

# 35 Felspar

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**F**elspars 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 felspars called orthoclase and microcline ( $K_2O.Al_2O_3.6SiO_2$ ), sodium felspar called albite ( $Na_2O.Al_2O_3.6SiO_2$ ) and calcium felspar called anorthite ( $CaO.Al_2O_3.2SiO_2$ ). The sodium and calcium felspars form a continuous series of solid solutions and are together termed plagioclase felspars. Though felspars occur in various colours, pink, brown and grey felspars are common.

## RESOURCES

As per the UNFC system, the total resources of felspar 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).

## PRODUCTION, STOCKS & PRICES

The production of felspar at 411 thousand tonnes in 2007-08 decreased by 14% as compared to the preceding year due to labour shortage, development works and heavy rains.

There were 25 reporting mines of felspar in 2007-08 as against 33 mines in the previous year. Besides, the production of felspar was also reported from 25 mines as an associated mineral primarily with quartz and asbestos. Twenty-five mines (including ten associated mines) producing more than one thousand tonnes annually accounted for 98% of the total production. Seven principal producers reported 90% of the total production during the year under review.

Andhra Pradesh was the leading producing state contributing 88% of the total production followed by Rajasthan 10% and Jharkhand 2%. A meagre quantity was reported from Tamil Nadu (Tables - 2 to 5).

The mine-head stocks of felspar at the end of the year 2007-08 were 149 thousand tonnes as against 259 thousand tonnes at the beginning of the year (Table - 6).

The average daily employment of labour in 2007-08 was 273 as against 365 in the previous year. Prices of felspar are given in Table - 7.

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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					
<b>All India : Total</b>	<b>19220596</b>	<b>4288467</b>	<b>14540774</b>	<b>38049836</b>	<b>57004</b>	<b>1008010</b>	<b>2800094</b>	<b>2235339</b>	<b>8381135</b>	<b>38250244</b>	<b>52731826</b>	<b>90781662</b>
<b>By Grades</b>												
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
<b>By States</b>												
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, 2007-08**

Name and address of producer	Location of mine	
	State	District
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
S.Ramkrishnareddy, R.R. Stone (P) Ltd, H.No.3-5 874/4 II <sup>nd</sup> Floor, Hyderabad-500 029 Andhra Pradesh.	Andhra Pradesh	Hyderabad

(Contd.)

Table - 2 (Concl'd.)

Name and address of producer	Location of mine	
	State	District
Parasmal Jain C/o Mahavir Minerals Ltd, Post-Khajanchi Gali, Dist-Beawar Rajasthan.	Rajasthan	Bhilwara
Bharat Mineral Supply Corpn., Mine owner, & Merchants, Ajmer Road, Post- Beawar, Dist-Ajmer, Rajasthan.	Rajasthan	Ajmer
*M/s Sadhna Minerals, 1/116, Masthauvali Complex, Anil Nagar, N.H.5, Chilakur-524 412. Nellore, Andhra Pradesh.	Andhra Pradesh	Nellore
Kalpitaru Minerals Prop. D.C. Jain, Omji Dawaiwala Building Pali Bazar Post- Beawar - 305901, Dist- Ajmer, Rajasthan.	Rajasthan	Ajmer

\* Producing felspar as an associated mineral with quartz.

**Table – 3 : Production of Felspar, 2005-06 to 2007-08  
(By States)**

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

State	2005-06		2006-07		2007-08(p)	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>India</b>	<b>426498</b>	<b>70740</b>	<b>479715</b>	<b>86044</b>	<b>410926</b>	<b>76769</b>
Andhra Pradesh	334864	58218	387300	73380	362869	69635
Jharkhand	7450	913	11175	1853	10804	1785
Karnataka	2402	781	0	0	0	0
Rajasthan	79362	10205	80611	10622	36677	5088
Tamil Nadu	2420	623	629	189	576	261

**Table – 4 : Production of Felspar, 2006-07 and 2007-08(p)  
(By Frequency Groups)**

(In tonnes)

Production group	Number of mines		Production for the group		Percentage in total production		Cumulative percentage	
	2006-07	2007-08	2006-07	2007-08	2006-07	2007-08	2006-07	2007-08
<b>All Groups</b>	<b>33(39)</b>	<b>25(25)</b>	<b>479715</b>	<b>410926</b>	<b>100.00</b>	<b>100.00</b>	-	-
Up to 500	9(17)	5(12)	5200	2597	1.01	0.63	1.01	0.63
501-1000	4(11)	5(3)	11478	5884	2.40	1.43	3.41	2.06
1001-3000	4(6)	5(3)	12612	11481	2.70	2.80	6.11	4.86
3001-5000	9(3)	3(6)	42989	26047	8.96	6.33	15.07	11.19
5001-10000	3(1)	1(1)	29588	15890	6.17	3.87	21.24	15.06
10001 & above	4(1)	6	377848	349027	78.76	84.94	100.00	100.00

Figures in parentheses indicate number of associated mines.

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**Table – 5 : Production of Felspar, 2006-07 and 2007-08  
(By Sectors/States/Districts)**

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

State/District	2006-07			2007-08(p)		
	No. of mines	Quantity	Value	No. of mines	Quantity	Value
<b>India</b>	<b>33(39)</b>	<b>479715</b>	<b>86044</b>	<b>25(25)</b>	<b>410926</b>	<b>76769</b>
Private sector	33(39)	479715	86044	25(25)	410926	76769
<b>Andhra Pradesh</b>	<b>9(16)</b>	<b>387300</b>	<b>73380</b>	<b>9(10)</b>	<b>362869</b>	<b>69635</b>
Khammam	-	-	-	(1)	18	3
Krishna	(1)	310	79	-	-	-
Mahboobnagar	5	366094	69419	6	338132	62218
Nellore	4(14)	15326	3241	3(9)	24719	7414
Ranga Reddy	(1)	5570	641	-	-	-
<b>Jharkhand</b>	<b>3(5)</b>	<b>11175</b>	<b>1853</b>	<b>3(5)</b>	<b>10804</b>	<b>1785</b>
Dumka	(1)	785	157	(1)	1976	415
Hazaribagh	1	568	105	1	140	26
Jamtara	1	4291	729	1	2138	377
Latehar	1(4)	5531	862	1(4)	6550	967
<b>Karnataka</b>	<b>1</b>	<b>2402</b>	<b>781</b>	-	-	-
Bangalore	1	2402	781	-	-	-
<b>Rajasthan</b>	<b>21(11)</b>	<b>80611</b>	<b>10622</b>	<b>13(5)</b>	<b>36677</b>	<b>5088</b>
Ajmer	11(3)	38932	6251	8	15151	2631
Alwar	(1)	110	33	(1)	50	15
Bhilwara	9(6)	36631	4040	5(4)	21476	2442
Pali	(1)	1244	149	-	-	-
Rajsamand	1(1)	4938	298	-	-	-
<b>Tamil Nadu</b>	<b>(7)</b>	<b>629</b>	<b>189</b>	<b>(5)</b>	<b>576</b>	<b>261</b>
Dindigul	(1)	78	27	(1)	182	81
Erode	(2)	464	150	(3)	387	178
Karur	(2)	21	5	-	-	-
Madurai	(1)	117	35	-	-	-
Namakkal	(1)	3	1	(1)	7	2
Salem	(1)	63	6	-	-	-

Figures in parentheses indicate the number of associated mines.

**Table - 6 : Mine-head Stocks of Felspar, 2007-08 (p)  
(By States)**

(In tonnes)

State	At the beginning of the year	At the end of the year
<b>India</b>	<b>259224</b>	<b>149228</b>
Andhra Pradesh	217698	116931
Jharkhand	715	1106
Karnataka	3583	541
Madhya Pradesh	11	11
Rajasthan	34682	30072
Tamil Nadu	2535	507

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**Table -7 : Prices of Felspar, 2005-06 to 2007-08  
(Domestic Markets)**

		(In Rs. per tonne)		
Grade	Market	2005-06	2006-07	2007-08(P)
A Grade Lumps	Ex-mine Sankiroddipally (Andhra Pradesh)	380	380	380
Feldspar	Ex-mine Balanagar (Andhra Pradesh)	150	152	152
Feldspar (Potash)	Ex-mine MML (Karnataka)	425	425	425
Below 10 mm fines	Ex-mine MML (Karnataka)	225	225	225
Pegmatite	Ex-mine MML (Karnataka)	85	85	85
Grade I	Ex-mine Ajmer (Rajasthan)	225-300	200-300	200-300
Grade II	Ex-mine Ajmer (Rajasthan)	150	150	150
Grade III	Ex-mine Ajmer (Rajasthan)	90-100	100	100
Waste	Ex-mine Ajmer (Rajasthan)	60	50	50
Commerl.	Ex-mine Beawar (Rajasthan)	170-220	190	190
Dressed material	Ex-mine Beawar (Rajasthan)	450	525	525
Grade I	Ex-mine Bikaner (Rajasthan)	425	525	525
Grade II	Ex-mine Bikaner (Rajasthan)	180	190	190
Grade III	Ex-mine Bikaner (Rajasthan)	55	60	60
Medium Grade	Ex-mine Jamkanali (Jharkhand)	200	220	220

### MINING & MARKETING

Felspar is won chiefly from pegmatites. Mining is carried out, generally, by opencast method. Significant output of felspar 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 centres 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 felspar 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 felspar 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 felspar is bagged and despatched to different consignees.

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 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,

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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 feldspar 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, feldspar is used as one of the batch constituents in the manufacture of acid-proof refractories. In welding electrode industry, feldspar 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 feldspar materials an excellent filler qualities.

### SPECIFICATIONS

The BIS specifications of potash feldspar for use in glass and pottery industries as per IS:9749-1981 (Reaffirmed 1990) are given in Table-8.

**Table - 8 : Specifications of Potash Feldspar 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 <sub>2</sub> ), % by mass, max	67	67	68
3.	Alumina (as Al <sub>2</sub> O <sub>3</sub> ), % by mass	17 to 20	17 to 21	17 to 21
4.	Ratio of SiO <sub>2</sub> : Al <sub>2</sub> O <sub>3</sub>	3.4:3.6	3.4:3.6	3.5:3.8
5.	Iron oxide (as Fe <sub>2</sub> O <sub>3</sub> ), % 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 <sub>2</sub> O), % by mass, min	9.00	9.00	7.00
8.	Alkalies (as Na <sub>2</sub> O)	4.00	4.00	6.00
9.	Total alkalies (as K <sub>2</sub> O+Na <sub>2</sub> O), % by mass, min	13.00	13.00	10.00

\* For glass industry

In case of lumps, Fe<sub>2</sub>O<sub>3</sub> 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

K<sub>2</sub>O 11-14%, Na<sub>2</sub>O 2-7%, SiO<sub>2</sub> 62-68%, Al<sub>2</sub>O<sub>3</sub> 16-20%, Fe<sub>2</sub>O<sub>3</sub> 0.25% (max). The deleterious constituents are TiO<sub>2</sub> and MgO.

### Insulators

K<sub>2</sub>O 11-12.5%, Na<sub>2</sub>O 2-3% (4% max), SiO<sub>2</sub> 64.5-68%, Al<sub>2</sub>O<sub>3</sub> 17-21%, Fe<sub>2</sub>O<sub>3</sub> 0.48% (max) (but Fe<sub>2</sub>O<sub>3</sub> less than 0.1% is accepted).

### Ceramic Tiles

K<sub>2</sub>O 9%, Na<sub>2</sub>O 4%, Al<sub>2</sub>O<sub>3</sub> 18% (min), Fe<sub>2</sub>O<sub>3</sub> 1% (max), K<sub>2</sub>O+Na<sub>2</sub>O 14% (max). Both sodium and potassium feldspars are used.

### Crockeryware

K<sub>2</sub>O 12.15%, Na<sub>2</sub>O 3.69%, SiO<sub>2</sub> 63.05%, Al<sub>2</sub>O<sub>3</sub> 19.56% and Fe<sub>2</sub>O<sub>3</sub> 0.10%.

### Glass

BIS specifications of feldspar are given as Grade-1 in Table - 8. Besides, the physical requirements specified are that the material in powder form prepared from natural feldspar 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<sup>o</sup>C - 1,260<sup>o</sup>C), and fired- colour shall be glassy-white and free from specks.

However, the producers accept feldspar analysing 10% K<sub>2</sub>O + Na<sub>2</sub>O, 64-68% SiO<sub>2</sub>, 15-19% Al<sub>2</sub>O<sub>3</sub> and 0.15% Fe<sub>2</sub>O<sub>3</sub>.

### Refractory

There is no BIS specification for feldspar for use in refractory industry. The industry prefers potash feldspar analysing 11 to 12% Na<sub>2</sub>O<sub>3</sub> + K<sub>2</sub>O, 60 to 70% SiO<sub>2</sub>, 20 to 24% Al<sub>2</sub>O<sub>3</sub>, 1.5% Fe<sub>2</sub>O<sub>3</sub>, 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  $\text{SiO}_2$  65%,  $\text{Al}_2\text{O}_3$  18%,  $\text{Na}_2\text{O} + \text{K}_2\text{O}$  10% (max),  $\text{Fe}_2\text{O}_3$  0.45%,  $\text{MgO}$  0.5%,  $\text{CaO}$  0.6% and LOI 2% (max), and white or pink mineral is preferred.

### Electrode

Potash felspar, analysing 12 to 14%  $\text{K}_2\text{O}$ , 1 to 3%  $\text{Na}_2\text{O}$ , 63 to 67%  $\text{SiO}_2$ , 17 to 20%  $\text{Al}_2\text{O}_3$  and below 0.3%  $\text{Fe}_2\text{O}_3$ , 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 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 and about 200 units in SSI sector. Production of glazed ceramic tiles in 2007-08 was 290 million sq m. This sector accounts for about 2.5% of the world ceramic tile production. In India, the per capita consumption of ceramic tiles (0.3 sq m) is much less than that in European countries (5-6 sq m). 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

sanitarywares with an installed capacity of about 143 thousand tpy in organised sector and about 200 plants with total 50,000 tpy capacity in the small-scale sector. Production of sanitaryware in 2007-08 was 366 thousand tonnes in the organised sector. There are 16 units of potteryware in organised sector, having a total installed capacity of 43,000 tpy. Production of potteryware in 2007-08 was about 59 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. Currently, both sheet and float glass types are exported to South Asia, East Asia and South & East African countries.

There are 43 units producing glass containers and hollowwares, having an annual installed capacity of 15 lakh tonnes. The production in 2007-08 (up to December 2007) was 6.75 lakh tonnes. There are six units producing laboratory/scientific glassware in the country.

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 2007-08 was estimated at 312,100 tonnes in the organised sector. Of the total consumption, the ceramic industry accounted for 78%, glass industry 17%, and remaining 5% by cement, abrasive, refractory, electrode industries, etc. (Table - 9).

**Table - 9 : Reported Consumption of Felspar  
2005-06 to 2007-08  
(By Industries)**

Industry	(In tonnes)		
	2005-06(R)	2006-07	2007-08(p)
<b>All industries</b>	<b>304700</b>	<b>311600</b>	<b>312100</b>
Abrasive	600 (3)	600 (3)	600 (3)
Cement	13000 (3)	14000 (4)	14100 (4)
Ceramic	238000 (48)	243800 (48)	244200 (48)
Coal washery	++ (1)	++ (1)	++ (1)
Electrode	200 (10)	300 (11)	300 (11)
Glass	51600 (48)	51600 (48)	51600 (48)
Refractory	1300 (13)	1300 (15)	1300 (15)

Figures rounded off. Data collected on non-statutory basis. Figures in parentheses denote the number of units in organised sector reporting industrial consumption.

## 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 22.5 million tonnes in 2007. Major producers were Turkey (27%), Italy (21%), China (10%), USA, Japan, Spain, Thailand and France (3% each) (Table-10).

**Table - 10 : World Production of Felspar  
(By Principal Countries)**

Country	(In '000 tonnes)		
	2005	2006	2007
<b>World : Total</b>	<b>19710</b>	<b>21371</b>	<b>22492</b>
China	2300	2300 <sup>e</sup>	2300 <sup>e</sup>
Czech Republic	472	487	514
Egypt	357	360 <sup>e</sup>	360 <sup>e</sup>
France	651	650 <sup>e</sup>	650 <sup>e</sup>
India*	426	373	405
Italy	3335	4019	4727
Japan @	800 <sup>e</sup>	800 <sup>e</sup>	750 <sup>e</sup>
Korea, Republic of	509	427	399
Mexico	373	459	439
Poland	427	458	389 <sup>e</sup>
Spain	650	697	700
Thailand	1150	1068	685
Turkey	4750	5500	6000
USA	750	760	760 <sup>e</sup>
Other Countries	2760	3013	3414

Source : World Mineral Production, 2003-2007.

@ Including weathered granite felspar.

\*India's production of felspar in 2005-06, 2006-07 & 2007-08 was 426 thousand, 480 thousand and 411 thousand tonnes, respectively.

## FOREIGN TRADE

### Exports

Exports of felspar (natural) decreased to 427 thousand tonnes in 2007-08 from 558 thousand tonnes in the previous year. Exports were mainly to UAE (36%), Bangladesh (21%), Malaysia (13%), Indonesia (7%) and Thailand (5%). Exports value of felspar (cut & uncut) decreased to Rs. 2.78 crore in 2007-08 from Rs. 4.89 crore in 2006-07. Felspar (cut) accounted for more than 99% of total exports value in 2007-08. Exports of felspar (cut & uncut) were mainly to Italy (23%), USA (20%), UAE (16%), Thailand (13%), U.K. (9%) and Hong Kong (3%) (Tables - 11 to 14).

### Imports

Imports of felspar (natural) decreased sharply to 90 tonnes in 2007-08 from 53 thousand tonnes in 2006-07. Imports were mainly from Turkey, Italy and Spain. In 2007-08, imports value of felspar (cut & uncut) doubled to Rs. 76.57 lakh from Rs.38.78 lakh in the previous year. In 2007-08 imports of uncut felspar were of Rs.39.09 lakh and those of cut felspar were of Rs. 37.48 lakh. Imports were mainly from USA, UK and Brazil (Tables - 15 to 18).

**Table - 11: Exports of Felspar (Natural)  
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
<b>All Countries</b>	<b>557565</b>	<b>1147834</b>	<b>427222</b>	<b>890716</b>
UAE	231789	374811	151567	257330
Bangladesh	77277	171304	90861	165478
Malaysia	73810	165712	54999	101055
Indonesia	40888	108676	31311	97622
Thailand	32770	76746	22317	57545
Vietnam	13102	44758	15767	49573
Turkey	39100	66869	23951	40835
Chinese Taipei/ Taiwan	12951	36916	10114	30454
Iran	3821	13735	6698	23707
Japan	2706	9541	3973	14814
Other countries	29351	78766	15664	52303

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**Table 12 : Exports Value of Felspar  
(Cut & Uncut) : Total  
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
<b>All Countries</b>	<b>88</b>	<b>48086</b>	<b>64</b>	<b>27569</b>
Italy	1	275	17	6297
USA	13	8263	13	5609
U A E	++	168	11	4317
Thailand	14	8194	8	3487
UK	1	312	5	2342
Hong Kong	6	3320	2	904
Belgium	20	12425	-	-
South Africa	8	4467	-	-
Switzerland	10	4073	-	-
Ukraine	3	2590	-	-
Other countries	12	3999	8	4613

*Note : Quantity not given due to partial coverages, value figures however have full coverage.*

**Table - 13 : Exports of Felspar (Cut)  
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
<b>All Countries</b>	<b>88</b>	<b>48086</b>	<b>64</b>	<b>27569</b>
Italy	1	275	17	6297
USA	13	8263	13	5609
U A E	++	168	11	4317
Thailand	14	8194	8	3487
UK	1	312	5	2342
Hong Kong	6	3320	2	904
Belgium	20	12425	-	-
South Africa	8	4467	-	-
Switzerland	10	4073	-	-
Ukraine	3	2590	-	-
Other countries	12	3999	8	4613

**Table - 14 : Exports of Felspar (Uncut)  
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
<b>All Countries</b>	<b>++</b>	<b>785</b>	<b>++</b>	<b>219</b>
Germany	++	416	-	-
Hong Kong	++	358	-	-
Spain	++	11	-	-
UK	-	-	++	219

**Table - 15 : Imports of Felspar (Natural)  
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
<b>All Countries</b>	<b>53127</b>	<b>133122</b>	<b>90</b>	<b>792</b>
France	21	352	-	-
Italy	63	682	21	288
Spain	-	-	18	251
Thailand	53040	132080	-	-
Turkey	-	-	48	229
UAE	3	8	-	-
UK	-	-	3	24

**Table - 16 : Imports Value of Felspar  
(Cut & Uncut) : Total  
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
<b>All Countries</b>	<b>3878</b>	<b>3878</b>	<b>7657</b>	<b>7657</b>
Australia		230		-
Brazil		-		1041
Kenya		-		328
Pakistan		164		-
Tanzania		326		14
Thailand		3158		-
UK		-		1548
USA		-		3748
Zambia		-		978

*Note : Quantity not given due to partial coverages, value figures however have full coverage.*

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**Table - 17 : Imports of Felspar (Cut)  
(By Countries)**

Country	2006-07		2007-08	
	Qty. ( '000 Crt)	Value (Rs. '000)	Qty. ( '000 Crt)	Value (Rs. '000)
<b>All Countries</b>	++	<b>863</b>	<b>1</b>	<b>3748</b>
Australia	++	230	-	-
Thailand	++	633	-	-
USA	-	-	1	3748

**Table - 18 : Imports of Felspar (Uncut)  
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
<b>All Countries</b>	++	<b>3015</b>	++	<b>3909</b>
UK	-	-	++	1548
Brazil	-	-	++	1041
Zambia	-	-	++	978
Kenya	-	-	++	328
Tanzania	++	326	++	14
Pakistan	++	164	-	-
Thailand	++	2525	-	-