

KYANITE, SILLIMANITE AND ANDALUSITE



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KYANITE, SILLIMANITE AND ANDALUSITE

(FINAL RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

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17 Kyanite, Sillimanite and Andalusite

Kyanite, sillimanite and andalusite are unhydrous aluminosilicate minerals that have the same chemical formula Al_2O_3 but differ in crystal structure and physical properties. When calcined at high temperature around 1350 °C to 1380 °C for kyanite and slightly higher for andalusite and sillimanite, these minerals are converted to mullite, ($3 Al_2O_3 \cdot 2SiO_2$) and silica (SiO_2) which are refractory minerals.

Synthetic mullite is made by heating mixtures of alumina and silica or bauxite and kaolin at around 1550 °C to 2000 °C. Refractory are heat resistant materials used in high temperature applications such as furnaces, ladles, kilns, in the metallurgical, glass, chemical, cement and other industries.

RESERVES/RESOURCES

Kyanite

The total reserves/resources of kyanite as per NMI database, based on UNFC system as on 1.4.2015 in the country have been placed at 104.98 million tonnes. Out of these resources, only 0.68 million tonnes are the reserves and 104.29 million tonnes are the remaining resources. Out of total resources, high and medium-grade resources together account for merely 1.74%, low grade 8%, mixed grade 0.73%, quartz kyanite rock, kyanite gneiss rock and kyanite schist 87.1% and granular, others and not-known grades 2.41%. Statewise, share of Telangana is 46% of total resources followed by Andhra Pradesh 30.5%, Karnataka 12.67% and Jharkhand 7.23%.

Remaining 3.60% resources are in Kerala, Maharashtra, Rajasthan, Tamil Nadu and West Bengal collectively (Table-1).

Sillimanite

The total reserves/resources of sillimanite as per NMI database, based on UNFC system in the country as on 1.4.2015 have been placed at 70.20 million tonnes. Out of these resources, the reserves are only 6.50 million tonnes, while about 63.70 million tonnes are the remaining resources. Out of total resources, more than 73.33% are granular high-grade, while quartz sillimanite rocks and sillimanite bearing rocks are about 21.64%. Resources of massive sillimanite of all grades are about 4.83%. The resources are located mainly in Odisha (25.15%), Tamil Nadu (24.87%), Uttar Pradesh (16.30%), Andhra Pradesh (12.52%), Kerala (10.17%) and Assam (6.55%). Remaining 4.44% resources are in Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Rajasthan and West Bengal (Table-2).

Andalusite

The total reserves/resources of andalusite in the country as on 1.4.2015 as per NMI database, based on UNFC system have been placed at 28.20 million tonnes. Most of the resources are of reconnaissance category located in Uttar Pradesh (Table-3).

EXPLORATION & DEVELOPMENT

Details of exploration & development if any are given in the review of "Exploration & Development" in "General Reviews".

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**Table – 1 : Reserves/Resources of Kyanite as on 1.4.2015
(By Grades/States)**

Grade/State	Reserves				Remaining Resources						Total Resources (A+B)	
	Proved STD111	Probable STD121 STD122	Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334		Total (B)
					STD221	STD222						
All India : Total	639121	48958	688079	1505114	568205	2193427	579619	3577402	95869713	-	104293480	104981559
By Grades												
High grade	-	-	-	-	4317	21867	-	297827	114689	-	438700	438700
Medium grade	212881	48958	261839	430490	-	276651	-	34410	381532	-	1123083	1384922
Low grade	426240	-	426240	234210	15930	1178813	386247	2214900	3952872	-	7982972	8409212
High & medium mixed	-	-	-	-	100550	53103	-	93640	106928	-	354221	354221
Medium & low mixed	-	-	-	-	-	-	-	-	48000	-	48000	48000
High, medium & low mixed	-	-	-	13097	89650	10606	-	45000	210025	-	368378	368378
Granular	-	-	-	-	-	-	-	167000	81359	-	248359	248359
Quartz kyanite rock	-	-	-	-	-	-	-	-	81105358	-	81105358	81105358
Kyanite gneiss rock	-	-	-	-	-	-	-	-	5370800	-	5370800	5370800
Kyanite schist	-	-	-	-	-	-	-	724625	4250000	-	4974625	4974625
Others	-	-	-	593710	23491	303166	1012	-	12530	-	933909	933909
Not-known	-	-	-	233607	334267	349221	192360	-	235620	-	1345075	1345075
By States												
Andhra Pradesh	-	-	-	-	-	-	399	-	32003829	-	32004228	32004228
Jharkhand	426240	-	426240	824472	524467	881313	-	1754900	3182363	-	7167515	7593755
Karnataka	-	-	-	637460	15930	113630	386247	1610502	10531529	-	13295298	13295298
Kerala	-	-	-	-	-	-	192360	-	10000	-	202360	202360
Maharashtra	212881	48958	261839	30085	27808	1187479	1012	45000	1684113	-	2975497	3237336
Rajasthan	-	-	-	13097	-	10606	-	-	-	-	23703	23703
Tamil Nadu	-	-	-	-	-	-	-	167000	81359	-	248359	248359
Telangana	-	-	-	-	-	-	-	-	48350000	-	48350000	48350000
West Bengal	-	-	-	-	-	-	-	-	26520	-	26520	26520

Figures rounded off.

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**Table – 2 : Reserves/Resources of Sillimanite as on 1.4.2015
(By Grades/States)**

(In tonnes)

Grade/States	Reserves				Remaining Resources						Total Resources (A+B)		
	Proved STD111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance STD334	Total (B)
		STD121	STD122			STD221	STD222						
All India : Total	323231	5728868	450016	6502115	1020187	135278	20257525	4580083	17790664	16068690	3849600	63702027	70204142
By Grades													
Massive high grade	-	-	-	-	-	-	-	-	-	11903	-	11903	11903
Massive medium grade	-	-	-	-	-	4000	-	-	-	29705	-	33705	33705
Massive low grade	44021	-	15000	59021	300	-	519	-	850000	2273786	-	3124605	3183626
Massive high & medium	-	-	-	-	-	-	-	-	-	19800	-	19800	19800
Massive medium & low	136981	-	7274	144255	-	-	-	-	-	-	-	-	144255
Massive high, medium & low	-	-	-	-	-	-	-	-	-	38	-	38	38
Granular high	128789	5728868	427742	6285399	1019887	120208	20257006	2480083	7590600	13732942	-	45200726	51486125
Quartz sillimanite rock	-	-	-	-	-	-	-	-	-	-	-	3748000	3748000
Sillimanite bearing rock	-	-	-	-	-	-	-	2100000	9350000	-	-	11450000	11450000
Others	-	-	-	-	-	11070	-	-	-	-	-	11070	11070
Unclassified	13440	-	-	13440	-	-	-	-	-	-	-	-	13440
Not-known	-	-	-	-	-	-	-	-	64	516	101600	102180	102180
By States													
Andhra Pradesh	2045	-	37	2082	15	11278	12	267	7430300	1346988	-	8788861	8790943
Assam	-	-	-	-	-	-	-	-	850000	6700	3748000	4604700	4604700
Jharkhand	-	-	-	-	-	-	-	-	-	83000	-	83000	83000
Karnataka	-	-	-	-	-	-	-	-	-	982725	-	982725	982725
Kerala	-	-	-	-	1015625	120000	-	2479816	160300	3369200	-	7144941	7144941
Madhya Pradesh	-	-	-	-	-	-	-	-	64	15516	101600	101600	101600
Maharashtra	181002	-	22274	203276	-	-	-	-	-	55807	-	15580	218856
Meghalaya	-	-	-	-	-	-	-	-	-	4943600	-	55807	55807
Odisha	-	5728868	427705	6156573	-	-	6557013	-	-	-	-	11500613	17657186
Rajasthan	-	-	-	-	300	-	519	-	-	-	-	819	819
Tamil Nadu	140184	-	-	140184	4246	4000	13699981	-	-	3612154	-	17320381	17460565
Uttar Pradesh	-	-	-	-	-	-	-	2100000	9350000	-	-	11450000	11450000
West Bengal	-	-	-	-	-	-	-	-	-	1653000	-	1653000	1653000

Figures rounded off.

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Table – 3 : Reserves/ Resources of Andalusite as on 1.4.2015

(In '000 tonnes)

State	Total Reserves	Remaining Resources			Total Resources (A+B)
	(A)	Inferred STD333	Reconnaissance STD334	Total (B)	
All India : Total	–	4000	24201	28201	28201
By Grades					
Unclassified	-	-	24201	24201	24201
By States					
Low	-	4000	-	4000	4000
Jharkhand	–	4000	1	4001	4001
Uttar Pradesh	–	-	24200	24200	24200

Figures rounded off

PRODUCTION & STOCKS

Kyanite

During 2016-17 production of kyanite at 3,254 tonnes increased by 12% as compared to the previous year. There were 5 reporting mines in both the years. Two principal producers contributed almost the entire production of kyanite during the year (Tables- 4 to 6).

In 2016-17, 3154 tonnes i.e. about 97% of total production of kyanite was of grade 40% Al₂O₃ and above and 100 tonnes i.e. about 3% of total production of kyanite was of grade below 40% Al₂O₃. About 30% of the total production was reported by the public sector.

Mine-head closing stocks at the end of the year 2016-17 were 12,892 tonnes (Table - 7).

The average daily employment of labour was 65 in 2016-17 as against 98 in the preceding year.

Table – 4 : Producers of Kyanite, 2016-17

Name & address of producer	Location of mine	
	State	District
Pavri Kyanite Mines, Cimmco House, A-1 Indra Sagar Apartment, Ravindranath Tagore Marg, Civil Lines, Nagpur- 440 001, Maharashtra.	Maharashtra	Bhandara
Maharashtra State Mining Corporation Ltd Plot No. 7, Ajani Chowk, Wardha Road, Nagpur - 440 015, Maharashtra.	Maharashtra	Bhandara

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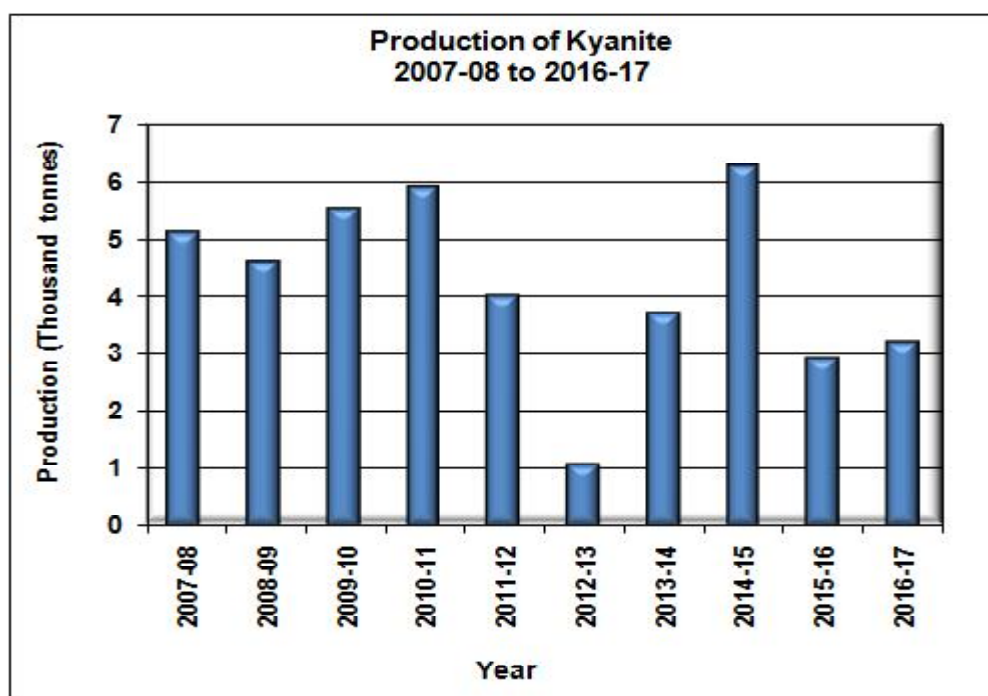


Table – 5 : Production of Kyanite, 2014-15 to 2016-17 (By States)

(Qty in tonnes; Value in ` '000)

State	2014-15		2015-16		2016-17 (P)	
	Quantity	Value	Quantity	Value	Quantity	Value
India	6255	12185	2901	14180	3254	13632
Karnataka	4400	3520	-	-	-	-
Maharashtra	1855	8665	2901	14180	3254	13632

Table – 6 : Production of Kyanite, 2015-16 and 2016-17 (By Sectors/States/Districts/Grades)

(Qty in tonnes; Value in ` '000)

State/District	No. of mines	2015-16				Value	2016-17 (P)			
		Quantity			Value		Quantity			Value
		40% & above Al ₂ O ₃	Below 40% Al ₂ O ₃	Total			No. of mines	40% & above Al ₂ O ₃	Below 40% Al ₂ O ₃	
India	5	2566	335	2901	14180	5	3154	100	3254	13632
Public sector	1	123	79	202	322	1	877	100	977	1909
Private sector	4	2443	256	2699	13858	4	2277	-	2277	11723
Karnataka	1*	-	-	-	-	1*	-	-	-	-
Mysuru	1*	-	-	-	-	1*	-	-	-	-
Maharashtra	4	2566	335	2901	14180	4	3154	100	3254	13632
Bhandara	4	2566	335	2901	14180	4	3154	100	3254	13632

* : Only labour reported.

**Table – 7 : Mine-head Closing Stocks of Kyanite, 2015-16 and 2016-17
(By States/Grades)**

(Qty in tonnes)

State	2015-16			2016-17 (P)		
	40% Al ₂ O ₃ & above	Below 40% Al ₂ O ₃	Total	40% Al ₂ O ₃ & above	Below 40% Al ₂ O ₃	Total
India	465	14054	14519	810	12082	12892
Jharkhand	-	1327	1327	-	1327	1327
Karnataka	-	12182	12182	-	10430	10430
Maharashtra	465	545	1010	810	325	1135

Sillimanite

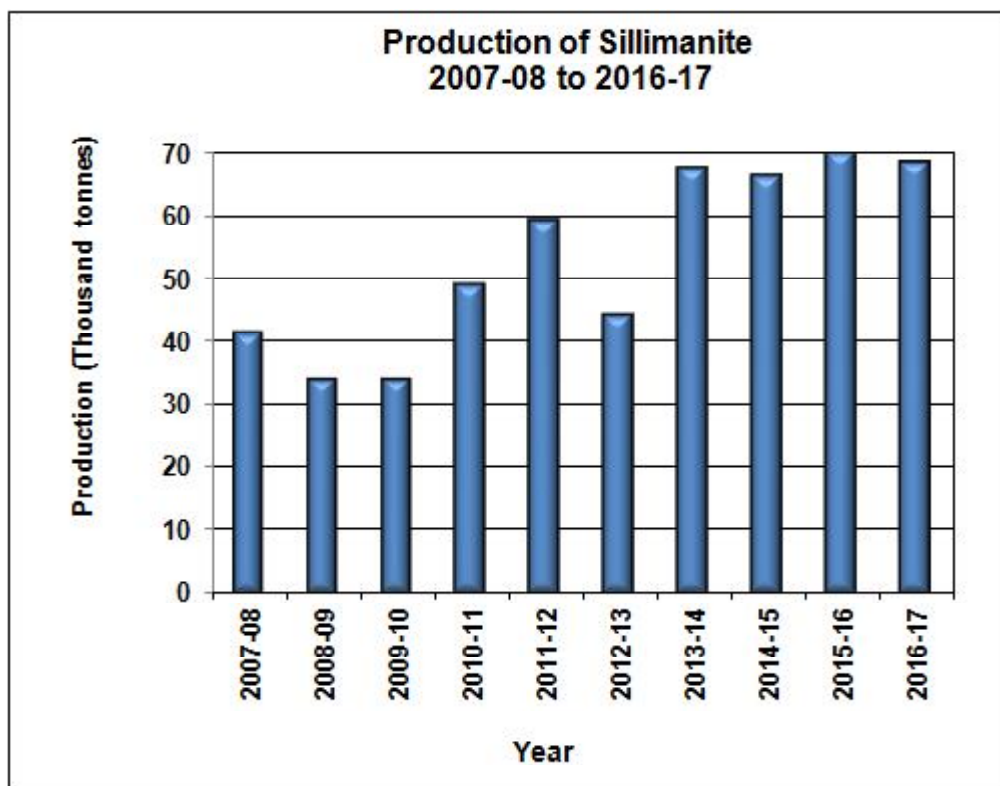
During 2016-17 the production of sillimanite at 68,137 decreased by 3% as compared to previous year. There were 4 reporting mines in the current and the previous year. All the four mines reported production of sillimanite as an associated mineral either with garnet or kyanite during 2016-17.

Ninety nine percent of total production during the year 2016-17 was contributed by three producers. About 37% of total production of sillimanite was reported by the public sector, while remaining 63% of

production was reported by the private sector. Andhra Pradesh, the main producing state contributed 54% of the total production of sillimanite during 2016-17 followed by Odisha (23%), Kerala (14%) and Maharashtra (9%) (Tables - 8 to 10).

Mine-head closing stocks for the year 2016-17 were 28,531 tonnes as against 24,430 tonnes in the previous year (Table - 11).

The average daily employment of labour during 2016-17 was 1,723 as against 1,759 in the previous year.



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Table – 8 : Producers of Sillimanite, 2016-17

Name & address of producer	Location of mine	
	State	District
Indian Rare Earths Ltd, Plot No. 1207, Veer Sawarkar Marg, Near Siddhi Vinayak Temple, Prabhadevi, Mumbai-400 028, Maharashtra.	Odisha	Ganjam
#Trimex Sands Private Limited, Trimex Towers, No.-1, Subbraya Avenue, C.P. Ramaswamy Road, Alwarpet, Chennai - 600 018. Tamil Nadu.	Andhra Pradesh	Srikakulam
*Pavri Kyanite Mines, A/1, Indrasagar Apartments, Ravindranath Tagore Road, Civil Lines, Nagpur- 440 001 Maharashtra.	Maharashtra	Bhandara

Producing as an associated mineral with garnet.
* Producing as an associated mineral with kyanite.

**Table – 9 : Production of Sillimanite, 2014-15 to 2016-17
(By States)**

(Qty in tonnes; Value in `'000)

State	2014-15		2015-16		2016-17 (P)	
	Quantity	Value	Quantity	Value	Quantity	Value
India	66273	456050	69942	509314	68137	534098
Andhra Pradesh	33801	250026	42409	340841	37109	322265
Kerala	7689	69201	5121	49585	9260	86929
Maharashtra	6472	17948	9019	27133	6196	21447
Odisha	18311	118875	13393	91755	15572	103457

**Table – 10 : Production of Sillimanite, 2015-16 and 2016-17
(By Sectors/States/Districts)**

(Qty in tonnes; Value in `'000)

State/District	2015-16			2016-17 (P)		
	No. of mines	Quantity	Value	No. of mines	Quantity	Value
India	4(4)	69942	509314	4(4)	68137	534098
Public sector	4	18514	141340	4	24942	190757
Private sector	(4)	51428	367974	(4)	43195	343341
Andhra Pradesh	(1)	42409	340841	(1)	37109	322265
Srikakulam	(1)	42409	340841	(1)	37109	322265
Kerala	2	5121	49585	2	9260	86929
Kollam	2	5121	49585	2	9260	86929
Maharashtra	1(3)	9019	27133	1(3)	6196	21447
Bhandara	1(3)	9019	27133	1(3)	6196	21447
Odisha	1	13393	91755	1	15572	103457
Ganjam	1	13393	91755	1	15572	103457

Figures in parentheses indicate the number of associated mines with garnet and kyanite.

Table – 11: Mine-head Closing Stocks of Sillimanite 2015-16 & 2016-17 (By States)

(In tonnes)

State	2015-16	2016-17 (P)
India	24430	28531
Andhra Pradesh	2709	3435
Kerala	1980	2388
Maharashtra	16095	18908
Odisha	3646	3800

Andalusite

There was no production of andalusite in the country since 1988.

MINING & MARKETING

Kyanite

Kyanite mines are worked by opencast manual as well as semi-mechanised methods. Generally, the mineral is marketed under three grades: 60% Al₂O₃ and above, 50-60% Al₂O₃ and less than 50% Al₂O₃. These three grades are used in the manufacture of refractories.

Sillimanite

Sillimanite mines are also worked by opencast method. Pohra mine of Maharashtra State Mining Corporation Ltd is semi-mechanised.

Granular sillimanite is obtained from beach sands in Kerala, Odisha and Tamil Nadu as a by-product along with ilmenite, rutile, zircon, garnet, etc. while recovering monazite. The Odisha Sands Complex of IREL in the coastal region of Chatrapur in Ganjam district, Odisha, has the capacity to recover 10,000 tpy granular sillimanite at present. At Chatrapur, mining is carried out by suction dredging with gravel pump. IREL's

Chavara plant in Kollam district, Kerala, presently has an installed capacity of 10,000 tpy granular sillimanite.

At Chavara in Kerala, beach sand mining operations are carried out by IREL in two stages: (i) by means of bulldozers and wheel loaders, and subsequently loading by front-end loaders, wheel loaders and belt conveyors; and (ii) upgrading it to around 93% heavy minerals at Dredge & Wet Concentration Plant and concentrate upgrading unit. The Mineral Recovery Plant (MRP) essentially consists of a dredging system to mine the deposit and a pre-concentration system to separate the valuable minerals and dispose of the waste at the same place from where it was mined. The two systems are mounted on a combined floating platform which keeps moving with the progress of mining. For details regarding mining and processing, etc. of beach sand minerals, review on 'Ilmenite and Rutile' may be referred.

USES

Kyanite, sillimanite and andalusite are mainly used in refractories and ceramic products because of their ability to form mullite phase at high temperature. Mullite is an essential component of high - alumina refractories forming the inner lining of furnaces and high temperature vessels widely used in the production of metals, ceramics, glass and cement. These are used to manufacture refractory products like dense bricks, insulating bricks, monolithic & castables. Sillimanite refractory bricks are extensively used in steel and glass industries and also in ceramics, cement kilns, heat treatment furnaces and petrochemical industries.

SPECIFICATIONS

BIS has prescribed IS:14301-1995 (reaffirmed in 2011) for kyanite used in Refractory Industry. There are two grades i.e. Grade-1 and Grade-2. Composition of kyanite under this specification is Al₂O₃ 58% min for Grade-1 and 54% min for Grade-2; Fe₂O₃ 1.50% max, K₂O + Na₂O 1% max; other constituents as agreed between the supplier and purchaser and Pyrometric Cone Equivalent (PCE) not less than 36 (for Grade-1) and 35 (for Grade-2). Size of the material is 50 to 150 mm or 10 to 50 mm.

BIS has laid down IS:14302-1995 (reaffirmed in 2011) in respect of beach sand sillimanite for use in Refractory Industry, while IS:2045-1962 in respect of natural sillimanite blocks for glass melting tanks furnaces has been withdrawn.

CONSUMPTION

Kyanite

The consumption of kyanite in various industries was 3,400 tonnes in 2016-17 which is about 10% more than previous year. About 91% consumption of kyanite was accounted for by the Refractory Industry and rest of 9% consumption is reported by other industries (Table-12).

Sillimanite

The consumption of sillimanite was 24,200 tonnes in 2016-17, decreased by about 15% over the previous year. Refractory Industry alone accounted for about 83% of consumption and Ceramic Industry (8%) (Table-12).

Table – 12 : Consumption* of Kyanite and Sillimanite 2014-15 to 2016-17 (By Industries)

(In tonnes)

Industry	2014-15	2015-16(R)	2016-17 (P)
Kyanite			
All Industries	3200	3100	3400
Refractory	2900	3000	3100#
Others	300	100	300#
Sillimanite			
All Industries	28200	28400	24200
Ceramic	2400	2400	2400
Foundry	++	1100	1300
Refractory	25500	23700	19300
Others (abrasives, cement, chemicals, etc.)	300	1200	1200

Figures rounded off.

(Due to paucity of data, consumption may not be complete).*

Consumption taken from despatches of 2016-17.

Whereas the apparent consumption for kyanite was 3849 tonnes and 54079 tonnes for sillimanite for the year 2016-17.

WORLD REVIEW

World reserve of kyanite and related minerals is large in the USA. Andalusite is limited to only a few countries. The main producer and exporter of andalusite is South Africa. USA and India are the main producers of kyanite. India is the leading producer of sillimanite. World production of kyanite and related minerals is given in Table-13.

Table – 13 : World Production of Kyanite and Related Minerals (By Principal Countries)

(In tonnes)

Country	2014	2015	2016
Brazil			
Kyanite ^{eb}	200	200	200
France			
Andalusite ^e	68000	68000	65000
India			
Kyanite	6255	2901	3254
Sillimanite	66273	69942	68137
Madagascar	3000 ^e	1800 ^e	2300
Nepal			
Kyanite	12	7	1
South Africa			
Andalusite ^e	270000	270000	270000
USA			
Kyanite ^(a)	89000 ^e	108000	100000 ^e

Source: World Mineral Production, 2012-2016.

(a) Including related minerals.

(b) Including beneficiated & directly shipped material.

The availability of inexpensive refractory-grade bauxite from China served to increase demand for refractories from alternative raw material such as andalusite. Demand for refractories in iron and steel production is expected to have larger increases in countries with higher growth rates in steel production. Increased demand also is anticipated for refractories used to produce other metals and in

the industrial mineral market because of increasing production of cement, ceramics, glass, and other mineral products.

FOREIGN TRADE

Exports

Exports of kyanite during 2016-17 were 153 tonnes which increased marginally by 6% more than the previous year. Exports were mainly to Greece (91%) and Kenya, UAE & Nepal (3% each). While exports of sillimanite decreased by 7% to 14,064 tonnes in 2016-17 from 15,078 tonnes in the previous year. Sillimanite were exported mainly to China (46%) and Nepal (45%). Exports of andalusite during 2016-17 was 150 tonnes, registered entire exports were to Germany (Tables - 14 to 16).

Imports

In 2016-17, imports of kyanite were at 748 tonnes as against 478 tonnes in the previous year. Imports of sillimanite was at 24 tonnes declined drastically by 89% during 2016-17 as compared to the previous year. Imports of andalusite was 10,909 tonnes decreased by 22% during 2016-17. The imports of kyanite were from USA (64%) & China (36%). Japan (92%) and USA (8%) were the main supplier of sillimanite, while South Africa (95%) was the main supplier of andalusite in 2016-17 (Tables - 17 to 19).

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**Table – 14: Export of Kyanite
(By Countries)**

Country	2015-16 (R)		2016-17 (P)	
	Qty (t)	Value (` '000)	Qty (t)	Value (` '000)
All Countries	144	2703	153	3052
Greece	46	924	139	2675
Kenya	-	-	4	179
UAE	++	81	5	163
Nepal	10	62	5	35
Saudi Arabia	32	842	-	-
China	56	783	-	-
Jordan	++	9	-	-
Singapore	++	2	-	-

**Table – 15: Exports of Sillimanite
(By Countries)**

Country	2015-16 (R)		2016-17 (P)	
	Qty (t)	Value (` '000)	Qty (t)	Value (` '000)
All Countries	15078	110847	14064	114678
China	10160	79494	6507	69404
Nepal	3867	11671	6384	25355
Japan	474	10664	480	9347
Belgium	208	2545	234	2853
Thailand	76	1368	120	2052
Germany	22	403	125	1838
Iran	27	312	80	1834
Malaysia	13	56	51	672
UAE	20	1192	9	443
Sri Lanka	25	365	31	390
Other countries	186	2777	43	490

**Table – 16: Exports of Andalusite
(By Countries)**

Country	2015-16 (R)		2016-17 (P)	
	Qty (t)	Value (` '000)	Qty (t)	Value (` '000)
All Countries	-	-	150	2063
Germany	-	-	150	2063

**Table – 17: Imports of Kyanite
(By Countries)**

Country	2015-16 (R)		2016-17 (P)	
	Qty (t)	Value (` '000)	Qty (t)	Value (` '000)
All Countries	478	16913	748	16619
USA	478	16913	478	14607
China	-	-	270	2012

**Table – 18: Imports of Silimanite
(By Countries)**

Country	2015-16 (R)		2016-17 (P)	
	Qty (t)	Value (` '000)	Qty (t)	Value (` '000)
All Countries	214	9044	24	3029
Japan	19	2039	22	2143
USA	19	2954	2	886
France	96	3289	-	-
Turkey	79	527	-	-
China	++	150	-	-
Hong Kong	++	56	-	-
Chinese Taipei/ Taiwan	1	29	-	-

**Table – 19 : Imports of Andalusite
(By Countries)**

Country	2015-16 (R)		2016-17 (P)	
	Qty (t)	Value (` '000)	Qty (t)	Value (` '000)
All Countries	14072	306082	10909	222534
South Africa	12817	267491	10368	205494
France	1127	34855	454	14614
Peru	-	-	79	1684
Japan	8	631	8	656
China	-	-	++	86
USA	120	3105	-	-

FUTURE OUTLOOK

The demand for high quality raw and calcined sillimanite minerals is closely linked to the need for high performance refractories with increased operational lifespans. As the predominant consumer of refractory products, the Steel Manufacturing Industry provides a reliable market indicator of the demand for sillimanite minerals.

The Asia-Pacific region remains the largest market for refractories. As per the Report of the Working Group for 12th Plan (2012-17), the current demand of sillimanite is 32,000 tpy. The production of sillimanite is likely to be increased in coming years to meet the demand. China will remain the leading market on global front. Demand for refractory minerals is likely to scale up as the steel production is increasing in India.