

35 Felspar

Felspars are one of the most abundant rock-forming minerals in the earth's crust, comprising a complex series of aluminosilicates with varying amounts of potassium, sodium and calcium and rarely barium. Common amongst these are the potash feldspars called orthoclase and microcline ($K_2O.Al_2O_3.6SiO_2$), sodium feldspar called albite ($Na_2O.Al_2O_3.6SiO_2$) and calcium feldspar called anorthite ($CaO.Al_2O_3.2SiO_2$). The sodium and calcium feldspars form a continuous series of solid solutions and are together termed plagioclase feldspars. Though feldspars occur in various colours, pink, brown and grey feldspars are common.

RESOURCES

As per the UNFC system, the total resources of feldspar in the country as on 1.4.2005 are estimated at about 91 million tonnes of which 38 million tonnes (42%) are reserves and 53 million tonnes (58%) are the remaining resources. In terms of grades, pottery/ceramic grade account for 50%, other/unclassified and not-known grades 42% and glass grade only 8% of the total resources. By States, Rajasthan alone accounts for about 62% of the total resources followed by Tamil Nadu (10%), Bihar and West Bengal 5% each (Table - 1).

EXPLORATION

The Directorate of Mines & Geology, Government of Rajasthan carried out exploration for feldspar in 2009-10 near village Jhaira, Nayagaon, Kakor, Kabra, etc, in tehsil and district Tonk over an area of 200 sq.km. Mapping in the scales 1:50000, 1:10,000 and 1:2000 was progressively carried out.

PRODUCTION & STOCKS

The production of feldspar at 456 thousand tonnes in 2009-10 decreased by 14 % as compared to the preceding year, due to labour shortage.

There were 67 reporting mines in 2009-10 as against 66 mines in the previous year. Besides, the production of feldspar was also reported from 44 mines as an associated mineral primarily with quartz and mica. Seven

mines, each producing more than ten thousand tonnes annually, accounted for approximately 61% of the total production in 2009-10. Seven principal producers reported 66 percent of the total production during the year under review.

Rajasthan was the leading producing State contributing 49% of the total production followed by Andhra Pradesh 47%, Jharkhand 2% and the remaining 2% was contributed by West Bengal, Karnataka and Tamil Nadu (Tables - 2 to 5).

The mine-head stocks of feldspar at the end of the year 2009-10 were 229 thousand tonnes as against 213 thousand tonnes in the beginning of the year (Table - 6).

The average daily employment of labour in 2009-10 was 710 as against 673 in the previous year. Prices of feldspar are furnished in the General Review on 'Prices'.

MINING & MARKETING

Feldspar is won chiefly from pegmatites. Mining is carried out, generally, by opencast method. Significant output of feldspar is obtained as an associated mineral during mining of quartz, mica and to some extent beryl. Bhilwara and Ajmer districts in Rajasthan and Mahaboobnagar and Nellore districts in Andhra Pradesh are the important mining areas in the country.

The pegmatite bodies are exposed by the removal of top soil and overburden. It is then broken either manually or by drilling and blasting. Mechanised production of feldspar has been widely adopted in Indian mineral industry since long, moving the industry forward from hand cobbled method, employed by small producers. The broken material is sorted out and sized. Crushed feldspar is separated mechanically by suitable screens to meet market requirements. The general demand is for 30/80 mesh, 100 mesh, 150 mesh, 180 mesh, 200 mesh and 250 mesh material. Washing is sometimes done to upgrade the product by removing clay, etc. The processed feldspar is bagged and despatched to different consignees.

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**Table – 1 : Reserves/Resources of Felspar as on 1.4.2005
(By Grades/States)**

(In tonnes)

Total Grade/State	Reserves				Remaining resources						Total resources (A+B)	
	Proved STD111	Probable		Total A	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333		Total B
		STD121	STD122			STD221	STD222					
All India : Total	19220596	4288467	14540774	38049836	57004	1008010	2800094	2235339	8381135	38250244	52731826	90781662
By Grades												
Glass	1852385	205254	3056067	5113706	-	29800	200176	231341	153892	1144278	1759487	6873193
Pottery/Ceramic	14846457	2579915	9449824	26876195	57004	383822	1253987	198352	273384	16433842	18600391	45476586
Others	236886	-	149246	386132	-	-	-	23957	-	133898	157855	543987
Unclassified	1977705	1128910	1607172	4713787	-	590888	608452	181882	208278	11530467	13119967	17833754
Not-known	307163	374388	278465	960016	-	3500	737479	1599807	7745581	9007759	19094126	20054142
By States												
Andhra Pradesh	2115904	281751	2456752	4854407	-	-	-	-	3800000	2789906	6589906	11444314
Bihar	-	-	-	-	-	-	-	-	4195	4848447	4852642	4852642
Haryana	-	-	-	-	-	-	-	-	-	72164	72164	72164
Jharkhand	174914	91940	423007	689861	-	-	19845	32510	117705	797470	967530	1657391
Karnataka	67789	-	206430	274219	-	-	-	25000	135133	207245	367378	641597
Madhya Pradesh	-	-	-	-	-	-	-	-	-	23509	23509	23509
Maharashtra	1392461	-	133521	1525982	-	-	160477	-	-	-	160477	1686459
Meghalaya	-	-	-	-	-	-	-	-	-	37449	37449	37449
Rajasthan	12197678	3882963	10924565	27005206	57004	968210	2415248	1224589	821150	23692430	29178631	56183837
Tamil Nadu	3271850	31813	396498	3700161	-	39800	204524	18870	69822	5447875	5780890	9481052
Uttar Pradesh	-	-	-	-	-	-	-	-	-	200000	200000	200000
West Bengal	-	-	-	-	-	-	-	934370	3433130	133750	4501250	4501250

Figures rounded off.

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**Table – 2 : Principal Producers of Felspar
2009-10**

Name and address of producer	Location of mine	
	State	District
Shri Modi Levigoted Koli pvt. Ltd., Opposite Rly Station, Neem ka Thana-332 713, Sikar, Rajasthan.	Rajasthan	Sikar
Shri Vijaya Gimpex Mining Pvt. Ltd.Gimpex House, 181,Linghi Chetty Street, Chennai – 600 001, Tamil Nadu.	Andhra Pradesh	Mahaboobnagar
B. Narasimhulu, Plot No. 144, Sri Durga Estates, Deepti Srinagar Colony, Chandranagar, Hyderabad, Andhra Pradesh.	Andhra Pradesh	Mahaboobnagar

Table - 2 (Concl'd.)

Name and address of producer	Location of mine	
	State	District
M/s Sadhna Minerals, 1/116, Masthanvali Complex, Anil Nagar, N.H.-5, Chillkur-524 412, Gudur by pass Road, Nellore,Andhra Pradesh.	Andhra Pradesh	Nellore
Shrimati Anjana Jain C/o:Hakim Ali Khan, Bhagat Chouraha, 9th Press Complex, Chawani Road, Beawar, Ajmer, Rajasthan	Rajasthan	Ajmer
Jaikishan Baldua, Govind Bhawan, Pratap Nagar, Beawar, Ajmer, Rajasthan	Rajasthan	Bhilwara
Brijkishor Yadao, Sutarkhana Mohalla, Nasirabad, Ajmer, Rajasthan.	Rajasthan	Ajmer

(Contd.)

**Table – 3 : Production of Felspar, 2008-09 to 2009-10
(By States)**

(Qty. in tones; value in Rs.'000)

State	2007-08		2008-09		2009-10(P)	
	Quantity	Value	Quantity	Value	Quantity	Value
India	488458	99521	531689	97300	455549	91510
Andhra Pradesh	364246	77055	309352	61164	213512	48738
Jharkhand	10893	2081	10815	1864	11322	2062
Karnataka	–	–	573	120	3100	651
Maharashtra	–	–	587	103	–	–
Rajasthan	108276	17805	205788	32146	223120	38093
Tamil Nadu	1629	788	3078	1065	451	117
West Bengal	3414	1792	1496	838	4044	1849

**Table – 4 : Production of Felspar, 2007-08 & 2009-10 (P)
(By Frequency Groups)**

(In tonnes)

Production Group	No. of mines		Production for the group		Percentage in total production		Cumulative percentage	
	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10
All Groups	66(48)	68(44)	531689	455549	100.00	100.00	–	–
Up to 500	25(23)	19(20)	8586	6341	1.62	1.39	1.62	1.39
501-1000	11(9)	14(9)	14008	16846	2.63	3.70	4.25	5.09
1001-3000	15(11)	14(4)	42376	31252	7.97	6.86	12.22	11.95
3001-5000	3(2)	10(6)	22122	59402	4.16	13.04	16.38	24.99
5001-10000	5(2)	4(5)	46205	64558	8.69	14.17	25.07	39.16
10001 & above	7(1)	7	398392	277150	74.93	60.84	100.00	100.00

(P) Provisional.

Figures in parentheses indicate number of mines of felspar with mica & quartz.

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**Table – 5 : Production of Felspar, 2008-09 & 2009-10
(By Sectors/States/Districts)**

(Qty. in tonnes, value in Rs.'000)

State/District	2008-09			2009-10(P)		
	No.of mines	Quantity	Value	No.of mines	Quantity	Value
India	66(48)	531689	97300	67(44)	455549	91510
Private sector	64(48)	530529	97077	66(44)	452449	90860
Public sector	2	1160	223	1	3100	650
Andhra Pradesh	17(22)	309352	61164	15(19)	213512	48738
Krishna	(1)	10	2	–	–	–
Mahaboobnagar	10(4)	272556	51455	8(5)	174650	38140
Nalgonda	2	72	11	2	46	7
Nellore	5(17)	36714	9696	5(14)	38816	10591
Jharkhand	3(6)	10815	1864	3(6)	11322	2062
Deoghar	(1)	1274	180	(1)	1958	331
Dumka	(1)	727	145	(1)	1513	303
Hazaribagh	1	242	47	1	602	117
Jamtara	1	2480	347	1	984	138
Latehar	1(4)	6092	1145	1(4)	6265	1173
Karnataka	1	573	120	1	3100	651
Bengaluru	1	573	120	1	3100	651
Maharashtra	1	587	103	–	–	–
Sindhudurg	1	587	103	–	–	–
Rajasthan	44(12)	205788	32146	48(15)	223120	38093
Ajmer	12(4)	54354	8050	12(6)	37862	4313
Alwar	(1)	55	17	(1)	261	78
Bhilwara	25(5)	43934	6087	24(4)	64993	12514
Rajasamand	5(1)	3422	422	10(2)	13327	1671
Sikar	2	102230	17122	2	100692	18022
Tonk	(1)	1793	448	(2)	5985	1495
Tamil Nadu	(7)	3078	1065	(3)	451	117
Dindigul	(2)	136	95	(1)	33	23
Erode	(1)	896	627	–	–	–
Madurai	(2)	40	14	(1)	18	6
Coimbatore	(1)	554	111	(1)	400	88
Salem	(1)	1452	218	–	–	–
West Bengal	(1)	1496	838	(1)	4044	1849
Birbhum	(1)	1496	838	(1)	4044	1849

*(P) Provisional.**Figures in parentheses indicate number of associated mines of felspar with mica & quartz.*

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**Table – 6 : Mine-head Stocks of Felspar,
2009-10 (P)
(By States)**

State	At the beginning of the year	At the end of the year
(In tonnes)		
India	213109	229273
Andhra Pradesh	153282	179836
Jharkhand	1115	1437
Karnataka	1040	1515
Madhya Pradesh	11	11
Maharashtra	3654	4547
Rajasthan	53018	41469
Tamil Nadu	938	333
West Bengal	51	125

The processing of felspar involves usually flotation or magnetic separation to remove accessory minerals like mica, garnet, ilmenite and quartz. Silica in the form of quartz in pegmatites and silica sand in felspathic sand deposits are obtained as co-products of mining. In some applications, presence of silica is advantageous. Other users require extremely pure and finely-ground grades. Glass grade felspar is usually the most coarse material. The filler application demands finely-ground material. A modern processing plant is located at Kodthal in Mahaboobnagar district of Andhra Pradesh and 12 processing plants in Rajasthan cater to ceramics and glass industries.

USES

Potassium felspar obtained from pegmatites is used traditionally as a source for alumina and alkali in ceramic and glass industries which account for more than 90% consumption. It also finds use as functional filler in paint, plastic, rubber and adhesive; as a bonding agent in abrasives; and in the manufacture of artificial

teeth, fertilizer and white cement. Certain varieties of felspar (like moonstone) are used as semi-precious stones.

In ceramic industry, felspar is used as fluxing agent in softening, melting and wetting other batch constituents. The flux controls the degree of vitrification of the ceramic body during firing. Potash felspar has technical advantages over sodium felspar. After clay, felspar is the biggest ingredient in the raw material batch for ceramic bodies. Typical felspar contents are < 25% in earthenware, 25-35% in sanitaryware, 15-30% in whiteware, 10-55% in floor and wall tiles and 30-55% in electrical porcelain. For glass industry, the alkali content in felspar acts as a flux, lowering the glass batch melting temperature and thus cutting production cost. The mineral is primarily added for alumina content which varies from 0.05% for flat glass, 8% for container glass, 11% for some speciality glasses and up to 18% for insulation fibreglass.

In the abrasive industry, plagioclase felspar is used as a mild abrasive material in scouring powders because of its semi-conchoidal fracture, although its hardness is 6 on Mohs' scale. In refractory industry, felspar is used as one of the batch constituents in the manufacture of acid-proof refractories. In welding electrode industry, felspar is used as a flux which acts as an arc stabilizer and helps in weld-pool protection.

Physical properties like good dispersability, chemical inertness, stable pH, low free silica content and brightness of 89-95% impart finely-ground felspar materials an excellent filler qualities.

SPECIFICATIONS

The BIS specifications of potash felspar for use in glass and pottery industries as per IS: 9749-1981 (Reaffirmed 1990) are given in Table-7.

**Table – 7 : Specifications of Potash Felspar for
Glass & Pottery Industries
(IS : 9749 - 1981, Reaffirmed 1990)**

Sl. No.	Characteristic	Requirement		
		Gr-1*	Gr-2	Gr-3
1.	Loss on ignition, % by mass, max	0.6	0.6	0.8
2.	Silica (as SiO ₂), % by mass, max	67	67	68
3.	Alumina (as Al ₂ O ₃), % by mass	17 to 20	17 to 21	17 to 21
4.	Ratio of SiO ₂ : Al ₂ O ₃	3.4:3.6	3.4:3.6	3.5:3.8
5.	Iron oxide (as Fe ₂ O ₃), % by mass, max	0.20	0.35	0.50
6.	Calcium & magnesium oxides (CaO + MgO), % by mass, max	0.75	1.00	1.00
7.	Alkalies (as K ₂ O), % by mass, min	9.00	9.00	7.00
8.	Alkalies (as Na ₂ O)	4.00	4.00	6.00
9.	Total alkalies (as K ₂ O+Na ₂ O), % by mass, min	13.00	13.00	10.00

* For glass industry

In case of lumps, Fe₂O₃ content shall not exceed 0.15% by mass for Grade-2 and 0.25% by mass for Grade-3. The lump size may be agreed to between the supplier and the producer.

However, the producers prefer following specifications for the various ceramic products:

Sanitaryware

K₂O 11-14%, Na₂O 2-7%, SiO₂ 62-68%, Al₂O₃ 16-20%, Fe₂O₃ 0.25% (max). The deleterious constituents are TiO₂ and MgO.

Insulators

K₂O 11-12.5%, Na₂O 2-3% (4% max), SiO₂ 64.5-68%, Al₂O₃ 17-21%, Fe₂O₃ 0.48% (max) (but Fe₂O₃ less than 0.1% is accepted).

Ceramic Tiles

K₂O 9%, Na₂O 4%, Al₂O₃ 18% (min), Fe₂O₃ 1% (max), K₂O+Na₂O 14% (max). Both sodium and potassium felspars are used.

Crockeryware

K₂O 12.1m5%, Na₂O 3.69%, SiO₂ 63.05%, Al₂O₃ 19.56% and Fe₂O₃ 0.10%.

Glass

BIS specifications of felspar are given as Grade-1 in Table-8. Besides, the physical requirements specified are that the material in powder form prepared from natural felspar should be free from foreign matter; moisture shall not exceed 2% by mass; sp. gr. should be between 2.5 and 2.7; PCE should be 8 to 10 orton (1,225°C -1,260°C), and fired-colour shall be glassy-white and free from specks.

However, the producers accept felspar analysing 10% K₂O + Na₂O, 64-68% SiO₂, 15-19% Al₂O₃ and 0.15% Fe₂O₃.

Refractory

There is no BIS specification for felspar for use in refractory industry. The industry prefers potash felspar analysing 11 to 12% Na₂O₃ + K₂O, 60 to 70% SiO₂, 20 to 24% Al₂O₃, 1.5% Fe₂O₃, 0.8% LOI, 4 to 6 orton PCE and 2.5 to 10 cm material.

Abrasive

Felspar in both powder and lump forms is used. As per the users in organised sector, felspar analysing SiO₂ 65%, Al₂O₃ 18%, Na₂O + K₂O 10% (max), Fe₂O₃ 0.45%, MgO 0.5%, CaO 0.6% and LOI 2% (max), and white or pink mineral is preferred.

Electrode

Potash felspar, analysing 12 to 14% K₂O, 1 to 3% Na₂O, 63 to 67% SiO₂, 17 to 20% Al₂O₃ and below 0.3% Fe₂O₃, is preferred.

INDUSTRY

Ceramic industry in India is about a century old and has formed a sizeable industrial base. It comprises ceramic tiles, sanitaryware and crockery

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items. The industry has its base both in large and small-scale sectors with wide variance in type, size, quality and standard. Manufacturing units are spread all-over India. The state-of-the-art ceramic goods are manufactured in the country. The domestic technology is of international standard. During the last two decades, there has been a phenomenal growth in the field of technical ceramics to meet specific demands of industries like high alumina ceramic, cutting tools and other structural ceramics.

As per the data from Department of Industrial Policy & Promotion, Ministry of Commerce & Industries, there are at present 16 ceramic glazed tiles units in the organised sector with an annual installed capacity of 21 lakh tonnes and about 200 units in SSI sector. Production of ceramic tiles in 2009-10 was 340 million sq m. This sector accounts for about 2.5% of the world ceramic tile production. The demand of ceramics is expected to increase with the growth in the housing sector.

Sanitary and pottery items are also produced by both large and small-scale sectors. Sanitaryware has been growing 5% per annum during the last two years. There were 7 units of sanitaryware with an installed capacity of about 143 thousand tonnes per annum in organised sector and about 210 units, with total 53,000 tonnes per annum capacity in the small-scale sector. Production of sanitaryware in 2009-10 was 431 thousand tonnes in the organised sector. There are 16 units of potteryware in organised sector, having a total installed capacity of 43,000 tpy. In the small-scale sector, there are over 1,400 plants with a capacity of 3,00,000 tonnes per annum. Production of potteryware in 2009-10 was about 73 thousand tonnes in organised sector. Majority of the production of ceramic tableware is of bone china and stoneware.

The glass industry comprises containers, hollowware, tableware, float glass, vacuum flasks, refills, laboratory glassware, fibre glassware, etc. Float glass and glass fibre are classified as high priority items. Most of the other items are reserved for SSI.

There has been a growing acceptability of the Indian flat glass products in the global market. The Indian manufacturers have explored new

markets. The technology upgradation is taking place in fibre glass composites. There is considerable scope in demand for glass fibre products particularly due to growth in petrochemical sector and allied products.

The production of bottles/ bottle glassware during 2009-10 was 8,96,636 tonnes. The export and import of glass & glassware during 2009-10 was worth Rs.1675.37 crore and Rs.2137.77 crore, respectively.

Firozabad in Uttar Pradesh, popularly known as 'Glass City of India', is the chief centre of small-scale glass production units. These units make the most innovative items of glass which are exported to different parts of the world. This town accounts for about 70% production in small-scale sector.

CONSUMPTION

Felspar is used mainly in ceramic, glass and cement industries. Minor quantity of felspar is consumed by refractory, abrasive and electrode industries. Total consumption of felspar in 2009-10 was estimated at 421,700 tonnes in the organised sector. Of the total consumption, the ceramic industry accounted for 84%, glass industry about 12% and remaining 4% by cement, abrasive, refractory and electrode industries (Table - 8).

**Table – 8 : Reported Consumption of Felspar
2007-08 to 2009-10
(By Industries)**

(In tonnes)			
Industry	2007-08	2008-09(R)	2009-10(P)
All Industries	332000	334400	421700
Abrasive	600(3)	600(3)	600(3)
Cement	14800(4)	11200(5)	15900(6)
Ceramic	263100(49)	268400(49)	355400(49)
Coal washery	++(1)	++(1)	++(1)
Electrode	300(11)	300(11)	300(11)
Glass	52000(48)	52900(50)	48500(49)
Refractory	1200(14)	1000(16)	1000(16)

Figures rounded off. Data collected on non-statutory basis. Figures in parentheses denote the number of units in organised sector reporting consumption. (*Includes actual reported consumption and/or estimates made wherever required).*

WORLD REVIEW

World resources of felspar are large and adequate enough to meet the anticipated world demand and hence quantitative data on resources of felspar in granites, pegmatites and felspathic sands have not been compiled. The world production of felspar was estimated at 20.17 million tonnes in 2009. Major producers were Italy (25%), Turkey (20%) and China (12%) (Table-9).

**Table – 9 : Production of Felspar
(By Principal Countries)**

Country	(In '000 tonnes)		
	2007	2008	2009
World : Total	21481	23245	20171
China	2400 ^(e)	2400 ^(e)	2400 ^(e)
Czech Republic	514	488	431
Egypt	135	169	–
France	650 ^(e)	650 ^(e)	550 ^(e)
India	488	351	390
Iran	512	502	502 ^(e)
Italy	3524	5000 ^(e)	5000 ^(e)
Japan @	750 ^(e)	700 ^(e)	700 ^(e)
Korea, Rep. of	399	344	623
Malaysia	359	457	357
Mexico	439	446	348
Poland	502	599	446
Portugal	372	370 ^(e)	370 ^(e)
Spain	683	690	550
Thailand	685	671	670 ^(e)
Turkey	6000	6500	4000
USA	730	680	530 ^(e)
Other countries	2339	2228	2304

Source: World Mineral Production, 2005-2009.

FOREIGN TRADE

Exports

Exports of felspar (natural) decreased to 316 thousand tonnes in 2009-10 from 338 thousand tonnes in the previous year. Exports were mainly to Bangladesh (29%), Indonesia (13%) and

Malaysia (11%). Exports value of felspar (cut & uncut) decreased to Rs. 5.06 crore in 2009-10 from Rs. 19.12 crore in 2008-09. Felspar (cut) accounted for more than 99% of total exports value in 2009-10. Exports of felspar (cut & uncut) were mainly to USA & Germany (28%) each and Japan (13%) (Tables - 10 to 13).

Imports

Imports of felspar (natural) increased to 7,281 tonnes in 2009-10 from 290 tonnes in 2008-09. Imports were mainly from Thailand, Malaysia and China. In 2009-10, imports value of felspar (cut & uncut) decreased to Rs. 15.60 lakh from Rs.40.57 lakh in the previous year. In 2009-10 imports value of uncut felspar were of Rs. 12.72 lakh and that of cut felspar was of Rs. 2.88 lakh. Imports of felspar (uncut) were mainly from Brazil, while, imports of felspar (cut) were mainly from Hong Kong (Tables - 14 to 17).

**Table – 10 : Exports of Felspar (Natural)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	337664	924103	315549	1074155
Bangladesh	84375	205517	90257	224461
Indonesia	52180	147353	41000	146830
Vietnam	22500	100992	27202	123774
Malaysia	44422	117316	35879	116251
Thailand	31585	83895	30598	110842
Iran	9428	36764	15587	68987
Chinese Taipei/ Taiwan	9937	36454	13481	54966
UAE	29509	73220	18429	50076
China	3483	17126	10725	41584
Oman	3985	15960	7224	30368
Other countries	46260	89506	25167	106016

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Table – 11: Exports Value of Felspar (Cut & Uncut) (By Countries)

Country	2008-09		2009-10	
	Qty ('000 Crt)	Value (Rs.'000)	Qty ('000 Crt)	Value (Rs.'000)
All Countries	191202	187354	358	50497
USA	368	49290	58	14280
Germany	21	5947	209	13929
Japan	11	3882	44	6371
Chinese Taipei/ Taiwan	1	327	10	3968
Hong Kong	42	58755	3	3446
Thailand	529	37161	27	2742
UK	357	17714	2	1197
France	2	2437	1	975
Russia	++	3195	++	16
South Africa	5	3971	++	5
Other countries	17	4675	4	3568

Quantity not given due to partial coverage. Value figures, however, have full coverage.

Table – 12 : Exports of Felspar (Cut) (By Countries)

Country	2008-09		2009-10	
	Qty ('000 Crt)	Value (Rs.'000)	Qty ('000 Crt)	Value (Rs.'000)
All Countries	1353	187354	358	50497
USA	368	49290	58	14280
Germany	21	5947	209	13929
Japan	11	3882	44	6371
Chinese Taipei/ Taiwan	1	327	10	3968
Hong Kong	42	58755	3	3446
Thailand	529	37161	27	2742
UK	357	17714	2	1197
France	2	2437	1	975
Russia	++	3195	++	16
South Africa	5	3971	++	5
Other countries	17	4675	4	3568

Table – 13 : Exports of Felspar (Uncut) (By Countries)

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	++	3848	++	115
USA	-	-	++	109
Australia	-	-	++	3
Singapore	-	-	++	3
Denmark	++	31	-	-
Hong Kong	++	238	-	-
Israel	++	3060	-	-
UK	++	519	-	-

Table – 14 : Imports of Felspar (Natural) (By Countries)

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	290	3856	7281	32129
Thailand	-	-	6300	14850
Malaysia	84	1301	483	7929
China	-	-	370	6901
Spain	50	802	97	1333
Germany	-	-	20	977
UK	1	11	11	139
Italy	84	1313	-	-
Turkey	71	429	-	-

Table – 15 : Imports Value of Felspar (Cut & Uncut) (By Countries)

Country	2008-09		2009-10	
	Qty ('000 Crt)	Value (Rs.'000)	Qty ('000 Crt)	Value (Rs.'000)
All Countries	4057	4057	1560	1560
Brazil		702		1272
Hong Kong		3158		277
Germany		-		6
USA		-		5
Sri Lanka		80		-
Thailand		117		-

Quantity not given due to partial coverage. Value figures, however, have full coverage.

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**Table – 16 : Imports of Felspar (Cut)
(By Countries)**

Country	2008-09		2009-10	
	Qty (000 Carat)	Value (Rs.'000)	Qty (000 Carat)	Value (Rs.'000)
All Countries	5	3209	++	288
Hong Kong	5	3092	++	277
Germany	-	-	++	6
USA	-	-	++	5
Thailand	++	117	-	-

**Table – 17 : Imports of Felspar (Uncut)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	++	848	3	1272
Brazil	++	702	3	1272
Hong Kong	++	66	-	-
Sri Lanka	++	80	-	-