

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.

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 having 1.58 RI.

RESOURCES

Occurrences of emerald are reported from Rajasthan, Odisha, Tamil Nadu and Andhra Pradesh. However, reserves have not 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, Kalaguman, Kanj-ka-Kheda, etc. areas in Rajsamand district.

In Odisha, 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 Odisha where good finds of aquamarine and other gemstones were reported.

PRODUCTION

Production of emerald 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.

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 producing countries.

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In recent years, Madagascar was a globally significant producer of gem stone that included emerald, ruby and sapphire. Emerald was produced near Mananjary. Societe Orgaco of France mined the emerald (536 kg Heaven's gift) in matrix at the Morafeno mine near Mananjary and exported it to Reunion.

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 2009-10, exports value of emerald (cut & uncut) increased to Rs.482.63 crore from Rs. 480.05 crore in the previous year. The share of cut emerald was about 93% and that of uncut emerald was merely 7% in 2009-10. Exports were mainly to USA (23%), Hong Kong (22%), and Singapore (18%) (Tables - 1 to 3).

Imports

In 2009-10, imports value of emerald (cut and uncut) decreased to Rs.390.55 crore from 425.35 crore in the previous year. The share of uncut emerald in total value was 40% and that of cut emerald was 60% in 2009-10. Imports were mainly from Hong Kong (29%), Thailand (24%), Brazil (13%) and Zambia (11%) (Tables - 4 to 6).

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

Country	(Value in Rs. '000)	
	2008-09	2009-10
All Countries	4800533	4826365
USA	974367	1100039
Hong Kong	1258288	1064951
Singapore	524775	887043
UK	159378	584115
Thailand	545872	364483
Germany	126011	160099
Italy	222320	152671
Japan	210714	133548
Switzerland	126435	95602
UAE	249572	53117
Other countries	402801	230697

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

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

Country	2008-09		2009-10	
	Qty (‘000 Crt)	Value (Rs.‘000)	Qty (‘000 Crt)	Value (Rs.‘000)
All Countries	6089	4760579	14213	4505533
USA	1586	974367	5249	1088040
Hong Kong	1661	1239763	2592	1032641
Singapore	302	524775	1118	887014
Thailand	734	545369	2091	364483
UK	222	156893	290	311488
Germany	137	126011	394	159976
Italy	287	222320	648	152671
Japan	295	210714	985	133548
Switzerland	144	114280	111	95602
UAE	247	249572	41	52513
Other countries	474	396515	694	227557

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.‘000)	Qty (t)	Value (Rs.‘000)
All Countries	2	39954	1	320832
UK	++	2484	1	272627
Hong Kong	2	18525	++	32310
USA	–	–	++	11999
Israel	++	4906	++	2920
UAE	–	–	++	604
Zambia	–	–	++	219
France	++	1153	–	–
Kenya	++	228	–	–
Switzerland	++	12155	–	–
Thailand	++	503	–	–
Other countries	–	–	++	153

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

(Value in Rs '000)

Country	2008-09	2009-10
All Countries	4253563	3905599
Hong Kong	457741	1147483
Thailand	1113946	939354
Brazil	522933	511502
Zambia	1183735	421113
USA	414650	283898
UK	12383	190709
UAE	237788	161621
Germany	12785	75512
Switzerland	67646	21348
Unspecified	64117	34171
Other countries	165839	118888

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

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

Country	2008-09		2009-10	
	Qty (‘000 Crt)	Value (Rs.‘000)	Qty (‘000 Crt)	Value (Rs.‘000)
All Countries	4656	2116427	2946	2343509
Hong Kong	674	401999	772	907561
Thailand	3080	956116	1929	862533
USA	361	322761	120	242456
UAE	197	195857	25	150883
Germany	15	11797	29	74574
Sri Lanka	31	15642	19	26488
Switzerland	58	51204	2	12745
UK	11	11696	11	12411
Belgium	30	35573	++	83
Unspecified	137	64000	4	9860
Other countries	62	49782	35	43915

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	44	2137136	78	1562090
Brazil	14	521476	28	511502
Zambia	19	1172438	19	410435
Hong Kong	++	55742	11	239922
UK	++	687	1	178298
Thailand	6	157830	6	76821
USA	4	91889	11	41442
Israel	++	39524	++	21441
UAE	1	41931	++	10738
Switzerland	++	16442	++	8603
Unspecified	++	117	++	24311
Other countries	++	39060	2	38577