

POTASH



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POTASH

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Potash is a generic term for various Potassium (K) salts. Over 90% of Potash is used as fertilizer and is one of the three primary agricultural nutrients (N-P-K). The end product is sold in fertilizer markets and can take a number of forms, all of which include the critical nutrient Potassium. 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 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. SOP may be applied to carbohydrate crops however the use of MOP on leafy plants will typically burn and harm them while also affecting taste. 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 rock salt (NaCl). In India, 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 and Karauli districts of Rajasthan. It is in the form of Glauconitic (a potassium bearing green mica) sandstone. However, reported occurrences in the country are not commercially exploitable and hence no production of potash is reported from India. The entire requirement of potash to be utilised as fertilizer is, therefore, met by imports.

RESERVES/RESOURCES

As per NMI database, based on UNFC system, the total resources of potash as on 1.4.2015 have been estimated at 22,508 million tonnes, all in remaining resource category. Rajasthan alone contributes 91% 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 given in the Review on Exploration & Development in "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 (91%) are located in Nagaur district of Rajasthan, followed by Panna district, Madhya Pradesh (5%) and the balance in Sonbhadra & Chitrakut district, Uttar Pradesh (4%). Occurrences of Potash are also reported from Tirap districts of Arunachal Pradesh, Rohtas district of Bihar, Kachchh district of Gujarat, Rohtak and Sirsa districts of Haryana, Leh district of Jammu & Kashmir, Sidhi district of Madhya Pradesh, Bhatinda district of Punjab, Bhilwara and Nagaur districts of Rajasthan, Tanjavur district of Tamil Nadu, Banda, Chitrakut, Sonbhadra and 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 sea bed 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, for fertilizer use, are potassium sulphate, potassium magnesium sulphate and potassium nitrate. Potassium chloride and potassium nitrate are used in manufacture of glass, ceramics, soap, synthetic rubber and chemicals. Potassium nitrate is used in explosive manufacture. Potash is also used as a raw material for manufacturing complex fertilizers.

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**Table – 1 : Reserves/Resources of Potash as on 1.4.2015
(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	–	18142	3660	707	22508	22508
By Grades						
Glauconite	–	878	1076	707	2662	2662
Polyhalite	–	13985	2179	–	16164	16164
Sylvite	–	2072	404	–	2477	2477
Unclassified	–	1206	–	–	1206	1206
By States						
Madhya Pradesh	–	1206	–	–	1206	1206
Rajasthan	–	16936	3462	22	20419	20419
Uttar Pradesh	–	–	198	685	883	883

Figures rounded off.

CONSUMPTION

As per FAI, the all India consumption of Potassic fertilizer (in K₂O content) was at 2779.7 thousand tonnes during 2017-18, whereas it was 2508.5 thousand tonnes in the previous year.

WORLD REVIEW

The world reserves are estimated at approximately 5,800 million tonnes of K₂O content. Deposits are located mainly in Russia (34%), Canada (21%), Belarus (13%), China (6%), Israel & Jordan (5% each), UK & Germany (3% each) (Table-2).

The world production of potash in 2018 was 42.00 million tonnes in terms of K₂O content as against 41.00 million tonnes in 2017. Canada is the leading producer of potash with 29% share in total production in 2018, followed by Russia (18%), Belarus (17%), China (13%), Germany (7%), Israel (5%), Jordan & Chile (3% each) (Table-3).

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

(In '000 tonnes of K₂O content)

Country	Reserves
World: Total (Rounded off)	5800000
Belarus	750000
Brazil	24000
Canada	1200000
Chile	100000
China	350000
Germany	150000
Israel	270000
Jordan	270000
Russia	200000
Spain	41000
UK	170000
USA	220000
Other countries	280000

Figures rounded off

Source: Mineral Commodity Summaries, 2019

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

(In '000 tonnes of K₂O content)

Country	2017	2018
World: Total (Rounded off)	41400	42000
Belarus	7100	7100
Brazil	290	300
Canada	12200	12000
Chile	1100	1000
China ^e	5510	5500
Germany	2700	2900
Israel	2000	2000
Jordan	1390	1400
Russia	7300	7500
Spain	610	560
UK	250	190
USA	480	500
Other countries	500	600

Source: World Mineral Production, 2017-18

FOREIGN TRADE

Exports

There is no reported production of Potash in the country. However, exports of potash fertilizer increased by 69 % to 41,323 tonnes in 2017-18, as compared to 24,388 tonnes during the previous year. Exports were mainly to Netherlands (39%), Peru (15%), Pakistan (14%), UAE (8%), Nepal (6%), Egypt (3%) and Morocco & Jordan (2% each). Exports of potassium nitrate decreased slightly to 920 tonnes in 2017-18 from 1,015 tonnes in the previous year. Exports were mainly to Thailand (40%), China (22%), USA & Turkey (11% each), Pakistan (5%), and Egypt (4%) (Tables- 4 & 5).

Imports

Imports of potash fertilizer increased by 22% to 5.11 million tonnes in 2017-18 as compared to 4.18 million tonnes during the previous year. Canada (25%), Russia (20%), Israel (14%), Belarus (13%) and Lithuania & Jordan (11% each). On the

other hand imports of potassium nitrate decreased drastically by 31% to 108 tonnes in 2017-18 from 345 tonnes in the previous year. China (71%) and Korea, Rep. of (28%) are the main suppliers of potassium nitrate in 2017-18 (Tables- 6 & 7).

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

Country	2016-17		2017-18	
	Qty (t)	Value (` '000)	Qty (t)	Value (` '000)
All Countries	24388	737111	41323	1105976
Netherlands	4414	133816	16190	431592
Peru	2909	84218	6022	164908
Pakistan	6889	194678	5653	160327
UAE	2237	54028	3470	86640
Nepal	2	128	2522	47884
Egypt	112	3734	1269	34472
Morocco	600	20199	975	27030
Jordan	816	30795	865	22676
Saudi Arabia	743	23764	643	18798
Iran	266	11686	492	18708
Other countries	5400	180065	3222	92941

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

Country	2016-17		2017-18	
	Qty (t)	Value (` '000)	Qty (t)	Value (` '000)
All Countries	1015	213902	920	165183
Thailand	344	66421	366	61170
China	149	34049	203	44544
USA	200	66747	102	19472
Egypt	55	16540	39	10860
Pakistan	18	3795	46	10526
Turkey	6	1929	100	7156
UAE	36	9563	19	4416
Indonesia	0	19	15	2978
Saudi Arabia	3	902	5	1741
Bangladesh	191	10780	21	1374
Other countries	13	3157	4	946

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

Country	2016-17		2017-18	
	Qty (t)	Value (` '000)	Qty (t)	Value (` '000)
All Countries	4185124	69662647	5114248	78745036
Canada	1050044	17184083	1288514	19418403
Russia	692311	11176542	1019450	15320327
Israel	695586	11425375	736346	11308858
Belarus	535389	8905092	690387	10496601
Lithuania	541031	8846653	548722	8346190
Jordan	505115	8520198	544694	8297176
Germany	75239	1550983	214942	3765320
Uzbekistan	43710	692827	27487	401560
Chinese Taipei/Taiwan	7488	246135	8958	275978
China	11956	373882	8161	252387
Other countries	27255	740877	26587	862236

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

Country	2016-17		2017-18	
	Qty (t)	Value (` '000)	Qty (t)	Value (` '000)
All Countries	345	30157	108	9520
Korea, Rep. of	60	10852	30	4218
China	214	12960	77	4026
Italy	1	351	1	458
USA	++	123	++	408
Germany	++	228	++	401
Singapore	-	-	++	7
Spain	-	-	++	2
Belgium	++	9	-	-
Chile	++	28	-	-
Switzerland	++	5	-	-
Other countries	70	5601	-	-

FUTURE OUTLOOK

Agriculture forms the backbone of India's Economy. However, declining soil fertility impacts crop productivity. The appropriate application of fertilizer is a key factor in enhancing soil fertility and productivity and for overcoming potassium

depletion. The market of potash is expected to increase year-on-year globally. The domestic demand and entire supply by imports encourages for mining of potash in India. Therefore, the investment opportunities for potash mining in India as an import substitute mineral may be utilised for the development of mineral wealth.