

POTASH



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POTASH

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GOVERNMENT OF INDIA
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Potash is an impure combination of potassium carbonate & potassium (K) salts. Over 90% of potash is used as fertilizer and is one of the three primary agricultural nutrients (N-P-K). All commercial potash deposits come originally from evaporite deposits and are often buried deep below the earth's surface.

The principal ore is sylvinite, a mixture of sylvite (KCl) and halite (NaCl). In India, a few deposits of potash mineral are reported from Sidhi district of Madhya Pradesh, Sonbhadra district of Uttar Pradesh, Kaimur district of Bihar and Sawai Madhopur & Karauli districts of Rajasthan. It is in the form of Glauconitic (a potassium-bearing green mica) sandstone. The entire requirement of potash mostly utilised for producing fertilizer products is met through imports.

RESERVES/RESOURCES

As per NMI database, based on UNFC system, the total resources of potash as on 1.4.2020 have been estimated at 23,091 million tonnes, all of which are placed under Remaining Resource category. Rajasthan alone contributes 89% to the total resources, followed by Madhya Pradesh (5%) and Uttar Pradesh (4%) (Table- 1).

EXPLORATION & DEVELOPMENT

The exploration and development details, if any, are covered in the Review on Exploration & Development under "General Reviews".

OCCURRENCES

Glauconitic sandstones/greensands deposits can be used as an alternative indigenous resource for potash. Glauconite is essentially a complex hydrous silicate of iron and potassium chiefly with ferric oxide and partly with ferrous oxide. It contains about 4–7% K_2O .

Major part of these resources are located in Nagaur district of Rajasthan, followed by Panna district, Madhya Pradesh and the balance in Sonbhadra & Chitrakoot districts, Uttar Pradesh.

Occurrences of potash are also reported from Tirap district of Arunachal Pradesh; Rohtas district of Bihar; Kachchh district of Gujarat; Rohtak & Sirsa districts of Haryana; Leh district of Jammu & Kashmir; Sidhi district of Madhya Pradesh; Bhatinda district of Punjab; Bhilwara & Nagaur districts of Rajasthan; Tanjavur district of Tamil Nadu and Banda, Chitrakoot, Sonbhadra & Etah districts of Uttar Pradesh.

In Rajasthan, glauconitic sandstones/shales occur in Chittorgarh, Kota, Karauli, Jaisalmer and Barmer districts. In Gujarat, glauconite is found in Ukra Formation at Guneri in Kachchh district. In Himachal Pradesh, glauconite of hydrothermal origin is found in Kumla-Kathwar area of Sirmaur district. In Kerala, glauconite occurs in Quilon Limestone and seabed sediments of Thiruvananthapuram coast.

USES

Potash is the general name given to various inorganic compounds that contain potassium in a water-soluble form. A number of common potassium compounds exist, including potassium carbonate and potassium chloride. Before the industrial era, potash was obtained by leaching wood ashes in a pot (hence the name 'pot-ash'). This product was used to manufacture soap, glass, and even gun powder.

Potassium chloride (KCl) is the principal fertilizer product with 60–62% of K_2O equivalent. Other salts that are used as fertilizer and that which are known to improve nutrient value & disease resistance in food crops are potassium sulphate, potassium magnesium sulphate and potassium nitrate. Potassium chloride and potassium nitrate are used in manufacture of glass, ceramics, soap & detergent, dye, synthetic rubber and chemicals. Potassium nitrate is used in explosive manufacture. Potash is also used as a raw material for manufacturing complex fertilizers.

Potash can be used on all plants to boost plant health and nutrition as well as to increase crop yields. While all potash fertilizers contain potassium there are a number of different forms in which it exists. The

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**Table – 1 : Reserves/Resources of Potash as on 1.4.2020
(By Grades/States)**

(In million tonnes)

Grade/State	Reserves Total (A)	Remaining Resources			Total (B)	Total Resources (A+B)
		Indicated STD332	Inferred STD333	Reconnaissance STD334		
All India : Total	0	18151	4125	814	23091	23091
By Grades						
Glauconite	0	888	1495	766	3149	3149
Polyhalite	0	13985	2179	0	16164	16164
Sylvite	0	2072	452	48	2572	2572
Unclassified	0	1206	0	0	1206	1206
By States						
Madhya Pradesh	0	1206	36	2	1244	1244
Rajasthan	0	16936	3509	127	20572	20572
Uttar Pradesh	0	10	198	685	893	893
Bihar	0	0	230	0	230	230
Jharkhand	0	0	152	0	152	1

Figure rounded off

two most common forms are Muriate of Potash (MOP) and Sulphate of Potash (SOP). Sulphate of Potash (SOP) is a premium potash fertilizer free of chloride (unlike MOP) which is harmful to plants. SOP is used primarily on high value crops, usually leafy plants, fruits and vegetables. MOP is commonly used on carbohydrate type crops, such as, wheat.

CONSUMPTION

As per FAI, the all India consumption of Potassic fertilizer (in K₂O content) was at 2.53 million tonnes during 2021-22, whereas it was 2.02 million tonnes in the previous year.

WORLD REVIEW

The world reserves are estimated at approximately 3,300 million tonnes of K₂O content. Reserves are located mainly in Canada (33%), Belarus (22%), Russia (12%), USA (6%), China (5%), Germany (4%) and Chile (3%) (Table-2).

The world production of potash in 2021 was 45.70 million tonnes in terms of K₂O content as against 44.50 million tonnes in 2020. Canada is the leading producer of potash with 31% share in total production in 2021, followed by Belarus (17%), Russia (16%), China (12%), Germany (6%), Israel (5%), Jordan (3%) and Chile (2%) (Table-3).

**Table – 2: World Reserves of Potash
(By Principal Countries)**

(In '000 tonnes of K₂O content)

Country	Reserves
World: Total (rounded off)	3300000
Canada	1100000
Belarus	750000
Russia	400000
United States	220000
China	170000
Germany	150000
Chile	100000
Laos	75000
Spain	68000
Brazil	2300
Other countries	300000

Figures rounded off

Source: Mineral Commodity Summaries, 2023

¹Data are rounded to not more than two significant digits to avoid disclosing company proprietary data

²Israel and Jordan recover potash from the Dead Sea, which contains nearly 2 billion tonnes of potassium chloride

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**Table – 3: World Production of Potash
(By Principal Countries)**

(In '000 tonnes of K₂O content)

Country	2019	2020	2021
World:Total (rounded off)	41600	44500	45700
Canada (Chloride)	12851	13783	14244
Belarus	7348	7562	7630
Russia (Chloride)	6771	6893	7503
China	5450	6000	6000
Germany (Potassic salts)	2615	2874	2793
Israel (Chloride)	2057	2375	2406
Jordan	1516	1598	1563
Chile (Chloride)	681	951	878
Laos	462	713	818
United Kingdom (Polyhalite)	632	709	789
Other countries	1299	1011	1055

Source: BGS World Mineral Production, 2017-21,

FOREIGN TRADE

Exports

There is no reported production of potash in the country. However, exports of potash fertilizer decreased substantially by 78% to 5877 tonnes in 2021-22, as compared to 26,583 tonnes during the previous year. Exports were mainly to Serbia (36%) and UAE (14%). Exports of potassium nitrate increased by 11% to 917 tonnes in 2021-22 from 827 tonnes in the previous year. Exports were mainly to USA (36%), Thaila (31%),South Africa (5%). Indonesia (5%), and Egypt (3%) (Tables- 4 & 5).

Imports

Like exports, imports of potash fertilizer also decreased marginally by 43% to 3.02 million tonnes in 2021-22 as compared to 5.25 million tonnes during the previous year.imports were mainly from Belarus (33%),Canada (20%),Israel (17%), Jordan (14%) and Lithuania (9%), Imports of potassium nitrate increased drastically to 153 tonnes in 2021-22 from 58 tonnes in the previous

year. China (85%) and Korea Rep.of (13%) were the main suppliers of potassium nitrate in 2021-22 (Tables- 6 & 7).

**Table – 4: Exports of Potash Fertilizers
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	26583	673799	5877	209314
Serbia	1040	23810	2106	62860
UAE	1363	27518	1360	48935
Malaysia	12	2877	850	21681
Indonesia	++	6	908	21441
Lebanon	1	134	249	7657
Qatar	++	3	144	7340
Nepal	15494	345727	34	6065
Germany	-	-	1	5646
Czech Rep	-	-	1	3992
Kenya	53	3626	38	3692
Other countries	8620	270098	186	20005

**Table – 5: Exports of Potassium Nitrate
(By Countries)**

Country	2020-21(R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	827	165914	917	187910
USA	268	71190	336	98194
Thailand	257	38113	290	40260
South Africa	21	5346	49	9649
Indonesia	46	9627	51	8508
Egypt	27	8540	36	6079
Korea Rep.of	11	1901	25	5608
China	104	16899	29	5176
UAE	42	7655	28	3802
Bangladesh	33	3387	26	3541
Turkey	-	-	24	2733
Other countries	18	3256	23	4360

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**Table – 6 : Imports of Potash Fertilizers
(By Countries)**

Country	2020-21(R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	5250814	94059271	3020152	77176503
Belarus	922089	16620176	1000208	27164459
Israel	485631	8555193	520802	13825336
Canada	1612329	28597032	615257	13766303
Jordan	629092	11082614	432153	10826541
Lithuania	569610	9768040	280988	6839191
UK	26537	469062	55880	992536
Russia	747928	13133743	54056	976074
Taiwan	21713	724649	14475	599372
Belgium	3941	161200	14690	565383
Germany	198887	3877702	6629	296578
Other countries	33057	1069860	25014	1324730

**Table – 7 : Imports of Potassium Nitrate
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	58	7553	153	16481
China	54	3272	131	10193
Korea Rep.of	-	-	20	5043
Germany	2	2474	++	612
Italy	1	370	1	355
UK	++	5	1	240
USA	1	1234	++	36
France	-	-	++	2
Spain	++	157	-	-
Switzerland	++	41	-	-

FUTURE OUTLOOK

Agriculture is the backbone of India's Economy. However, declining soil fertility impacts on crop productivity. The appropriate application of fertilizer is a key factor in enhancing soil fertility and productivity for overcoming potassium depletion. The market of potash is expected to increase year-on-year globally. The domestic demand is met almost entirely by imports which require a turnaround, and

initiatives to promote indigenous mining of potash in India must be encouraged. Prospects of potash mining in India could mitigate the issue of import of the mineral and consequently will have positive impact in the investment opportunities in the sector which in turn could be utilised for the development of mineral wealth. To carry out the feasibility study of solution mining of potash in the State of Rajasthan, a Tripartite agreement between DGM, Rajasthan, RSMML and MECL was signed.