

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. Most of the units in the marble industry are in the small scale sector.

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 are 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.

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 reveal that about 63% resources are in Rajasthan and 23% in Jammu & Kashmir. The remaining resources are distributed mainly in Gujarat, Chhattisgarh, Maharashtra, Haryana and Uttarakhand in descending order.

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

(In '000 tonnes)

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.

EXPLORATION

The State Directorate of Mines & Geology, Government of Rajasthan carried out exploration for marble in 2009-10 in villages Koshithal, Arnota, Galwa, Govindpura, etc., tehsil Raipur, dist. Bhilwara. Mapping was carried out over an area of 100 sq km. Out of this, 40 sq km was done by 1:10,000 scale, by RGM and 3 sq km area on 1:2,000 by DGM. About 39 spot samples/block samples and 21 chip samples were collected. The reserves

are not computed. The dolomatic marble band of Koshithal area extends from Koshithal in the north east to Chavandi Kheda in South west for 5000 m with width varying from 50 m to 120 m. It is medium to coarse grained, jointed & fractured white, pale white and lemon - yellow in colour. It does not seem to be highly suitable for block mining as per surface observation but at sub-surface it may be suitable for block mining for marble exploration by drilling is warranted in the area.

PRODUCTION

The total production value of marble increased to Rs.1,151 crore in 2008-09 from Rs. 674 crore in 2007-08. Rajasthan alone accounted for 94% output value followed by Gujarat and Madhya Pradesh. Production was less than 1% in Odisha, Andhra Pradesh and Jharkhand in 2008-09 (Table - 3).

**Table – 3 : Value of Production of Marble
2006-07 to 2008-09
(By States)**

	(Value in Rs. '000)		
	2006-07	2007-08	2008-09(P)
India	6368476	6741641	11506488
Rajasthan	5963825	6081992	10769397
Gujarat	167654	448310	448310
Madhya Pradesh	235928	192591	288084
Odisha	415	415	415
Andhra Pradesh	548	18227	176
Jharkhand	106	106	106

Source : 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 and 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 removal of overburden is generally carried out with heavy earth-moving machinery. In some cases, the weathered zone is removed by drilling holes by jackhammers and slim drill machines. These holes are charged with 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, jackhammers, 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.

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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, Chittorgarh 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 and 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 belongs 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 lime-stone 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 throughout the country. The maximum period for which a lease may be granted shall not exceed thirty years and minimum period shall not be less than twenty years. Further, no lease is to be granted unless there is mining plan duly approved by the State Government or any person authorized in this behalf by that Government. Normally, the minimum area of the lease to be granted should not be less than 4 hectares and maximum area shall not exceed 50 hectares.

As per the Export-Import Policy, 2009-14, and the Foreign Trade Policy thereunder, the imports of crude or roughly-trimmed, marble & travertine blocks, slabs and ecaussine & calcareous monumental or building stone are restricted while imports of alabaster are freely allowed under heading No .2515. Import of restricted marble 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 \$ 50 and above per sq m except in case of import of marble products from Nepal. However, the exemption is applicable only to imports which have been processed/manufactured out of marble mined in Nepal. The facility is not available on the marble products processed/manufactured in Nepal using imported marble.

The total import of Rough Marble Blocks under Exim Code No. 25151100 and 25151210 will be subject to a ceiling of 3 lakh MT for the whole of the licensing year 2010-11.

Import of marble, classified under chapter 25 and 68 from Bhutan shall be subjected to a combined annual quota of 3,14,000 sq.ft. The

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quota shall come into force from the date of this Notification (i.e.No.93 (RC - 2008)/2004-09 dated 2.3.2009 and operate on financial year basis. Since the total import of marble from Bhutan during this financial year has already exceeded more than 6 lakh sq.ft., therefore, no import of marble shall be allowed during this financial year i.e. up to 31st March, 2009. Monitoring and allocation of the quota shall be made by the Government of Bhutan. Department of Commerce and Industry has clarified that 'Honed marble' is not to be treated differently from marble blocks/slabs/tiles, polished covered under EXIM Code No. 68022101 which is presently restricted. Actually, 'Honed marble' is covered under Exim Code Heading 68022101 and its import is restricted. This clarification shall be applicable for those imported consignments also which have taken place prior to issue of Notification dated 24th June, 1997.

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 and exterior wall cladding, interior and exterior paving, fireplace facing and hearth, lavatory tops, residential and 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 (total) decreased to 275,502 tonnes in 2009-10 from 306,545 tonnes in the previous year. Out of total marble exported in 2009-10, exports of dressed marble at 211,359 tonnes constituted 77% while exports of other marbles at 64,143 tonnes accounted for remaining 23%. Exports were mainly to China (28%), Nepal (13%), Egypt (12%), and Hong Kong (9%) (Tables 4 to 6).

Imports

Imports of marble (total) increased to 431,022 tonnes in 2009-10 from 313,680 tonnes in the previous year. Imports of dressed marble at 312,665 tonnes shared 73% imports in 2009-10 while the remaining 27% imports were of other marbles. Main suppliers of marble were Italy (32%), followed by Turkey (30%), Vietnam and Egypt (9% each), and China (8%) (Tables 7 to 9).

**Table – 4 : Exports of Marble
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	306545	3628602	275502	3045855
China	74385	600389	77239	656096
Egypt	41307	289676	32725	288867
USA	12452	392592	10455	283754
Nepal	25655	152743	34431	229049
Hong Kong	5030	41300	24373	157415
UAE	10909	145919	11860	156369
Italy	11566	205396	8359	142908
Saudi Arabia	14106	142919	5507	81244
Algeria	7528	113773	3391	43288
Germany	7018	113179	2491	39468
Other countries	96589	1430716	64671	967397

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**Table – 5 : Exports of Marble (Dressed)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	217874	2151093	211359	2003559
China	72402	581047	73195	612396
Nepal	24979	143334	33082	221775
Hong Kong	5002	40841	24331	154867
U S A	6650	203541	6323	140943
Egypt	34863	208135	19006	120625
UAE	6928	74316	7444	97471
Italy	7313	111483	5450	82074
Libya	3387	43999	2817	36974
Saudi Arabia	4834	68496	2182	35355
Germany	5527	72118	2010	26773
Other countries	45989	603783	35519	474306

**Table – 7 : Imports of Marble : Total
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	313680	6533016	431022	8418728
Italy	113675	2095192	137948	2525285
Turkey	94533	1617118	128121	2199575
China	26481	742136	35959	1107700
Egypt	18211	476407	37581	596175
Vietnam	8838	139507	38264	580654
Oman	14670	581655	17359	534620
Spain	6937	144494	9055	183807
Sri Lanka	6057	221677	4477	173106
Iran	5053	79500	7004	110853
Greece	2422	65731	4645	109504
Other countries	16803	369599	10609	297449

**Table – 6 : Exports of Marble (Others)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	88671	1477509	64143	1042296
Egypt	6444	81541	13719	168242
USA	5802	189051	4132	142811
Italy	4253	93913	2909	60834
UAE	3981	71603	4416	58898
Saudi Arabia	9272	74423	3325	45889
Turkey	2377	34866	3092	42215
Spain	3610	59805	1694	32565
Algeria	4837	75525	1876	24900
Iran	4382	86496	884	14595
Israel	5268	113157	145	3487
Other countries	38445	597129	27951	447860

**Table – 8 : Imports of Marble (Dressed)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	217913	3621757	312665	5136712
Italy	95417	1545830	103308	1674271
Turkey	75887	1158756	98138	1545232
Egypt	10466	198454	35854	522676
Vietnam	6474	96965	33570	494153
Oman	3178	118290	10117	231932
China	4834	125537	7860	215411
Spain	4677	74584	6516	118890
Iran	4244	66515	6503	102127
Greece	1223	23065	3627	72178
Bhutan	3370	65039	794	31024
Other countries	8143	148722	6378	128818

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**Table – 9 : Imports of Marble (Others)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	95767	2911259	118357	3282016
China	21647	616599	28099	892289
Italy	18258	549362	34640	851014
Turkey	18646	458362	29983	654343
Oman	11492	463365	7242	302688
Sri Lanka	6002	219877	3712	153411
Vietnam	2364	42542	4694	86501
Egypt	7745	277953	1727	73499
Spain	2260	69910	2539	64917
Greece	1199	42666	1018	37326
Nepal	1760	46662	851	24304
Other countries	4394	123961	3852	141724

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. India with its rich tradition of craftsmanship and trained artisans could impact the world market in discernible ways.

There is a major concern world over about low recovery of finished product. However, the demand for artifacts specially carved work is on the rise. As the industry is growing, there is an urgent need to invent sophisticated machinery to minimise losses during mining and processing.