonesia	170550	104677	61971	53666
China	37788	58412	11560	38464
Bangladesh	85088	77295	13857	31608
Malaysia	6424	10010	5972	10421
Korea, Dem. People's Rep.	21500	33589	-	-
Other countries	15394	44957	34335	65202

**Table - 8 : Imports of Salt (Other than common salt)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	27668	46138	28679	50762
Pakistan	27256	42981	28319	44116
USA	6	475	205	3208
Israel	8	214	46	1378
Germany	++	4	16	705
Thailand	44	442	56	661
UK	-	-	25	294
Italy	1	18	4	187
Chinese Taipei/Taiwan	7	280	5	178
Netherlands	22	193	2	12
Afghanistan	24	826	-	-
Sri Lanka	288	418	-	-
Other countries	12	287	1	23