

56 Marble

Marble is a 'minor mineral' as defined in Clause (e) of Section 3 of Mines and Minerals (Development & Regulation) Act, 1957. The term "marble" is derived from the Latin word Murmur which in turn is said to have been coined from Greek word Marmorous meaning shining stone. It is known for its pleasant colours, smooth and uniform texture, moderate hardness, amenability to be quarried into big blocks, smooth & shiny polished surface and silky feel. Marble occupies a unique position among other dimension stones, because of its aesthetic value.

In terms of geological definition it is a metamorphosed limestone produced by recrystallisation under condition of thermal and also regional metamorphism. In commercial parlance almost any rocks consisting of calcium and/or magnesium carbonate which can take polish easily more especially unmetamorphosed limestone, are termed as marble. Marble is not a prime export commodity like the dimension stone, granite. Its internal demand has always remained high and most of the production added with recent increase in imports is consumed within the country. Marble is the most preferred stone in India among all dimension stones.

RESOURCES

The occurrences of marble have been reported from many states, viz., Rajasthan, Gujarat, Haryana, Andhra Pradesh, Madhya Pradesh, Jammu & Kashmir, Maharashtra, Sikkim, Uttar Pradesh and West Bengal. Among the above states, marble deposits of economic importance are localised in Rajasthan, Gujarat, Haryana, Andhra Pradesh and also in Madhya Pradesh as per the recent reports.

Rajasthan has the distinction of having the best among Indian resources of good quality marble. Out of 32 districts, 20 districts have marble in one or the other form. The important regions of marble occurrences in Rajasthan are:

- i) Udaipur - Rajsamand - Chittorgarh region;
- ii) Makrana - Kishangarh region;
- iii) Banswara - Dungarpur region;
- iv) Andhi (Jaipur) - Jhiri (Alwar) region; and
- v) Jaisalmer region.

The important deposits of marble in Rajasthan are given in Table - 1.

Table - 1 : Important Deposits of Marble in Rajasthan

Sl.No.	Name of deposit	District
i)	Agaria, Amet, Kilwa, Morwad, Dharmita, Katre, Parvati Koyal, Morchana, Arana, etc.	Rajsamand
ii)	Makrana, Borawad (White), Chosira Dwagri (Pink), Kumari	Nagaur
iii)	Kesariaji (Rikhabdeo), Odwas	Udaipur
iv)	Babarmal (Devimata), Rajnagar	Udaipur
v)	Tripura Sundari-Talai-Odabagi-Bhimkund-Vithaldeo, Prithvipura, Paloda, etc.	Banswara
vi)	Andhi, Bhainslana, Todi-ka-Bas	Jaipur
vii)	Jhiri, Sariska, Rajgarh, Badampur, Moti-Dungri, etc.	Alwar
viii)	Selwara-Dhanwar-Koteswar	Sirohi
ix)	Jahazpur, Kekri, Manoharpur, Asind, Banera, Shahpura	Bhilwara
x)	Kalyanpur-Narwar-Sardhana	Ajmer
xi)	Patan-Rampura, Kela-Dungari	Sikar
xii)	Dagota	Dausa
xiii)	Umar	Bundi
xiv)	Sabla, Nandli-dad, Peeth, Manpur, Dachki, etc.	Dungarpur
xv)	Mandal, Deh	Chittorgarh
xvi)	Pachori Chadi, Moriya Munjasar, etc.	Jodhpur
xvii)	Bar-Sendra Sarangwa, Sevari, Kundal	Pali
xviii)	Dunkar, Bidasar, Dujara	Churu
xix)	Mooisagar, Amarsagar, Habur, Naripa	Jaisalmer

MARBLE

The marbles of Rajasthan are in various colours and shades. The Makrana area is famous for pure white crystalline marble. Other varieties found in Makrana area is Albata, Adanga, Dongri Pink, etc. The marble from Rajsamand area is mined extensively. It is off-white and greyish-white. The internationally acclaimed variety of green marble comes from Rikhabdeo-Kesariaji area, 60 km away from Udaipur. The green marble has various shades of green with white and black network and patches. The marble from Babarmal is pink and is marketed as Indian Pink. It is a fine-grained hard marble having black and white bands. The marble from Bhilwara is white to off-white, fine to medium-grained hard marble having black and white bands. The marble from Banswara is white to off-white dolomitic marble and is soft. It is used generally for cladding purpose. The white to greyish-white marbles of Jaipur area are being sold under the trade name Andhi Pista, a white marble having green laths of serpentine; onyx; Indo-Italian and Black Marble. The Bhainslana marble is dark-black.

Gujarat has vast resources of marble in Banaskantha, Bharuch, Vadodara, Kachchh and Panchmahal districts. The Ambaji area in Banaskantha district and Chinchpura area in Vadodara district are the main producing centres. The white marble of Ambaji is known for its amenability to carving. Other deposits in Banaskantha district are Jarivav, Kumbharia, Kateswar, Bheroj and Khikla. Marble of Vadodara district occurs in various shades, viz., green, white, pink and cream. Marble of Bharuch varies in colour from black to green and red. The yellow marble of Kachchh is thin-bedded, sometimes fossiliferous and blockable deposits occur at Bhulawara- Chinchpura belt.

In Haryana, marble deposits are located in the district of Mahendragarh. Most important localities are Antri-Beharipur, Zainpur, Chappra-Bibipur, Nangaldurgu, Islampur and Dhanota-Dhancholi. Marble of this area occurs in variegated colours and banded forms. It enjoys the reputation as 'Patiala Marble' with black and white bands.

Of late, the world-famous marble rocks 'Bhedaghat' near Jabalpur in Madhya Pradesh have attracted entrepreneurs from Rajasthan. The extension of these rocks in between Jabalpur and Katni is being quarried. The marble from these areas is exploited for its off-white, fine-grained, banded attributes. A number of quarries are under operation.

Marble deposits of Maharashtra are of calcitic and dolomitic type which are located in the areas of Katta-Hiwara, Kadbikhera, Sakaritola, Pauni, Chorbaoli, Deolapar, Mansar, Kandri, Chargaon, Junewani villages in Nagpur district. In Katta-Hiwara, the marble is light-pink to grey in colour. The marble of Kadbikhera-Sakaritola is pink calcitic marble while the marble deposits of Mansar and Kandri areas are dolomitic type.

In Uttarakhand, thick impersistent bands of white marble occur in massive limestone in Pithoragarh district.

In Mirzapur district of Uttar Pradesh, two marble deposits at Hingha and Geria are of good quality and can yield blocks for limited requirement.

In Jharkhand, huge deposits of marble are available in Semra-Salatua and adjoining areas of Palamu. Pink marble occurrences are reported from Hesadih area, Singhbhum district.

MARBLE

The marbles of Khammam area of Andhra Pradesh are white and green. Occurrences of pink, purple, yellow and variegated marbles are reported in Cuddapah, Kurnool and Anantapur districts. The dolomitic marble of Cuddapah, Kurnool and Anantapur districts is other upcoming resource centre for off-white, coloured, greyish-black marbles which take good polish and are being exploited by private entrepreneurs.

On the basis of available data, IBM has prepared a mineral inventory of marble reserves and resources as per UNFC system as on 1.4.2005 which is furnished in Table - 2. The total resources of all grades of marble are placed at 1,793 million tonnes. Of these, only about 4.7 million tonnes (0.3%) fall under 'reserve' category and about 99.7% under 'remaining resources' category. Gradewise, about 62% resources fall under unclassified and not-known grades, 38% under off-colour grade and a meagre quantity under white colour grade. The available data on marble resources reveals that about 63% resources are in Rajasthan and 23% in Jammu & Kashmir.

The remaining resources are distributed mainly in Gujarat, Chhattisgarh, Maharashtra, Haryana and Uttrakhand in descending order.

EXPLORATION

The State Directorate of Mines & Geology, Government of Rajasthan carried out exploration for marble in 2006-07 in Jaisalmer, Jodhpur and Nagaur districts. The details of exploration carried out are given in Table - 3. No exploration was reported for marble in 2007-08.

PRODUCTION

The total production value of marble increased from Rs.594.6 crore in 2005-06 to 636.8 crore in 2006-07. Rajasthan alone accounted for more than 94% output value followed by Madhya Pradesh and Gujarat. Production of negligible values was reported from Andhra Pradesh, Orissa and Jharkhand together sharing less than 1% in 2006-07 (Table - 4).

**Table - 2 : Reserves/Resources of Marble as on 1.4.2005
(By Grades/States)**

Grade/State	Reserves			Remaining resources				Total resources (A+B)	
	Probable		Total (A)	Pre-feasibility		Indicated STD332	Inferred STD333		Total (B)
	STD121	STD122		STD221	STD222				
All India : Total	2507	2193	4700	27805	236316	17129	1506688	1787938	1792638
By Grades									
White colour	346	27	373	-	1393	-	6800	8193	8566
Off-colour	26	83	108	27805	213052	-	436578	677435	677543
Unclassified	-	-	-	-	21870	-	1058661	1080531	1080531
Not-known	2136	2083	4219	-	-	17129	4650	21779	25998
By States									
Andhra Pradesh	-	-	-	-	-	-	3	3	3
Chhattisgarh	-	-	-	-	-	-	83000	83000	83000
Gujarat	-	-	-	26571	45000	17129	5040	93740	93740
Haryana	-	-	-	1234	1602	-	19492	22328	22328
Jammu & Kashmir	-	-	-	-	-	-	404703	404703	404703
Maharashtra	324	-	324	-	81	-	57642	57723	58047
Rajasthan	2184	2193	4377	-	189633	-	928426	1118058	1122435
Sikkim	-	-	-	-	-	-	2382	2382	2382
Uttarakhand	-	-	-	-	-	-	6000	6000	6000

Figures rounded off.

MARBLE

Table - 3 : Details of Exploration Activities for Marble by DMG, Rajasthan, 2006-07

Agency/ State/Mineral/ District	Location/ Area/ Block	Mapping		Sampling (No.)	Remarks & Reserves/Resources estimated
		Scale	Area (sq km)		
DMG, Rajasthan					
Jaisalmer	Raikon ki Dhani, NE of Bairon ki Dhani, Stone No. 55, North of Pithla	1:2,000	3.0	-	Yellow marble bed of varying dimension noted.
Jodhpur	N/V Bedu Suwap of Tehsil Osiyan	1:10,000 1:2,000	10 3	20 -	Dolomitic marble deosit spread in about 4 sq.km area between villages Bedu-Bedu Kalon identified.
Nagaur	N/V Gumpaliya Chapara of Tahsil Hadnu	1:50,000	50	-	Occurrences of serpentine marble noted.

**Table - 4 : Production of Marble, 2004-05 to 2006-07
(By States)**

(Value in Rs.'000)

State	Unit	2004-05		2005-06		2006-07 (p)	
		Quantity	Value	Quantity	Value	Quantity	Value
India			5780012		5945341		6367955
Jharkhand	tonne	1	106	-	-	*	*
Andhra Pradesh	tonne	999	659	1020	695	686	548
Gujarat	tonne	346398	312587	735931	490042	251792	167654
Madhya Pradesh	tonne	195876	244845	200528	277234	258881	235928
Rajasthan	tonne	7548075	5221400	7332561	5177370	6815437	5963825
Orissa	cu m	3814	415	-	-	*	*

Source: State Governments.

* Data awaited from state governments.

MINING AND PROCESSING

Mining of marble or, for that matter, any dimension stone is different from conventional mining practices. In conventional mining method, mined out minerals are obtained in small-size fractions whereas in dimension stone mining, large-size intact blocks without minor cracks or damages are extracted.

Marble mining in India is quite old and has been perfected by trial and error method for extracting larger blocks by manual means. Advent of advanced mining machinery and improved methods of cutting & mining have largely transformed the marble mining methods and have led to increased production. Presently, mining of marble is done by manual, semi-mechanised and mechanised means. But in general, majority of mines adopt the semi-mechanised method of mining. The various stages in mining marbles are as follows:

The first and foremost work in a quarry is removal of overburden which may be present in the form of soil, rubbles and weathered material. The removal of overburden is generally carried out with heavy earth-moving machinery. In some cases, the weathered zone is removed by drilling holes by jack-hammers and slim drill machines. These holes are charged with light explosives and under controlled blasting methods the overburden material is loosened out. It is then removed using heavy earth-moving machinery, such as excavators, tippers and loaders.

After removal of overburden and capping, the marble is exposed at suitable places. After studying the topography and keeping in view the further development of quarry, a key block is marked for removal or for quarry front cut. At this stage, it is necessary to study the joint or fracture pattern in order to ascertain recovery of large-size block.

In manual operation, a line of shallow holes is made and by driving in wedges with feathers by continuous hammering, a fracture is developed along the already drilled holes, and the block is made free from all the sides. The block thus freed from the in situ rock is either pulled by chains or pulley system or is pushed by driving logs, etc. After the block is toppled, it is again cut and dressed for getting a parallel-piped shape.

In the semi-mechanised operation, jack-hammers, slim drills, line drilling machines are used for drilling holes in a predetermined line. The remaining operation

is more or less similar to manual mining except for lifting and pulling where cranes, winches, dozers, etc. are used. But in the above mentioned processes, the wastage is high and the size of the blocks recovered is small and seldom free from defects. However, to overcome these problems, the quarry front cut is made by using slim drill machines, diamond wire saw, quarry master, diamond belt saw machines and chain saw machines.

The slim drill machines and quarry masters are used to drill holes through which diamond wire saw is passed and the block is cut by continuous motion of the diamond wire saw. Once the block is cut, it is toppled with the help of hydrobags, pneumatic pillows, air-jacks, etc. The blocks cut this way are of exact sizes with minimum losses. The lifting and loading of blocks are done by Derrick cranes and using various types of loaders.

Processing of marble is done in two stages. The first stage of processing involves cutting the blocks into 2 to 3 cm thick slabs by using gang saws, wire saws and circular saws. In marble tile plant, the required thickness of tiles is 10 or 12 mm. For cutting, circular saws are used. In general, the slabs are sold as it is but in case of tiles, they are polished using various pneumatically-operated or other polishing machines, such as, line polishers, trimmed and cut to size, buffed and chamfered using different types of machines before being sold.

Rajasthan has about 95% processing capacity in the country. There are a number of gang saws and many automatic tiling plants that are in operation. Important processing centres in the State are Makrana, Jaipur, Alwar, Ajmer, Udaipur, Nathdwara, Rajsamand, Abu Road and Kishangarh. The capacity for marble slab production in the State is around 1,000 million sq ft per annum and for polished tiles, it is 3,000 million sq ft. In Gujarat, there are about 22 processing units located at Ahmedabad, Ambaji and Vadodara. India has a rich tradition of processing stones and carving jalis, pillars, garden furniture, floral and other design by expert craftsmen. The craftsmen have developed their art using manual means and simple tools. Presently, art collectors from world over seem to demand hand-carved articles produced especially in Makrana. Congruent with this trend, Stone Fairs are regularly organised in Rajasthan to promote stone artifacts produced and to provide the necessary impetus to sculptors and craftsmen.

CLASSIFICATION

A variety of marbles are produced and marketed under various trade names. BIS has classified marble into 10 different groups vide IS-1130-1969 (reaffirmed in 2003) on the basis of colour, shade and pattern. These are i) Plain White Marble, ii) Panther Marble, iii) White-Veined Marble, iv) Plain Black Marble, v) Black Zebra Marble, vi) Green Marble, vii) Pink Adanga Marble, viii) Pink Marble, ix) Grey Marble, and x) Brown Marble.

In addition, many new varieties of marble have been brought into the folds of classification especially after opening of new mining areas. The important new types other than the ones classified by BIS are given below :

1. Yellow marble from Jaisalmer.
2. Pista marble (amphibolite variety) from Andhi-Jhiri belt, Jaipur, Alwar and Dausa districts, Rajasthan.
3. Brown green and golden ultramafics from Dunkar, Churu district, Rajasthan.
4. Chocolate-brown and English teak wood marble from Jodhpur district, Rajasthan.
5. Parrot green marble from Jhilo in Sikar district, Rajasthan.
6. Chocolate-brown or wood-finish marble from Mandaldeh, Chittaurgarh district, Rajasthan.
7. Purple marble from Tripura Sundari in Banswara district, Rajasthan.
8. Blue marble from Desuri in Pali district, Rajasthan.

The marbles have also been classified by their genesis and chemical composition as under :

- i) Calcite Marble: It is a crystalline variety of limestone containing not more than 5% magnesium carbonate. Colour and designwise, it may vary from grey to white to any colour, and even figurative light- brown to pink.
- ii) Dolomitic Marble: It is a crystalline variety of limestone containing not less than 5% or more than 20% magnesium carbonates as dolomite molecules.
- iii) Dolomite Marble: It is a crystalline variety of dolomite containing in excess of 20% magnesium carbonate as dolomite molecules. It has variegated colours and textures. As the whiteness increases, the lustre and translucency increases to an extent that it starts resembling with onyx. The main advantage of this marble is availability of exotic

colours & patterns and its low maintenance cost. Marbles of Banswara in Rajasthan and Chhota Udaipur in Gujarat belong to this category.

iv) Siliceous Limestone: It is a limestone containing high silica with smooth appearance due to fine-grained texture. It is difficult to cut and polish this type of marble but once polished, it gives a pleasant look. It is available in several colours and designs. The pink marble of Babarmal and Indo-Italian variety from Alwar belong to this category.

v) Limestone: Several varieties of limestone are being exploited and used as marble. The Oolitic limestone of UK, Black Marble of Bhainslana, Katra & Sirohi and Golden-yellow Marble of Jaisalmer belong to this category. This type requires frequent maintenance in the form of polishing as they are non-metamorphosed and hence are softer in nature.

vi) Serpentine or Green Marble: This marble is characterised mainly by the presence of a large amount of serpentine mineral. It has various shades of green varying from parrot-green to dark-green and is known for having varying degrees of veinlet intensities of other minerals, chiefly carbonates of calcium and magnesium. Most of the green marbles from Gogunda, Rikhabdeo, Kesariyaji and Dungarpur belong to this category. This marble is mostly used for panelling. The darker variety of this marble, which is so dark-green that it looks like black, has been termed as Verde Antique.

vii) Onyx: It is a dense crystalline form of lime carbonate deposited usually from cold water solutions. It is generally transparent to translucent and shows a characteristic variegated colour layering due to mode of deposition. Such type of marble is found in Kupwara district in Jammu and Kashmir. It is used for making decorative articles.

viii) Travertine Marbles: It is a variety of limestone regarded as a product of chemical precipitation from hot springs. The depositional history has left exotic patterns which when cut into thin slabs and polished become translucent.

POLICY

The Central Government has brought forth Marble Development and Conservation Rules, 2002 (notified on 15.5.2002) for conservation, systematic development and scientific mining of marble with a purpose to provide a uniform framework that would be applicable

MARBLE

throughout the country. As per these rules, the minimum and maximum periods for grant of a marble lease are 20 years and 30 years, respectively. Further, no lease is to be granted unless there is an approved mining plan. Normally, the minimum area of the lease to be granted should not be less than 4 hectares and should not exceed 50 hectares.

As per the export-import policy announced for the years 2004-09 and the Foreign Trade Policy as amended with effect from 1st April 2008, the imports of crude or roughly-trimmed marble & travertine, blocks, slabs and ecaussine & other calcareous monumental or building stone are restricted while imports of alabaster are freely allowed under heading No. 2515. Import of restricted marble and travertine items from Sri Lanka under India-Sri Lanka Free Trade Agreement (ISFTA) is, however, allowed only through Port of Kolkata on conditions applicable under ISFTA. On the other hand, worked monumental blocks/tiles of marble, travertine and alabaster can be imported freely under heading No. 6802, provided the c.i.f. value is US\$ 2,700 and above per cu m except in case of import of marble products from Nepal. However, the exemption is applicable only on imports which have been processed/manufactured out of marble mined in Nepal. The facility is not available on marble products processed/manufactured in Nepal using imported marble. Marble items can also be imported from Sri Lanka under heading No. 6802 under ISFTA through Kolkata Port subject to conditions.

USES AND SPECIFICATIONS

Marble is used widely in buildings, monuments and sculptures. Its utility value lies in its beauty, strength and resistance to fire and erosion. Marble has its application in interior & exterior wall cladding, interior & exterior paving, fireplace facing & hearth, lavatory tops, residential & commercial counter tops, table tops, statues and novelty items. The other non-conventional uses of marble are in toothpaste, paint, whitening, agricultural lime, etc.

Different marble varieties are used basically as both interior and exterior vertical wall cladding and flooring. Their use as structural elements (masonry), statues, epitaphs, graves, etc. is quantitatively less with funeral art accounting for the largest percentage. In interior

application such as for floors, marble is used in the form of 20 mm thick cut-to-size slabs. The slabs are also used for interior and outer facings, stairs, table tops, kitchen platforms, etc. The tiles in sizes ranging from 10 x 10 cm to 60 x 60 cm are used for floors, dadoes and for skirting in thickness ranging from 10 to 20 mm. The selected marble blocks free from cracks and other inclusions are used for making artifacts, such as carved figures, handrails and balustrade for staircases, jalis, fire places, flower vases and many other pieces of art.

Indian standards for marbles (blocks, slabs and tiles) IS:1130-1969 (reaffirmed in 2003) are summarised as under:

i) Classification: Marble shall be classified as white and coloured categories.

ii) General requirements : Marble shall be free from foreign inclusions and prominent cracks.

iii) Sizes: Marble blocks shall be supplied in lengths ranging from 30 to 250 cm, widths 30 to 100 cm and thicknesses 30 to 100 cm. The slabs shall be supplied in lengths ranging from 70 to 250 cm, widths 30 to 100 cm and thicknesses from 20 to 150 mm. The tiles shall be supplied preferably in sizes of 10 x 10 cm, 20 x 20 cm, 30 x 30 cm, 40 x 40 cm, 50 x 50 cm and 60 x 60 cm with thickness ranging from 18 to 24 mm in the same piece.

Other sizes as agreed upon by supplier and purchaser may also be supplied.

iv) Physical properties: The physical properties of blocks, slabs and tiles shall conform to the requirements, as given under :

Physical Properties of Marble

Sl. No.	Characteristic	Requirement	Method of Test
1)	Moisture absorption after 24 hours immersion in cold water	0.4% max. by weight	IS : 1124-1974
2)	Hardness	3 min.	Mohs' scale
3)	Specific gravity	2.5 min.	IS : 1122-1974

v) Workmanship: The edge of slabs and tiles shall be true. The finishes shall be sand and/or abrasive-finish, honed-finish or polished-finish.

ENVIRONMENT

The environmental degradation of the land due to marble mining is much less than the environmental degradation caused by the waste from marble processing plants.

The environmental degradation during mining of marble is akin to any opencast mining activities, i.e, degradation and removal of top soil, mined out pits disturbing local flora & fauna and water table of the area. In addition, the rejected blocks, unsized blocks and rubbles generated from mining of blocks and from overburden when dumped unsystematically pose serious hazards.

Recently, utilisation of smaller blocks in tiling plant has created a new way for judicious utilisation of the mineral resource.

The processing waste of marble cutting plants comes out in the form of 'Marble Slurry'. This marble slurry is being dumped by the processing plants at the nearest site available or in the notified areas marked for dumping near the plants. When this slurry dries up, it leads to serious environmental pollution. The major environmental problems due to marble slurry are listed below:

- 1) The slurry when dumped on open land affects adversely the productivity of the land as it reduces the porosity and prevents ground water recharge.
- 2) Areas with dumped slurry cannot support vegetation.
- 3) After drying, the finer fraction of slurry becomes airborne and causes serious air pollution which is not only detrimental to human beings but also to vegetation and machinery.

The TIFAC (Technology Information Forecasting and Assessment Council) in collaboration with Regional Research Laboratories and Central Building Research Institute (CBRI), Roorkee, have found many uses of slurry by developing masonry cement, distempers, tiles, cellular concrete, gypsum plaster- based plane/fibre-reinforced boards and blocks.

WORLD REVIEW

Resources of natural stones are substantial in the world and almost every country produces dimension stones. Major exporting countries of marble in the world, are China, Italy, India, Spain, Turkey, Greece, Brazil and Portugal.

FOREIGN TRADE

Exports

Exports of marble increased to 311,264 tonnes in 2007-08 from 290,112 tonnes in the previous year. Out of total marble exported in 2007-08, exports of dressed marble at 247,140 tonnes constituted 79% while exports of other marbles at 64,124 tonnes accounted for remaining exports. Exports were mainly to China (13%), Hong Kong (12%) Egypt (11%), USA and Nepal (7% each) and Italy (6%) (Tables - 5 to 7).

Imports

Imports of marble increased to 297,158 tonnes in 2007-08 from 212,522 tonnes in the previous year. Imports of dressed marble at 193,022 tonnes shared 65% imports while the remaining 35% imports were of other marbles. Main suppliers of marble were Italy (37%), followed by Turkey (22%), Oman and China (7% each) and Sri Lanka (6%) (Tables - 8 to 10).

MARBLE

**Table - 5 : Exports of Marble : Total
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	290112	2809996	311264	4083745
USA	13448	453178	22247	655438
UK	2974	64916	13582	436095
Belgium	861	21856	12178	337474
Italy	19154	233256	20008	282440
China	37739	215490	40435	273814
UAE	9657	113696	12142	219151
Hong Kong	66051	308070	36782	205427
Egypt	36837	156371	34218	184052
Spain	12447	162429	10759	167298
Nepal	18619	109246	21981	115829
Other countries	72325	971488	86932	1206727

**Table : 7 : Exports of Marble (Others)
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	57085	1052334	64124	1205950
USA	6345	248746	6089	211131
Italy	4181	91190	5792	133366
UAE	3013	51247	4385	84854
Spain	5812	86337	5328	84023
Netherlands	430	15601	1800	72555
Saudi Arabia	4128	55991	4016	58969
France	760	19009	953	40258
Korea, Rep. of	1460	32661	1687	36304
Turkey	2769	48071	1567	25685
UK	714	22585	867	24515
Other countries	27473	380896	31640	434290

**Table - 6 : Exports of Marble (Dressed)
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	233027	1757662	247140	2877795
USA	7103	204432	16158	444307
UK	2260	42331	12715	411580
Belgium	407	5362	11888	327519
China	36251	204670	39946	266858
Hong Kong	66006	306745	36741	204930
Egypt	36689	153387	32822	159460
Italy	14973	142066	14216	149074
UAE	6644	62449	7757	134297
Nepal	18249	106074	21400	110907
Spain	6635	76092	5431	83275
Other countries	37810	454054	48066	585588

**Table - 8 : Imports of Marble : Total
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	212522	4227144	297158	5275339
Italy	81205	1324470	110584	1703883
Turkey	33162	557114	64018	941776
Oman	8576	288257	20766	559838
Sri Lanka	28071	917902	17699	544817
China	7018	216876	19633	463621
Egypt	15831	270332	14761	261896
Spain	4581	87731	10433	174699
Iran	7818	112748	10927	137886
Nepal	5604	89183	4775	88417
Vietnam	12558	173592	5328	72266
Other countries	8098	188939	18234	326240

MARBLE

**Table - 9 : Imports of Marble (Dressed)
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	154161	2598850	193022	2811260
Italy	64327	958888	89105	1264365
Turkey	26420	368449	50288	669851
Egypt	14645	243876	9344	130473
Iran	6776	97650	9206	111744
Spain	3296	55833	6573	87666
China	1484	53297	2689	74666
Oman	2059	60724	2469	72904
Sri Lanka	13991	432553	1893	56999
Nepal	5590	88836	2809	55936
Vietnam	10327	142179	3929	53687
Other countries	5246	96565	14717	232969

**Table - 10 : Imports of Marble (Others)
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	58361	1628294	104136	2464079
Oman	6517	227533	18297	486934
Italy	16878	365582	21479	439518
China	5534	163579	16944	388955
Turkey	6742	188665	13730	271925
Egypt	1186	26456	5417	131423
Spain	1285	31898	3860	87033
Bhutan	950	22573	1399	36941
Greece	570	23487	848	20788
Vietnam	2231	31413	1399	18579
Other countries	2388	61759	4957	94165

FUTURE OUTLOOK

The dimension stone, marble, is being used more commonly in domestic markets. It is articulated that improved quarrying, finishing and hauling technology, availability of many varieties of marble and the rising cost of alternative construction materials could be the factors that would keep marble high in demand in the immediate future.

Marble industry has to gear up to meet the increasing demand for exports as well as

for domestic consumption in foreseeable future. India has a great export potential as well as large domestic market. The demand for artifacts specially carved work is on the rise the world over. India with its rich tradition of craftsmanship and trained artisans could impact the world market in discernible ways.

In the world, there is a major concern over low recovery of finished product. As the industry is growing, there is an urgent need to invent sophisticated machinery to minimise losses during mining and processing.