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Granite technically refers to a light-coloured granulose plutonic rock composed of feldspars, plagioclase, quartz (felsic minerals) and minor amounts of mafic minerals, such as biotite, hornblende, pyroxene, iron oxides, etc. But, in the commercial parlance, the term granite has become synonymous with all those crystalline rocks which have pleasing colours, strength to bear the processes of quarrying and cutting & polishing and are used commonly for decorative purposes. Being more resistant to wear and tear as well as weathering, granite is most sought-after stone to be used as building as well as decorative stone. The fascination for granite is due to its taking mirror-like polish, high compressive strength, longevity and beauty. India possesses enormous deposits of all types of dimension stones. It is one of the largest producers of dimension stones in the world. The dimension stone industry employs over one million workforce. This industry plays a vital role in the economy of states like Tamil Nadu, Andhra Pradesh, Karnataka and Rajasthan. Rural economy of many developing states like Madhya Pradesh, Uttar Pradesh, Odisha and North-Eastern States is dependent on this industry.

The granite used for decorative purposes is a costly material in comparison with other materials. Hence, its utilisation and trade within the country has been at a low profile compared with the exports. With the emergence of the rich middle class and spurt in construction activity, the internal trade is on the rise.

Although granite is a minor mineral, it is a major contributor in foreign exchange earnings. India is the second largest exporter of raw granite after China and ahead of Brazil and South Africa. India ranked fifth in the export of processed (value added finished) product. Granite contributed 3.91% exports value of all ores and minerals in 2009-10. The exports value of granite was next only to diamond and iron ore during 2009-10.

RESOURCES

India is endowed with abundant resources of a wide variety of granite comprising over 200 shades. As on 1.4.2005, resources of granite dimension stone of all types are estimated at 37,426 million cubic metres. Of these resources, 1,130 million cubic metres (about 3%) fall in reserves category while remaining 36,296 million cubic metres or about 97% fall in resources category.

Under reserve category, about 23 million cubic metres of all grades fall under proved category while 1,162 million cubic metres fall under probable category. About 93% reserves are located in Madhya Pradesh and Odisha with a share of 86% and 7%, respectively.

Statewise breakup of total resources reveals that Karnataka with about 25% resources followed by Jharkhand (24%), Rajasthan (23%), Andhra Pradesh (6%), Madhya Pradesh (5%) and Odisha (5%) together account for 88% resources. Gradewise classification reveals that about 8% of the total resources fall under black granite while 91% under coloured granite. About 1% reserves and resources are of unclassified grade.

The details of reserves/resources as on 1.4.2005 are given in Table-1.

PRIME VARIETIES OF INDIAN GRANITE

In the world market, there are nearly 300 varieties of granite. India supplies about 200 varieties. Out of these, prime varieties represent a wide spectrum of colour, texture and structure. These prime varieties have substantial resource base. Commercial names of granite are derived from area, colour, patterns, etc.

Karnataka specialises in the production of Ruby red, chilly red, cera grey, Kanakpura multicolour, Himalayan blue and Sira grey varieties of granite. Andhra Pradesh is famous for Black Galaxy, Srikakulam blue and black varieties of granite while Tamil Nadu is abundant in Jet-black and Tippu-white, Kashmir-white and Paradiso sea green varieties of granite. Odisha specialises in pink granite, silver grey, sea weed green, chilka blue, grey wave varieties of granite. Availability of varieties of granite in various states is given in Table- 2.

EXPLORATION & DEVELOPMENT

Keeping in view the increasing demand in both domestic and international markets for new varieties, DMG, Governments of Rajasthan & Karnataka were actively engaged in exploration activities. The details of work carried out by these State Directorates are summarised in Table - 3.

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

(Thousand cubic metres)

Grade/State	Reserves				Remaining resources				Total resources (A+B)			
	Proved STD111	Probable		Total (A)	Pre-feasibility		Measured STD331	Indicated STD332		Inferred STD333	Reconnaissance STD334	Total (B)
		STD121	STD122		STD221	STD222						
All India : Total	23010	1075059	31955	1130024	44220	513249	841284	2064405	32793579	39240	36295977	37426001
By Grades												
Black granite	2694	11489	1933	16116	37920	500099	50934	465940	2089501	-	3144393	3160510
Coloured granite	20316	1063570	30022	1113908	6300	13150	790351	1276665	30666984	39000	32792449	33906357
Unclassified	-	-	-	-	-	-	-	321800	37095	240	359135	359135
By States												
Andhra Pradesh	-	-	-	-	-	-	-	-	2405890	-	2405890	2405890
Assam	-	-	-	-	-	513000	-	800	70150	-	583950	583950
Bihar	-	-	-	-	-	-	-	179000	698612	-	877612	877612
Chhattisgarh	-	-	-	-	-	-	-	-	50057	-	50057	50057
Gujarat	-	-	-	-	-	-	-	-	421296	-	421296	421296
Haryana	-	-	-	-	-	-	-	-	34000	-	34000	34000
Jharkhand	-	-	-	-	-	-	-	651300	8196064	-	8847364	8847364
Karnataka	19212	16617	18983	54812	-	-	4198	1231625	7998043	19000	9252866	9307678
Kerala	140	-	-	140	-	99	-	-	2570	-	2669	2808
Madhya Pradesh	-	969224	-	969224	-	150	-	540	1024170	-	1024860	1994084
Maharashtra	-	-	-	-	6300	-	486925	-	665622	-	1158847	1158847
Meghalaya	-	-	-	-	-	-	-	-	286467	-	286467	286467
Odisha	-	80000	-	80000	-	-	330328	-	1432492	240	1763060	1843060
Rajasthan	-	-	4500	4500	-	-	-	-	8500708	20000	8520708	8525208
Tamil Nadu	-	9218	8472	17690	37920	-	7	-	503818	-	541745	559435
Uttar Pradesh	-	-	-	-	-	-	-	-	494819	-	494819	494819
West Bengal	3658	-	-	3658	-	-	19827	1140	8802	-	29768	33426

Figures rounded off.

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Table – 2 : Varieties of Granite in Various States

State	Variety
Andhra Pradesh	Black Galaxy, Srikakulam blue, Steel grey, Paradiso, Anantapur grey, Silver Galaxy, etc.
Bihar	Tiger skin, Mayurakshi blue, Sawan rose, English teak, black-cheeta, etc.
Gujarat	Sonabadi grey, Balaram pink, Ajapur Galaxy, Godhra grey, Maharaja tiger-black, etc.
Haryana	Steel-grey porphyry, Purplish granite porphyry, Deep pink.
Karnataka	Ruby red, Fish Belly, Himalayan blue, Sira grey, Red multi, Tumkur porphyry, Hassan green, Magadi pink, Tiger black, etc.
Kerala	Tropical green, Paradiso, Kerala white, etc.
Maharashtra	Grey silk, Light pink, Jhansi red, etc.
Madhya Pradesh	Multicoloured, Black granite, etc.
Odisha	Berhampur blue, Silver grey, Seaweed green, Chilka blue, Red pearl, Jeypur and Keonjhar black, etc.
Rajasthan	Mokalsar green, Nagina green, Rosy pink, Blue Pearl, Chima pink, Bala flower, Platinum-white, etc.
Tamil Nadu	Kashmir white, Rawsilk, Paradiso, Pink multi, Colombo Juparana, Tiger skin, Kunnam black, Turaiyur blue, etc.
Uttar Pradesh	Ruby red, Jhansi red, Grey granite, Black granite, etc.
West Bengal	Bero pink porphyry, Streaky gneiss, Purulia black, Birbhum pink, Spotty black, etc.

Table – 3 : Details of Exploration for Granite during 2009-10

Agency/ State/ District	Location/ Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
DMG, Karnataka							
Chitradurga	Dasarahalli & Lambanihalli	1:50,000	500	–	–	15	The area comprises Peninsula gneissic complex and later intrusive bodies as granite, dolerite, quartz and pegmatites veins. About 1.58 million cu m resources were estimated to a workable depth of 20 m.
DMG, Rajasthan							
Jalore	Around Tehsil Raniwara	1:10,000 1:2,000	5.0 1.0	– –	– –	1	Isolated exposures of granite have been observed around the villages Slyakra, Sanpur & Bug.
Jaisalmer	N/V Rampura (Chauk), Guddi ka Tala & Sindhion ki Dhani	1:50,000 1:10,000 1:2,000	50.00 15.0 1.0	– – –	– – –	15	About 0.50 to 0.75 sq.km granite bearing area was observed. The size of granite boulders varies in dimension from 1x1x0.50 m to 2x1.5x1m.
- do -	N/V Dharvi	–	305 sq m 22 sq m 4 sq m	– – –	– – –	15	The exposures of granite were seen widely spread may be more than 2-2.5 Sq. km area. This granite was reddish brown in colour.

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PRODUCTION

Granite is declared as a “Minor Mineral,” under the MMDR Act, 1957 and falls under the purview of the State Governments. Therefore, precise data on production of granite are not available. The production of granite compiled from the data received from various states is given in Table-4.

Major production of granite in raw as well as processed form is generally from Tamil Nadu, Karnataka, Andhra Pradesh, Rajasthan, Gujarat, Uttar Pradesh and Odisha.

The important granite producing centres in Tamil Nadu are Dharmapuri, Erode, Madurai, Salem, Virudhunagar and Vilupuram districts. In Rajasthan, production centres are mainly spread in the districts of Jalore, Pali, Sirohi, Barmer, Ajmer, Jaisalmer, Jhunjhunu and Jodhpur. Karnataka is another important producer of granite varieties occurring in the districts of Bengaluru, Mysore, Gulbarga, Hassan, Raichur and Kolar. However, production data are not available from this State. The occurrences of granite have been reported from three districts of Uttar Pradesh, namely Lalitpur, Mahoba and Banda. However, almost all the production comes from Lalitpur district. In Andhra Pradesh, important mining areas are located in the districts of Chittoor, Anantapur, Kurnool, Prakasam, Srikakulam, Warangal, Karimnagar and Khammam.

The granite resources of Gujarat are localised in the districts of Mehasana, Banaskantha, Sabarkantha, Panchmahal, Dahod, Vadodara, Amreli, Bhavnagar and Kachchh. Bihar, Kerala, Odisha and West Bengal also produce granite.

Details regarding production of processed granite are not available. However, it is presumed that the processed material exported can be taken as production level in the country with addition of 5 to 15% for internal use. It may be mentioned here that the country is in a position to produce the required quantity of granite to meet demand of both domestic as well as export markets.

MINING

Production of blocks of considerable size and weight is a special feature of granite mining. The process and equipment used for granite mining differ considerably from those used for mining other minerals. The mining of granite involves two important stages of operation: one is actual block splitting either from sheet rock or boulder and the other operation involves many items of works, such as removal of weathered zone or overburden, opening of faces, lifting of cut blocks, transportation and many other ancillary work before and after the block splitting.

The actual block splitting from the sheet rocks or boulders is mainly done manually or in some

**Table – 4 : Production of Granite, 2006-07 to 2008-09
(By States)**

(Value in Rs.'000)

State	Unit	2006-07(R)		2007-08		2008-09 (P)	
		Quantity	Value	Quantity	Value	Quantity	Value
India	–	–	13963287	–	15319386	-	16148543
Andhra Pradesh	cu m	796880	13308421	787557	14608299	761078	15463740
Chhattisgarh	cu m	145	167	344	398	344	398
Gujarat	cu m	47169	8648	55139	11159	55139	11159
Jharkhand	cu m	*	*	*	*	*	*
Kerala	cu m	2341	47998	1829	38583	737	29480
Rajasthan	tonnes	335092	234053	362692	505297	358213	493766
Tamil Nadu	cu m	*	*	*	*	*	*
Uttar Pradesh	cu m	20800	364000	24900	155650	24000	150000

Source: State Governments.

Note: Figures have been repeated wherever necessary, due to non-availability of data.

* Data awaited from State Governments.

cases by semi-mechanised methods, whereas the other operations, such as removal of overburden, lifting and transportation of cut blocks, etc. are carried out by mechanised method. There are a very few mines which adopt the modern method of block splitting by using flame-jet burner and diamond wire saw for cutting. Heavy-duty derrick cranes of capacity to handle 50-tonne blocks from a depth of more than 60 m has brought revolution in granite quarrying by way of more output with less cost. The percentage recovery of granite is quite low and it varies from 5 to 15% because of unscientific mining method.

Efforts are being made in adopting more modern and scientific mining methods to enhance the recovery of dimensional blocks. For this purpose, 'Water Jet Cutting', a new technique is used. In this technique, water with tremendous pressure is passed through an orifice to form a jet. This jet is used to cut into the primary blocks as well as secondary blocks. The cutting loss in this process is minimum and there is no damage to adjacent block as in case of blasting.

PROCESSING INDUSTRY

The processing of granite in India is an age-old phenomenon and started in a small way in 1930s when some trimmed blocks as kerbstones were exported to UK. Since then, semi-hand-worked or hand-polished granite tomb stones found their acceptability in UK. Granite processing basically involves sawing or cutting of raw blocks into the tiles/slabs of required size & thickness and polishing of sawn-off surfaces. Other ancillary functions involve edge cutting, milling, boring and contouring for enhancing the quality and price of production. In India, the processing industry is in three sectors; namely, small-scale units, medium-scale units and 100% export-oriented units (EOU). The processing industry of granite in the country has been developed over the years. The share in exports of processed material has increased.

Centre for Development of Stones (CDOS), registered as a non-profit making society, is the common facilities centre for the entire stone industry, including granite being developed under the National Programme for Development of Stone

Industry in India (NPDSI), which is a joint effort of Govt. of India, and United Nations Industrial Development Organisation (UNIDO). CDOS was set up as an autonomous organisation by Govt. of Rajasthan and Rajasthan State Industrial Development & Investment Corp'n. Ltd (RIICO) at Jaipur, with an objective to develop, promote and support the dimensional stone sector and related industries in India. It also has testing centre for testing of stones as per international standards.

USES & SPECIFICATIONS

Uses

Granite is the most sought-after building stone since long. In the ancient times, the granite pillars and beams were preferred material to support the huge structures of temples and palaces and for making protective walls around them. With the invention of modern tools of greater hardness and polishing ability, the use of granite has rather increased for aesthetic values. The modern motorised tools of tungsten carbide and brazed diamond have enabled the user to cut & polish granite as per the specifications of the building sector. Presently, cut and polished granite slabs of 20 mm thickness are preferred for flooring, while tiles of 10 or 12 mm thickness are used for cladding. In addition to this, gravestones and monuments of various shapes and sizes are also in vogue. Because of the flexibility of the cutting tools, many artifacts of granite for decorative purposes are being made.

Granite also finds its application in making garden furniture, such as benches, fountains and many other articles which are used for landscaping and/or decorative purposes. The cut-to-size small blocks are used as cobblestone, kerbstone, road sidings and many other innovative uses.

Crude granites are utilised for structural purpose after little dressing & sizing whereas processed granites are used mostly in the construction of buildings and monuments and for interiors and exterior facing. Because of its superior wear resistance and non-denting quality, granite is used for various meteorological and engineering instruments, such as surface plates, straight edges, parallels, cubes, V blocks and work-mounting tables of co-ordinate measuring machines.

The surface plates are used as flat datum surface whenever precise measurements of dimensions and geometrical relationships are to be carried out. For this purpose, harder variety of granite is required so that it can bear the high-degree of grinding, polishing and calibration for achieving flat surface. It has been found that granite which is to be used for surface plates should have a close grain size, homogeneity, high density and hardness, uniform colour and low moisture absorption. The granite should be free from flaws.

Specifications

The properties of granite which are normally valued for exploitation are compressive strength, tensile strength, density, p-wave velocity, etc. For the marketability, other requirements like colour, texture, granularity, size, water absorption, porosity, hardness, moisture content, etc. are also essential. Raw blocks should be free from normal defects like fractures, joints, shears, hairline cracks, segregation, veins, etc.

The snippets of BIS specifications for granite are given below:

IS: 3316 - 1974 (First Revision; Reaffirmed 2003) Specifications for Structural Granite

This standard covers section, grading and strength requirements of structural granite for various constructional uses. The general requirements as per the specifications are that granite shall be free from flaws, injurious veins, cavities and similar imperfections that would impair its structural integrity and would affect adversely its strength and appearance. The strength requirements as per IS: 3316-1974 are as follows:

- i) The compressive strength when tested according to IS: 1121-1974 (Part 1) shall be not less than 1,000 kg/cm².
- ii) The true specific gravity when tested according to IS:1122-1974 shall not be less than 2.6.
- iii) The water absorption when tested according to IS: 1124-1974 shall not be more than 0.50%.

The shape of slabs shall be rectangular or square and of specified dimensions with a tolerance in length and breadth shall be 12 mm and thickness 1 mm. The dimensions of blocks

for masonry shall be as specified. The tolerance shall be allowed 15 mm for facing blocks.

IS:14223 (Part 1) - 1995; (Reaffirmed 2001)–Specifications for Polished Building Stones: Pt I Granite

This standard covers physical properties and finish requirements of polished granites used for various purposes. The general requirements as per the specifications are that the granite should be free from all imperfections and deleterious minerals that may interfere with the appearance, strength, structural integrity and its amenability to take good polish. Imperfections are mostly imparted by the textural variations which is a function of degree of uniformity and the distribution of the constituent minerals. Hairline cracks/joints, flower, moles, knots, white and dark lines due to segregation of light-coloured minerals in multicoloured granite and ferromagnesium minerals in light-coloured granites are considered to be the imperfections. Granite should be free from deleterious minerals, such as pyrite, marcasite, biotite, chlorite and ilmenite which interfere with the colour and appearance on weathering and also affect polishing characteristics.

The shapes of the slabs shall be rectangular or square and of specified dimensions with a tolerance in length and breadth shall be +2 mm and thickness +1 mm. The bottom face may be rough but the top surface shall be fine-polished and joint faces shall be dressed with the top surface without hollowness and spalling off.

The physical properties of granite shall conform to the requirements given in Table-5. Surface of the polished granite shall be mirror-finish without any hairline crack. The polish on the surface shall be checked with glassometer and shall not be less than 95%.

On the international scene, with the formulation of European Economy, the CEN Norm has come into force. As per CEN TC 246, various standards of stones have been formulated. The objectives of these standards are to oblige the companies to have the tests of the different stones being commercialised so as to allow the users the choice of the stone with desired physical characteristics according to its use. It is mandatory for every company doing business with European Union to mark their product with 'CE' marking from March 2004 onwards.

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Table – 5 : Physical Properties of Granite as per IS : 14223 (Part 1) -1995

Sl. No.	Characteristic	Requirements	
		Pink granite	Multicoloured & grey granites
1	Moisture content (%) (max)	0.15	0.15
2	Dry density (m/v)	2.58 to 2.63	2.60 to 2.68
3	Apparent specific gravity (min)	2.75	2.75
4	Water absorption (%) (max)	0.50	0.50
5	Porosity (%)	1.02 to 2.50	1 to 2
6	Compressive strength (kg/cm ²)	1000-1500	1300-2200
7	Tensile strength (kg/cm ²) (min)	90	90
8	Shear strength (kg/cm ²)	280-425	300-540
9	Hardness (Mohs' scale)	6 to 7	6 to 7
10	Hardness (Schmidt No.)	80-100	85-110
11	Hardness (Shore No.)	50-60	46 to 61
12	Ultrasonic pulse velocity	5000	5000
13	Resistance to wear	Not greater than 2 mm, on an average and 2.5 mm for any individual specimen	Not greater than 2 mm, on an average and 2.5 mm for any individual specimen

POLICY

Granite is a 'Minor Mineral' under the MMDR Act, 1957. The grant of various mineral concessions for granite is therefore, administered under the Minor Mineral Concession Rules of the respective State Governments. However, the Granite Conservation and Development Rules, 1999 aims at uniform rules for conservation, systematic development and scientific exploitation of granite resources. GCDR, 1999 inter alia, provides for:

Prospecting Licences (PL) prior to granting mining lease; Period of PL; Minimum and maximum period of mining lease and for renewals; Minimum and maximum area of lease; Preparation of scheme of prospecting ; Mining Plan to be prepared for grant of mining lease; etc.

As per the export-import policy for 2009-14 and the Foreign Trade Policy thereunder, the imports of granite monumental and building stone falling under heading No. 2516 (whether or not roughly trimmed or cut, by sawing or otherwise, into blocks or slabs of a rectangular shape) are restricted. On the other hand, worked granite blocks/tiles under sub-heading 680223 can be imported freely. There are no restrictions on exports of granite and items under Chapter 25 and Chapter 68.

ENVIRONMENT

The mining of granite started initially in the bouldery zone, had little damage to the environment. As more and more blocks in huge sizes were required to meet the demand, the sheet rock was approached by making cut in the ground and by removing top soil or overburden, which resulted in general degradation of environment.

Environmental problems are similar to any opencast mining operations. The general degradation of land due to unscientific and selective mining is a common feature. Besides air pollution causing breathing problems, the blasting and movement of heavy vehicles generate dust and aggravate air pollution in addition to noise pollution.

The processing of granite requires huge quantities of water for cutting and polishing. In some cases, kerosene and lime water are used as coolants for cutting purpose. Although most of the kerosene and lime is recycled, there are always chances of mixing these coolants with natural water courses.

Sludge generated during cutting needs proper disposal to avoid increased silting and pollution of the natural waterways.

For abating environmental pollution, guidelines have been spelt out in GCDR, 1999. The technology for making artificial stone called

Terrazzo will prove to be a boon for the utilisation of waste generated during mining and processing.

Hampshire. Besides, USA imported dimension stones from Brazil (37%), China (28%), Italy (14%) and India (13%) in terms of value.

WORLD REVIEW

World dimension stone production including granite is estimated to be around 107 million tonnes in 2009, at about the same level as in 2008. The principal producers by volume were: China, India, Turkey, Iran and Italy which accounted for about 71% of the global production.

China

China is the main world producer and USA the main customer of granite. There are four main regions for natural stone production and handling imports and exports: the provinces of Shandong, Fujian, Sichuan and Guangdong. The key centres of Chinese stone processing have been created mainly in Shandong, Fujian and Guangdong. Their chief function is to process local and imported materials into products for decorative interior finishing. Large quantities of natural stones are also imported for processing into gravestones for the Japanese and Korean markets.

Brazil

Brazil is the largest producer of natural stone in the world and well-known for producing prime varieties like Juparna, Classico and Tijuca black, from quarries located at the outskirts of Rio. Major areas of production are in Minas Gerais where multicoloured granite is produced. The yellow Veneziano variety of granite is produced in Victoria State.

More than half the Brazilian production is being exported, mostly to the North American market. In terms of weight, around half the Brazilian natural stone exports include rough blocks of granite.

Italy

Italy has a broad, in-depth know-how of stone quarrying and processing based on centuries of experience, but in the mass production segment, it has been overtaken by China, India, Iran and Brazil.

USA

The natural stone market in USA has grown strongly in the past years. USA has gradually become second most important consumer of natural stone after China, in the world, in absolute figures.

In USA, dimensional granite was produced to the tune of 469,000 tonnes in 18 states, mainly in Georgia, Vermont, North Carolina, Massachusetts and New

FOREIGN TRADE

Exports

Granite is an important commodity amongst ores and minerals which is being exported from the country. It is mainly traded in the form of crude or roughly trimmed blocks; as cut blocks and slabs; and as polished blocks and tiles. The export value of granite (total) increased to Rs. 4,994 crore in 2009-10 from Rs. 4,815 crore in 2008-09 and contributed about 3.91% of all-India exports of minerals & ores, next only to diamond and iron ore exports. The share of granite (others) was 49% at Rs. 2,471 crore that of crude or roughly trimmed blocks was about 32% at Rs. 1,617 crore followed by granite (polished blocks/tiles) with 13% at Rs. 672 crore, and granite (cut blocks/slabs) 5% at Rs. 234 crore. China was the most important buyer for granite and its share in the total value of exports of granite was 24%, followed by USA (14%) and Germany (6%) (Tables - 6 to 10).

Imports

In 2009-10, imports of granite (total) increased to 51,214 tonnes from 50,786 tonnes in the previous year. Out of the total imports, 33,072 tonnes were of crude and roughly trimmed granite, 3,286 tonnes of cut blocks/slabs, 6,267 tonnes of polished blocks/tiles and 8,589 tonnes of other granite. Granite was mostly imported from Norway (47%) and China (11%) (Tables - 11 to 15).

Table – 6 : Exports of Granite: Total (By Countries)

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	3958853	48149007	3827668	49937324
China	1807702	11285510	1913478	12209278
USA	403847	7996484	233917	6850975
Germany	72275	2613890	70974	2789523
Italy	326527	2941653	172235	2421686
UAE	113777	2246131	109642	2219047
U K	56628	1927104	54536	2146005
Hong Kong	242384	1562952	280283	2099809
Belgium	113781	1922514	90366	2091350
Turkey	65373	1362852	80657	1894020
Netherlands	36871	1227659	36533	1314703
Other countries	719688	13062258	785047	13900928

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**Table – 7 : Exports of Granite
(Crude or Roughly Trimmed)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	2641496	16334115	2598235	16165697
China	1674107	9683914	1750589	10231794
Hong Kong	229435	1407312	254189	1713576
Italy	285467	2069779	125603	932920
Chinese Taipei/Taiwan	129248	817424	143543	901614
Macao	–	–	100334	648778
Belgium	77615	539268	47382	365241
Norway	30311	194742	27583	185192
Thailand	18708	166709	15769	177504
Croatia	16944	126327	12111	123313
Spain	54337	454551	9635	77711
Other countries	125324	874089	111497	808054

**Table – 8 : Exports of Granite (Cut Blocks/Slabs)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	379326	1995799	295794	2341327
China	76120	582331	122056	956924
USA	180220	506297	57443	237686
Hong Kong	8792	83840	21229	214245
UAE	6649	62122	10280	150299
Nepal	19222	130872	22245	143399
Chinese Taipei/Taiwan	4806	47813	11996	120818
Japan	1182	11499	5378	59427
UK	12381	101529	6647	57791
Italy	7595	65526	4315	47691
Germany	11581	65819	4063	22213
Other countries	50778	338151	30142	330834

**Table – 9 : Exports of Granite (Others)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	629538	20212224	726134	24710807
USA	127130	4972614	120739	5149464
Germany	35230	1582278	45961	1995671
UK	30925	1445698	39126	1847451
Turkey	46735	1105357	74248	1770595
UAE	73759	1557182	76526	1682872
Belgium	19453	816540	26910	1248470
Italy	21385	478768	32205	1075192
Netherlands	18382	767978	23128	968998
Canada	15466	633491	17959	780379
Poland	16036	497524	22200	666469
Other countries	225037	6354794	247132	7525246

**Table – 10 : Exports of Granite
(Polished Blocks/Tiles)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	308493	9606869	207505	6719493
USA	59816	2360761	34408	1373203
Germany	21207	939150	16229	748259
China	36380	687915	26014	646880
Belgium	13277	547202	10443	427452
Italy	12080	327580	10112	365883
UAE	25822	552938	15568	334449
Netherlands	9228	399254	6952	308995
Nigeria	16881	383510	11137	277374
UK	8075	346846	5760	217696
Poland	13218	329604	7693	200877
Other countries	92509	2732109	63189	1818425

**Table – 11: Imports of Granite: Total
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	50786	996647	51214	1016841
Norway	16731	352702	23972	444655
China	3467	99395	5873	135699
Saudi Arabia	7307	125395	2877	79523
South Africa	3568	59768	3850	63523
Finland	3720	55468	3428	59171
Brazil	1372	41927	2557	46669
Italy	3710	71271	2027	43299
Ukraine	1175	18143	2136	34260
Madagascar	327	11702	618	20182
Turkey	4146	51437	–	–

**Table – 12 : Imports of Granite
(Crude or Roughly Trimmed)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	15771	350185	33072	618697
Norway	6421	159545	19611	367040
South Africa	2574	43031	3077	50119
Finland	989	14934	2388	42228
Brazil	253	14198	1805	30628
Angola	–	–	1177	30052
Ukraine	880	13557	1753	28137
Saudi Arabia	2570	51537	1499	26504
Madagascar	288	10815	618	20182
Italy	393	7800	366	6412
USA	245	9682	51	815
Other countries	1158	25086	727	16580

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**Table – 13 : Imports of Granite
(Cut Blocks/Slabs)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	21562	365965	3286	57671
Norway	7679	142660	1089	19980
Italy	2592	44520	1129	16997
Finland	1715	27732	300	8028
China	459	9212	204	3790
Brazil	714	15230	134	2623
South Africa	300	5149	51	704
Egypt	826	5467	–	–
Iran	1063	19088	–	–
Saudi Arabia	1559	36496	–	–
Turkey	4146	51437	–	–
Other countries	509	8974	379	5549

**Table – 14 : Imports of Granite
(Polished Blocks/Tiles)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	8306	136055	6267	159809
Saudi Arabia	3139	36914	1279	52031
Norway	2417	44873	2755	49138
China	178	4607	366	14347
South Africa	564	9962	455	9354
Brazil	52	2795	347	7570
Italy	277	7468	266	7057
Hong Kong	–	–	129	4921
Spain	–	–	146	3735
U S A	56	3595	56	3040
Finland	940	11985	157	2351
Other countries	683	13856	311	6265

**Table – 15 : Imports of Granite (Others)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	5147	144442	8589	180664
China	2680	83506	5293	117299
Italy	448	11483	266	12833
Norway	214	5624	517	8497
USA	25	809	306	7501
Finland	76	817	583	6564
Brazil	353	9704	271	5848
Ukraine	195	3235	305	4747
South Africa	130	1626	267	3346
Japan	24	4921	17	300
Germany	368	6593	2	83
Other countries	634	16124	762	13646

FUTURE OUTLOOK

The granite resources in the country are very large which can last for hundreds of years to meet demand - both domestic and export. The Indian granites can match the best granites produced in the world in terms of quality. The Indian granite is well established in the world market and it brings considerable amount of foreign exchange to the country.

The mining and processing techniques of granite adopted in the country have improved but need further improvement/upgradation so as to enable the Indian granite to compete in the international markets, especially with countries like China, South Africa, Italy, Brazil and Canada. The Granite Conservation and Development Rules, 1999 are expected to bring uniformity and stability in quarry leases for granite and facilitate scientific mining which will ultimately help in proper planning, utilisation and management of granite resources in the country.