

34 Emerald

Emerald has decorative value because of its superb colours. It shows various colours like yellowish-green, bluish-green or blue. However, the unique velvety green colour of fine emerald places it among the most precious stones. As a gemstone, the quality is gauged by its colour, flawlessness, absence of inclusions and size of the crude stone.

Emerald, a transparent, pale-green to sea-green variety of beryl, is chemically a complex silicate of aluminium and beryllium. Aquamarine, being blue-green to light-blue, is the other gemstone variety of beryl. The hardness of emerald is 7.5 and aquamarine 7.5 to 8 on Mohs scale. These minerals have specific gravity of 2.63 to 2.80 and are doubly refractive with RI as 1.58.

RESOURCES

Occurrences of emerald are reported from Rajasthan, Orissa, Tamil Nadu and Andhra Pradesh. However, no reserves have been estimated so far. In Rajasthan, emerald occurs at a number of places in Udaipur, Rajsamand and Ajmer districts. Emerald-bearing zones are found along 195 km long ultramafic rocks. The bands of vermiculite-actinolite schist with tourmaline are seen occasionally at the contact of pegmatites with emerald-bearing schist. In Ajmer district, emerald-bearing zones are located at Gudas and Bubani. Commercial deposits of emerald are reported from Tikhi, Kaliguman, Kanj-ka-Kheda, etc. areas in Rajsamand district.

In Orissa, occurrences of emerald are reported from Bira-Mohorajpur belt in Bolangir district, which extends into Sambalpur and Dhenkanal districts. Ghuchapada and Barmal prospects in Bolangir district are the potential areas.

In Eastern Ghat belt of Visakhapatnam district, Andhra Pradesh, pegmatite veins containing beryl and aquamarine, besides other gemstones, are reported from several places.

Continued investment in exploration resulted in a number of new gem resource prospects especially in Orissa where good finds of aquamarine and other gemstones were reported.

PRODUCTION

Production has not been reported since 1983.

MINING AND MARKETING

In Ajmer-Rajsamand belt of Rajasthan, emerald occurrences are confined to the upper fringes of pegmatites. Emerald was mined manually by opencast method in the past. The pits were worked at shallow depths. The stones collected during mining were sorted out according to size, shape and quality. The stones so collected were deposited with the State Government under the supervision of DMG officials and mine owners. Crude emerald was sold by public auction.

The beauty of rough stone is enhanced by skilful cutting and polishing into faceted or rounded form for use in jewellery. The rough stones are sorted out to determine the angles to which facets can be cut. They may be sawed or polished in any direction according to shape, size and colour to be retained. After the shape and size are determined, the next process of 'pre-shaping' is done. The third and important process 'calibration' gives the pre-shaped stone a definite proportion and size. The process that follows is 'faceting' and 'polishing'. The aim of this process is to achieve maximum internal reflection enhancing the beauty of stone. Emeralds are generally given a step-cut or cabochon-cut.

EMERALD

Jaipur in Rajasthan is the major centre for processing emeralds. Like diamonds, uncut emerald is imported and part of it is exported after processing. Emerald is next to diamond (uncut) amongst precious and semi-precious stones being imported and re-exported after cutting and polishing.

WORLD REVIEW

World production of emerald is reported mainly from Colombia, Pakistan and Afghanistan. In Africa, Nigeria, Mozambique, Madagascar and Zimbabwe are the chief emerald producing countries.

Aquamarines : A few aquamarine gems are found in gravels at Magok in Myanmar. Aquamarine is also produced in Namibia, Sri Lanka, Mozambique, Madagascar, Nigeria, South Africa and Brazil.

FOREIGN TRADE

Exports

In 2007-08, exports value of emerald (cut & uncut) decreased to Rs.361.83 crore from Rs. 373.05 crore in the previous year. The share of cut emerald was about 97% and that of uncut emerald was merely 3% in 2007-08. Exports of emerald (cut) were mainly to USA (30%), Hong Kong (21%) and Thailand (13%) (Tables - 1 to 3).

Imports

In 2007-08, imports value of emerald (cut and uncut) increased to Rs.313.34 crore from 233.02 crore in the previous year. The share of uncut emerald in total value was 67% and that of cut emerald was 33% in 2007-08. Imports of emerald (uncut) were mainly from Zambia (45%), Brazil (27%), UAE (10%) and USA (5%) (Tables - 4 to 6).

**Table - 1 : Exports Value of Emerald
(Cut & Uncut) : Total
(By Countries)**

Country	(Value in Rs. '000)	
	2006-07	2007-08
All Countries	3730559	3618344
USA	1341047	1086359
Hong Kong	620323	744188
Thailand	448163	475551
UAE	194699	235027
Germany	112279	156997
Japan	139700	150271
Italy	166627	106862
Switzerland	209074	99212
UK	64175	62792
France	66987	44283
Other countries	367485	456802

Note: Quantity not given due to partial coverage; value figures however have full coverage.

**Table - 2 : Exports of Emerald (Cut)
(By Countries)**

Country	2006-07		2007-08	
	Qty. (‘000 ct)	Value (Rs.‘000)	Qty. (‘000 ct)	Value (Rs.‘000)
All Countries	4719	3692361	4703	3505592
USA	1633	1331425	1470	1079600
Hong Kong	800	619958	993	738273
Thailand	600	448163	660	468572
UAE	244	194172	254	232619
Germany	124	112279	227	151731
Japan	216	139700	188	147575
Italy	165	166627	169	106862
Switzerland	319	209074	146	99212
UK	97	64175	81	61970
France	95	66953	67	44021
Other countries	426	339835	448	375157

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**Table - 3 : Exports of Emerald (Uncut)
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	4	38198	++	112752
Zambia	++	11951	++	36779
Brazil	++	6002	++	21980
Israel	3	9666	++	8257
Thailand	-	-	++	6979
USA	1	9622	++	6759
Hong Kong	++	365	++	5915
Germany	-	-	++	5266
Kenya	-	-	++	3837
UAE	++	527	++	2408
Unspecified	-	-	++	10186
Other countries	++	65	++	4386

**Table - 4 : Imports Value of Emerald (Cut & Uncut) : Total
(By Countries)**

Country	(Value in Rs. '000)	
	2006-07	2007-08
All Countries	2330172	3133444
Zambia	410270	944798
Thailand	441989	647815
Brazil	422545	572419
U S A	754340	282171
UAE	41919	216037
Hong Kong	110194	164889
South Africa	-	68751
Israel	21989	41786
Russia	16459	15310
Unspecified	36137	76955
Other countries	74330	102513

Note: Quantity not given due to partial coverage; value figures however have full coverage.

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**Table - 5 : Imports of Emerald (Cut)
(By Countries)**

Country	2006-07		2007-08	
	Qty. ('000 ct)	Value (Rs. '000)	Qty. ('000 ct)	Value (Rs. '000)
All Countries	1203	703017	2637	1032508
Thailand	642	382802	1893	560349
USA	424	196475	273	175568
Hong Kong	51	42863	227	94349
South Africa	-	-	70	67813
Israel	2	3903	14	11528
Sri Lanka	13	6576	10	9808
UAE	14	10579	59	8803
Brazil	4	5711	3	5294
Japan	7	8121	6	2961
Unspecified	36	28084	62	73965
Other countries	10	17903	20	22070

**Table - 6 : Imports of Emerald (Uncut)
(By Countries)**

Country	2006-07		2007-08	
	Qty. (t)	Value (Rs. '000)	Qty. (t)	Value (Rs. '000)
All Countries	66	1627155	76	2100936
Zambia	17	407834	37	944649
Brazil	26	416834	19	567125
UAE	5	31340	10	207234
USA	11	557865	2	106603
Thailand	2	59187	4	87466
Hong Kong	3	67331	1	70540
Israel	++	18086	1	30258
Belgium	-	-	++	20675
Kenya	2	14992	1	15562
Russia	++	16277	++	15310
Other countries	++	37409	1	35514