GEMSTONES

By Ronald F. Balazik

Webster's dictionary defines a gem as "any jewel, whether stone, pearl or the like, having value and beauty that are intrinsic and not derived from its setting; a precious or, sometimes, a semiprecious stone cut and polished for ornament. A semiprecious stone of value because it is carved or engraved, as a cameo or intaglio." Additionally, the dictionary states that gemstone is "any mineral or petrified material which can, when cut and polished, be used in jewelry." Therefore, a gem, gemstone, or gem material may be described as inorganic or organic minerals used for personal adornment, display, or to manufacture objects of art because they possess beauty, rarity, and durability. *(See table 1.)*

Production

Gemstones production in the United States during 1995 included cut, polished, engraved or carved material; specimen material; natural and cultured freshwater pearl; saltwater pearl; shell; amber; and coral. It is estimated that the value of domestic gemstone production from indigenous sources was at least $75 million in 1995. This estimate is based on a survey of more than 340 domestic gemstone operations conducted by the U.S. Geological Survey (USGS). The survey provides a foundation for projecting the scope and level of domestic gemstone operations. However, the survey is not necessarily representative of all gemstone activity in the United States, which includes thousands of professional and amateur collectors. Consequently, the USGS attempts to supplement its survey with estimates of domestic gemstones production from published data, contacts with gem dealers and collectors, and analyses of gem and mineral shows.

The USGS survey indicated that gem materials were produced in every State during 1995. Six States accounted for more than 90% of the total value of production reported by survey respondents. These States (in declining order of reported production value) were Tennessee, Alabama, Arkansas, Oregon, North Carolina, and Arizona. Certain States are known best for the production of a single gem material (e.g., Tennessee for freshwater pearls). Other States, however, produce a wide array of gemstones. For example, Arizona gemstone production includes agate, amethyst, antlerite, azurite, chrysocolla, fire agate, garnets, jade, malachite, obsidian, onyx, peridot, petrified wood, precious opal, shattuchite, smithsonite, and turquoise. California, Idaho, Montana, and North Carolina also produced a wide variety of gemstones.

New, potentially important gemstone mining operations were reported in 1995. For example, two new sapphire mining operations were initiated in Montana late in the year. Full-scale operations were expected to begin in 1996. Plans to open a commercial gem-quality diamond mine in Colorado also were reported during 1995.

It is estimated that U.S. synthetic gem production in 1995 was at least $25 million; simulant gemstone output reportedly was even greater. Some estimates of domestic synthetic/simulant production exceed $100 million. Laboratory grown synthetic gemstones have essentially the same appearance and optical, physical, and chemical properties as the natural material that they represent. Synthetic gemstones produced in the United States include alexandrite, coral, diamond, emerald, garnet, lapis lazuli, quartz, ruby, sapphire, spinel, and turquoise. Laboratory grown simulants have an appearance similar to that of a natural gem material but have different optical, physical, and chemical properties. The gemstone simulants produced in the United States include coral, cubic zirconia, lapis lazuli, malachite, and turquoise. Additionally, certain colors of synthetic sapphire and spinel, used to represent other gemstones, would be classed as simulants. Colored and colorless varieties of cubic zirconia are the major simulants produced.
(See table 2.)

Nine firms in five states reported the production of synthetic and simulant gem material in 1995. Reported production totalled $25 million. This output included the manufacture of alexandrite, azurite/malachite, cubic zirconia, emerald, lapis, ruby, sapphire, and turquoise. In descending order of production value, the States with reported output were California, New York, Michigan, Arizona, and New Jersey.

Consumption

Consumption of domestic gemstones was in the manufacture of jewelry; for exhibit in gem and mineral collections; for decorative purposes in statuettes, vases, and other art objects; and certain industrial applications. According to a survey conducted by a business association of domestic jewelry retailers, diamond remains the favorite gemstone jewelry among U.S. consumers. The survey also indicated that, in decreasing order of preference, diamonds were followed by emeralds, sapphires, and rubies as jewelry.

Prices

Values and prices of U.S. cut diamonds and U.S. cut gemstones are shown in tables 3, 4, and 5. Demand, beauty, durability, rarity, freedom from defects, and perfection of cutting generally govern the value of most gems. The Central Selling

Organization (CSO), controlled by De Beers Centenary AG, is a significant force affecting gem diamond prices worldwide.

Foreign Trade

The United States imported gemstones from more than 25 countries and exported/reexported gemstones to more than 75 countries during 1995. *(See tables 6 through 10.)*

The total value of all gemstones exported and reexported by the United States was about $2.53 billion; diamonds, including $2.01 billion for cut diamonds, accounted for 87% of the total. The value of U.S. exports plus reexports of natural rough colored gemstones was about $42.3 million, while the value of U.S. exports plus reexports of cut natural colored gemstones was about $207 million. Synthetic rough and cut gemstone exports plus reexports by the United States during the year were valued at $14.3 million and $14.5 million, respectively. Natural and cultured pearls exported and reexported by the United States were valued at $2.85 million and $5.33 million, respectively. Approximately $47.1 million of coral and shell was exported and reexported by the United States in 1995.

The United States remained the world's largest importer of colored gemstones in 1995. During the year, U.S. imports of gems and gemstones increased 3% to a record high of $6.66 billion. The value of imported gem diamonds accounted for about 89% of the total.

World Review

Foreign countries with major gemstone deposits other than diamond are Afghanistan (beryl, kunzite, ruby, and tourmaline); Australia (beryl, opal, and sapphire); Brazil (agate, amethyst, beryl, kunzite, ruby, sapphire, topaz, and tourmaline); Burma (beryl, jade, ruby, sapphire, and topaz); Colombia (beryl, and sapphire); Kenya (beryl, garnet, and sapphire); Madagascar (beryl, rose quartz, sapphire, and tourmaline); Mexico (agate, opal, and topaz); Sri Lanka (beryl, ruby, sapphire, and topaz); Tanzania (garnet, ruby, sapphire, tanzanite, and tourmaline); and Zambia (amethyst and beryl).

There are many natural diamond producers throughout the world. However, most production occurs in Africa (Angola, Botswana, Namibia, South Africa, and Zaire); Asia (northeastern Siberia and Yakutia in Russia); Australia; and South America (Venezuela and Brazil). *(See table 11.)*

De Beers Centenary AG, which controls most of the rough, uncut diamonds sold worldwide, reported record sales of $4.53 billion in 1995. This was an increase of 6.6% compared with 1994 sales. During 1995, diamond stocks held by De Beers ($4.67 billion) were greater than its annual sales for the second consecutive year; prior to 1994, stocks had never exceeded sales.

De Beers also encountered other significant issues in 1995. By yearend, for example, Australia's Argyle Diamond Mines Joint Venture was considering departure from the CSO. In addition, De Beers was seeking a trade agreement with Russia, which was selling diamonds independent of the CSO.

De Beers annual sales during the past five years were as follows: 1994, $4.25 billion; 1993, $4.40 billion; 1992, $3.42 billion; 1991, $3.93 billion; and 1990, $4.17 billion. During the same period De Beers' stocks of diamonds were: 1994, $4.38 billion; 1993, $4.10 billion; 1992, $3.36 billion; 1991, $3.03 billion; and 1990, $2.68 billion. (Estimated world retail sales of diamond jewelry rose 5% to more than $47 billion in 1995.)

Outlook

World demand for precious gems, particularly diamond, is expected to continue growing as personal disposable income rises in the United States and in other industrialized nations. Promotional efforts by producers and dealers also will further spur demand for gem diamond. Such efforts combined with rising incomes already are increasing retail diamond sales in Japan and other Asian countries. Demand for other precious gems will continue to rise as diamonds become more expensive and the popularity and acceptance of colored gemstones increase. Some in the industry anticipate further consolidation of jewelry retailing toward fewer companies and predict more niche marketing that targets specific demographic groups. Demand for synthetic and simulant gemstones for both personal and industrial consumption is expected to increase.

OTHER SOURCES OF INFORMATION

U.S. Geological Survey Publications

Gemstones, Mineral Commodity Summaries—1996.

Garnet, Mineral Industry Surveys, Annual Review—1995

Industrial Diamond, Mineral Industry Surveys, Annual Review—1995.

Other Sources

Annual Report—1995, De Beers Consolidated Mines Limited, Kimberley, South Africa.

Directory of Principal U.S. Gemstone Producers in 1995, Mineral Industry Surveys, U.S. Bureau of Mines, 1995.

An overview of Production of Specific U.S. Gemstones, Special Publication 14-95, U.S. Bureau of Mines, 1995.

TABLE 1
GUIDE TO SELECTED GEMSTONES AND GEM MATERIALS USED IN JEWELRY

Name	Composition	Color	Practical size 1/	Cost 2/	Mohs	Specific gravity	Refraction	Refractive index	May be confused with-	Recognition characters
Amber	Hydrocarbon	Yellow, red, green, blue	Any	Low to medium	2.0-2.5	1.0-1.1	Single	1.54	Synthetic or pressed, plastics	Fossil resin, soft.
Beryl:										
Aquamarine	Beryllium aluminum silicate	Blue-green to light blue	Any	Medium to high	7.5-8.0	2.63-2.80	Double	1.58	Synthetic spinel, blue topaz	Double refraction, refractive index.
Bixbite	do.	do.	Small	Very high	7.5-8.0	2.63-2.80	do.	1.58	Pressed plastics, tourmaline	Refractive index.
Emerald	do.	Green	Medium	do.	7.5	2.63-2.80	do.	1.58	Fused emerald, glass, tourmaline, peridot, green garnet doublets	Emerald filter, dichroism, refractive index.
Emerald, synthetic	do.	do.	Small	High	7.5-8.0	2.63-2.80	do.	1.58	Genuine emerald	Flaws, brilliant, fluorescence in ultraviolent light.
Golden (heliodor)	do.	Yellow to golden	Any	Low to medium	7.5-8.0	2.63-2.80	do.	1.58	Citrine, topaz, glass, doublets	
Goshenite	do.	do.	Any	Low	7.5-8.0	2.63-2.80	do.	1.58	Quartz, glass, white sapphire, white topaz.	Refractive index.
Morganite	do.	Pink to rose	Any	Low	7.5-8.0	2.63-2.80	do.	1.58	Kunzite, tourmaline, pink sapphire	do.
Calcite:										
Marble	Calcium carbonate	White, pink, red, blue, green, or brown	Any	Low	3.0	2.72	Double (strong)	1.49-1.66	Silicates, banded agate, alabaster gypsum	Translucent.
Mexican onyx	do.	do.	Any	Low	3.0	2.72	do.	1.6	do.	Banded, translucent.
Chrysoberyl:										
Alexandrite	Beryllium aluminate	Green by day, red by artificial light	Former U.S.S.R. (small), Sri Lanka (medium)	High	8.5	3.50-3.84	Double	1.75	Synthetic	Dichroism, inclusions in synthetic sapphire
Cats-eye	do.	Greenish to brownish	Small to large	do.	8.5	3.50-3.84	do.	1.75	Synthetic, shell	Gravity and translucence.
Chrysolite	do.	Yellow, green, and/or brown	Medium	Medium	8.5	3.50-3.84	do.	1.75	Tourmaline, peridot	Refractive index, silky.

See footnotes at end of table.

TABLE 1--Continued
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Name	Composition	Color	Practical size 1/	Cost 2/	Mohs	Specific gravity	Refraction	Refractive index	May be confused with-	Recognition characters
Coral	Calcium carbonate	Orange, red, white, black, or green	Branching, medium	Low	3.5-4.0	2.6-2.7	Double	1.49-1.66	False coral	Dull translucent.
Corundum:										
Ruby	Aluminum oxide	Rose to deep purplish red	Small	Very high	9.0	3.95-4.10	do.	1.78	Synthetics, including spinel	Inclusions, fluorescence.
Sapphire	do.	Blue	Medium	High	9.0	3.95-4.10	do.	1.78	do.	Inclusions, double refraction, dichroism.
Sapphire, fancy	do.	Yellow, pink, white, orange, green, or violet	Medium to large	Medium	9.0	3.95-4.10	do.	1.78	Synthetics, glass and doublets	Inclusions, double refraction, refractive index.
Sapphire and ruby stars	do.	Red, pink, violet blue, or gray	do.	High to Low	9.0	3.95-4.10	do.	1.78	Star quartz, synthetic stars	Shows asterism, color on side view.
Sapphire or ruby synthetic	do.	Yellow, pink, or blue	Up to 20 carats	Low	9.0	3.95-4.10	do.	1.78	Synthetic spinel, glass	Curved strae, bubble inclusions.
Diamond	Carbon	White, blue-white, yellow, brown, green, pink, blue	Any	Very high	10.0	3.516-3.525	Single	2.42	Zircon, titania, cubic zirconia	High index, dispersion, single refraction, hardness, cut, luster.
Feldspar:										
Amazonite	Alkali aluminum silicate	Green	Large	Low	6.0-6.5	2.56	--	1.52	Jade	Cleavage, sheen, vitreous to pearly, opaque, grid.
Labradorite	do.	Gray with blue and bronze sheen color play.	do.	Low	6.0-6.5	2.56	--	1.56	do.	Cleavage, sheen, vitreous to pearly, opaque, grid.
Moonstone	do.	White	do.	Low	6.0-6.5	2.77	--	1.52-1.54	Glass or white onyx.	Blue sheen, opalescent.
Garnet	Complex silicate	Brown, black, yellow, green, ruby red, or orange	Small to medium	Low to high	6.5-7.5	3.15-4.30	Single strained	1.79-1.98	Synthetics, spinel, glass	Single refraction, anomalous strain.
Jade:										
Jadeite	do.	Green, yellow, black, white, or mauve	Large	Low to very high	6.5-7.0	3.3-3.5	Cryptocrystalline	1.65-1.68	Onyx, bowenite, vesuvianite, grossularite	Luster, spectrum, translucent, to opaque.
Nephrite	Complex hydrous silicate	do.	do.	do.	6.0-6.5	2.96-3.10	do.	1.61-1.63	do.	Do.

See footnotes at end of table.

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Name	Composition	Color	Practical size 1/	Cost 2/	Mohs	Specific gravity	Refraction	Refractive index	May be confused with-	Recognition characters
Opal	Hydrous silica	Colors flash in white gray, black, red, or yellow	Large	Low to high	5.5-6.5	1.9-2.3	Isotropic	1.45	Glass, synthetics, triplets	Play of color.
Pearl	Calcium carbonate	White, pink, or black	Small	do.	2.5-4.0	2.6-2.85	--	--	Cultured and imitation	Luster, structure, X-ray.
Peridot	Iron magnesium silicate	Yellow and/or green	Any	Medium	6.5-7.0	3.27-3.37	Double (strong)	1.65-1.69	Tourmaline chrysoberyl	Strong double refraction, low dichroism.
Quartz:										
Agate	Silica	Any color	Large	Low	7.0	2.58-2.64	--	--	Glass, plastic, Mexican onyx	Cryptocrystalline, irregularly banded, dendritic inclusions.
Amethyst	do.	Purple	do.	Medium	7.0	2.65-2.66	Double	1.55	do.	Refractive index, double refraction, transparent.
Cairngorm	do.	Smoky	do.	Low	7.0	2.65-2.66	do.	1.55	do.	Do.
Citrine	do.	Yellow	do.	Low	7.0	2.65-2.66	do.	1.55	do.	Do.
Crystal, rock	do.	Colorless	do.	Low	7.0	2.65-2.66	do.	1.55	do.	Do.
Jasper	do.	Uniform or spotted red, yellow or green	do.	Low	7.0	2.58-2.66	--	--	do.	Opaque, vitreous.
Onyx	do.	Many colors	do.	Low	7.0	2.58-2.64	--	--	do.	Uniformly banded.
Rose	do.	Pink, rose red	do.	Low	7.0	2.65-2.66	do.	1.55	do.	Refractive index, double refraction, translucent.
Spinel	Magnesium aluminum oxide	Any	Small to medium	Medium	8.0	3.5-3.7	Single	1.72	Synthetic, garnet	Refractive index, single refraction, inclusions.
Spinel, Synthetic	do.	Any	Up to 40 carats	Low	8.0	3.5-3.7	Double	1.73	Spinel, corundum, beryl, topaz, alexandrite	Weak double refraction, curved striae, bubbles.
Spodumene:										
Kunzite	Lithium aluminum silicate	Pink to lilac	Medium	Medium	6.5-7.0	3.13-3.20	Double	1.66	Amethyst, morganite	Refractive index.
Hiddenite	do.	Yellow to green	do.	do.	6.5-7.0	3.13-3.20	do.	1.66	Synthetic spinel	Do.
Tanzanite	Complex silicate	Blue	Small	High	6.0-7.0	3.30	Double	1.69	Sapphire, synthetics	Strong trichroism.
Topaz	do.	White, blue, green	Medium	Low to medium	8.0	3.4-3.6	do.	1.62	Beryl, quartz	Refractive index.
Tourmaline	do.	All, including mixed	do.	do.	7.0-7.5	2.98-3.20	do.	1.63	Peridot, beryl, corundum, glass	Double refraction, refractive index.
Turquoise	Copper aluminum phosphate	Blue to green	Large	Low	6.0	2.60-2.83	do.	1.63	Glass, plastics	Difficult if matrix not present, matrix usually limonitic.
Zircon	Zirconium silicate	White, blue, or brown, yellow, or green	Small to medium	Low to medium	6.0-7.5	4.0-4.8	Double (strong)	1.79-1.98	Diamond, synthetics, topaz, aquamarine	Double refraction, strongly dichroic, wear on facet edges.

1/ Small-up to 5 carats; medium-up to 50 carats; large-more than 50 carats.
2/ Low-up to $25 per carat; medium-up to $200 per carat; high-more than $200 per carat.

TABLE 2
SYNTHETIC GEMSTONE PRODUCTION METHODS

Gemstone	Production methods	Company	Date of first production
Ruby	Flux	Chatham	1950's
Do.	do.	Kashan	1960's
Do.	do.	J.O. Crystal (Ramaura)	1980's
Do.	do.	Douras	1990's
Do.	Zone melt	Seiko	1980's
Do.	Melt pulling	Kyocera (Inamori)	1970's
Do.	Verneuil	Various producers	1900's
Star ruby	do.	Linde (Div. of Union Carbide)	1940's
Do.	Melt pulling	Kyocera	1980's
Do.	do.	Nakazumi	1980's
Sapphire	Flux	Chatham	1970's
Do.	Zone melt	Seiko	1980's
Do.	Melt pulling	Kyocera	1980's
Do.	Verneuil	Various producers	1900's
Star sapphire	do.	Linde	1940's
Emerald	Flux	Chatham	1930's
Do.	do.	Gilson	1960's
Do.	do.	Kyocera	1970's
Do.	do.	Seiko	1980's
Do.	do.	Lennix	1980's
Do.	do.	Russia	1980's
Do.	Hydrothermal	Lechleitner	1960's
Do.	do.	Regency	1980's
Do.	do.	Biron	1980's
Do.	do.	Russia	1980's
Alexandrite	Flux	Creative crystals	1970's
Do.	Melt pulling	J.O. Crystal	1990's
Do.	do.	Kyocera	1980's
Do.	Zone melt	Seiko	1980's
Cubic zirconia	Skull melt	Various producers	1970's

TABLE 3
VALUE OF U.S. GEMSTONE
PRODUCTION, BY GEMSTONE 1/

(Thousand dollars)

Gem materials	1994	1995
Agate	234	907
Beryl	492	698
Coral (all types)	88	114
Diamonds	284	163
Garnet	780	4,180
Gem feldspar	2,620	3,150
Geode/nodules	127	206
Obsidian	40	64
Opal	1,120	475
Peridot	635	225
Petrified wood	208	150
Quartz	1,060	1,440
Sapphire/ruby	2,810	785
Shell	33,000	54,500
Topaz	13	9
Tourmaline	14	52
Turquoise	1,710	1,670
Other	5,310	5,580
Total	50,500 r/	74,400 2/

r/ Revised.
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Estimated minimum production.

TABLE 4
PRICES OF U.S. CUT DIAMONDS, BY SIZE AND QUALITY

Carat weight	Description, color 1/	Clarity 2/ (GIA terms)	Price range per carat 3/ Jan. 1995-Jan. 1996	Average 4/ July 1994
0.25	G	VS1	$1,400 - $1,400	$1,400
.25	G	VS2	1,300 - 1,300	1,300
.25	G	SI1	975 - 975	975
.25	G	VS1	1,300 - 1,300	1,200
.25	G	VS2	1,150 - 1,150	1,150
.25	G	SI1	950 - 950	950
.50	G	VS1	3,050 - 3,050	3,050
.50	G	VS2	2,700 - 2,700	2,700
.50	G	SI1	2,400 - 2,400	2,400
.50	G	VS1	2,800 - 2,800	2,800
.50	G	VS2	2,600 - 2,600	2,600
.50	G	SI1	2,300 - 2,300	2,300
.75	G	VS1	3,650 - 3,600	3,650
.75	G	VS2	3,350 - 3,350	3,350
.75	G	SI1	2,950 - 3,100	2,950
.75	G	VS1	3,250 - 3,400	3,250
.75	G	VS2	2,950 - 3,200	2,950
.75	G	SI1	2,750 - 2,900	2,750
1.00	G	VS1	4,800 - 4,900	4,800
1.00	G	VS2	4,250 - 4,600	4,250
1.00	G	SI1	3,850 - 4,200	3,850
1.00	G	VS1	4,250 - 4,500	4,250
1.00	G	VS2	4,050 - 4,400	4,050
1.00	G	SI1	3,750 - 4,000	3,750

1/ Gemological Institute of America (GIA) color grades: D- -colorless; E- -rare white; G - H - I - -traces of color.
2/ Clarity: IF--no blemishes; VVS1--very, very slightly included; VS1--very slightly included; VS2--very slightly included, but not visible; SI1--slightly included.
3/ Jeweler's Circular-Keystone. V. 167, No. 3, Mar. 1996, p. 142.
4/ Jeweler's Circular-Keystone. V. 166, No. 9, Sept. 1995, p. 232.

TABLE 5
PRICES OF U.S. CUT COLORED GEMSTONES, BY SIZE 1/

Gemstone	Carat weight	Price range per carat in 1995 2/	Average price per carat 2/ Jan. 1995	Jan. 1996
Amethyst	1	$8 - $18	$13.00	$13.00
Aquamarine	1	75 - 90	82.50	82.50
Emerald	1	1,750 - 3,200	2,475.00	2,475.00
Garnet, tsavorite	1	600 - 900	750.00	750.00
Ruby	1	2,450 - 3,900	3,175.00	3,175.00
Sapphire	1	800 - 1,800	1,300.00	1,300.00
Tanzanite	1	115 - 220	157.50	172.50
Topaz	1	3 - 5	4.00	4.00
Tourmaline, red	1	60 - 125	92.50	92.50

1/ Fine quality.
2/ Jewelers' Circular-Keystone. V. 167, No. 3, Mar. 1996, p. 142. These figures represent a sampling of net prices that wholesale colored stone dealers in various U.S. cities charged its cash customers during the month for fine-quality stones.

TABLE 6
U.S. EXPORTS AND REEXPORTS OF DIAMOND (EXCLUSIVE OF INDUSTRIAL DIAMOND), BY COUNTRY 1/

Country	1994 Quantity (carats)	1994 Value 2/ (millions)	1995 Quantity (carats)	1995 Value 2/ (millions)
Belgium	462,000	$430	658,000	$475
Canada	263,000	46	123,000	44
France	11,100	27	23,900	31
Hong Kong	192,000	402	462,000	436
Israel	413,000	393	496,000	480
Japan	55,000	134	150,000	159
Singapore	14,000	36	26,500	57
Switzerland	36,200	190	54,100	183
Thailand	41,300	19	124,000	32
United Kingdom	23,300	66	10,900	64
Other	110,000	49	202,000	85
Total	1,620,000	1,790	2,330,000	2,040

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Customs value.

Source: Bureau of the Census, U.S. Department of Commerce.

TABLE 7
U.S. IMPORTS FOR CONSUMPTION OF DIAMOND, BY KIND, WEIGHT, AND COUNTRY 1/

Kind, range, and country of origin	1994 Quantity (carats)	1994 Value 2/ (millions)	1995 Quantity (carats)	1995 Value 2/ (millions)
Rough or uncut, natural: 3/				
Belgium	301,000	$174	181,000	$119
Brazil	15,300	4	4,910	1
Israel	23,100	15	36,500	22
Netherlands	109	(4/)	--	--
South Africa	34,800	43	17,800	26
Switzerland	1,960	8	6,950	10
United Kingdom	482,000	225	969,000	155
Venezuela	556	(4/)	19,900	(4/)
Other	576,000	321	476,000	299
Total	1,440,000	790	1,710,000	631
Cut but unset, not more than 0.5 carat:				
Belgium	849,000	236	677,000	181
Brazil	27,000	4	6,450	1
Canada	10,000	2	3,990	1
Hong Kong	145,000	30	216,000	39
India	6,150,000	1,130	7,240,000	1,190
Israel	880,000	360	769,000	352
South Africa	3,680	3	8,580	4
Switzerland	5,260	2	8,600	1
United Kingdom	9,750	2	8,260	2
Other	83,300	21	112,000	23
Total	8,160,000	1,790	9,050,000	1,790
Cut but unset, over 0.5 carat:				
Belgium	769,000	1,030	873,000	1,110
Hong Kong	29,000	43	43,600	64
India	248,000	143	326,000	196
Israel	1,350,000	1,570	1,490,000	1,740
Netherlands	491	3	300	1
South Africa	19,700	54	15,100	37
Switzerland	16,900	153	19,600	196
United Kingdom	14,600	45	8,290	38
Other	78,300	121	105,000	143
Total	2,520,000	3,160	2,880,000	3,530

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Customs value.
3/ Includes some natural advanced diamond.
4/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 8
U.S. IMPORTS FOR CONSUMPTION OF GEMSTONES, OTHER THAN DIAMOND, BY KIND AND COUNTRY 1/

Kind and country	1994 Quantity (carats)	1994 Value 2/ (millions)	1995 Quantity (carats)	1995 Value 2/ (millions)
Emerald:				
Belgium	8,360	$2	27,000	$4
Brazil	1,140,000	7	2,620,000	6
Colombia	928,000	89	1,130,000	94
France	1,590	2	1,500	2
Germany	106,000	4	24,600	2
Hong Kong	295,000	13	315,000	17
India	2,310,000	33	2,570,000	47
Israel	107,000	25	116,000	27
Japan	1,940	1	1,300	(3/)
South Africa	249	(3/)	474	(3/)
Switzerland	33,200	28	50,900	26
Taiwan	545	(3/)	3,890	(3/)
Thailand	558,000	10	418,000	7
United Kingdom	4,300	4	2,630	1
Other	169,000	9	32,600	3
Total	5,670,000	227	7,320,000	236
Ruby:				
Belgium	26,900	2	14,600	1
Brazil	5,670	(3/)	233	(3/)
Colombia	7,390	(3/)	438	(3/)
France	393	1	482	2
Germany	90,900	3	129,000	1
Hong Kong	171,000	7	278,000	6
India	1,480,000	7	1,370,000	6
Israel	81,300	1	8,360	1
Japan	3,170	(3/)	1,050	(3/)
Switzerland	24,500	14	52,400	18
Thailand	2,950,000	56	2,270,000	41
United Kingdom	2,770	2	13,900	2
Other	25,900	4	39,400	5
Total	4,860,000	96	4,180,000	84
Sapphire:				
Australia	27,200	1	49,900	1
Austria	229	1	214	(3/)
Belgium	16,300	2	9,280	(3/)
Brazil	12,300	(3/)	7,570	(3/)
Canada	274,000	1	82,200	(3/)
Colombia	7,240	1	1,270	(3/)
France	739	(3/)	863	1
Germany	130,000	3	146,000	2
Hong Kong	172,000	5	505,000	4
India	244,000	2	329,000	1
Israel	34,500	1	17,500	2
Japan	1,950	(3/)	831	(3/)
Singapore	8,880	(3/)	1,250	(3/)
Sri Lanka (Ceylon)	341,000	8	328,000	9
Switzerland	17,000	12	17,700	13
Thailand	5,740,000	62	5,240,000	49
United Kingdom	7,130	2	7,750	2
Other	31,600	2	30,300	1
Total	7,060,000	101	6,780,000	84

See footnotes at end of table.

TABLE 8--Continued
U.S. IMPORTS FOR CONSUMPTION OF GEMSTONES, OTHER THAN DIAMOND, BY KIND AND COUNTRY 1/

Kind and country	1994 Quantity (carats)	1994 Value 2/ (millions)	1995 Quantity (carats)	1995 Value 2/ (millions)
Other:				
Rough, uncut:				
Australia		$3		$3
Brazil		27		32
Colombia		6		3
Hong Kong		1		1
Nigera	NA	(3/)	NA	(3/)
Pakistan		2		1
South Africa		1		(3/)
Switzerland		(3/)		(3/)
United Kingdom		(3/)		(3/)
Zambia		1		1
Other	30,500,000	13 r/	61,900,000	21
Total	97,400,000	54 r/	1,530,000,000	61
Cut, set and unset:				
Australia		4		6
Brazil		8		8
Canada		1		(3/)
China		4		5
Germany		15 r/		14
Hong Kong	NA	23 r/	NA	23
India		11 r/		13
Japan		10		11
Switzerland		2		1
Taiwan		3		2
Thailand		21 r/		19
United Kingdom		(3/)		1
Other	NA	18 r/	NA	22
Total	NA	122 r/	NA	125

r/ Revised. NA Not available.
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Customs value.
3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 9
VALUE OF U.S. IMPORTS OF SYNTHETIC AND IMITATION
GEMSTONES, INCLUDING PEARLS, BY COUNTRY

(Thousand dollars) 1/

Country	1994	1995
Synthetic, cut but unset:		
Australia	2,720	1,120
Austria	5,050	6,250
China	908	2,830
France	999	1,010
Germany	10,900	11,000
Hong Kong	1,890	1,390
Italy	688	1,120
Japan	1,080	512
Korea, Republic of	1,470	1,360
Sri Lanka (Ceylon)	725	510
Switzerland	3,530	4,430
Thailand	9,820	371
Other	1,130	1,780
Total	41,000	41,200
Imitation: 2/		
Austria	48,100	59,900
China	421	575
Czech Republic	9,830	12,800
Germany	2,160	1,640
Japan	552 r/	503
Taiwan	744	448
Other	1,020	1,240
Total	62,800 r/	77,100

r/ Revised.
1/ Customs value.
2/ Includes pearls.

Source: Bureau of the Census.

TABLE 10
U.S. IMPORTS FOR CONSUMPTION OF GEMSTONES 1/

(Thousand carats and thousand dollars)

	1994		1995	
Stones	Quantity	Value 2/	Quantity	Value 2/
Diamonds:				
Rough or uncut	1,440	790,000	1,710	631,000
Cut but unset	10,700	4,940,000	11,900	5,320,000
Emeralds: Cut but unset	5,670	227,000	7,320	236,000
Coral and similar materials, unworked	2,400	4,630	2,140	4,020
Rubies and sapphires: Cut but unset	11,900	197,000	11,000	168,000
Pearls:				
Natural	NA	2,360	NA	3,260
Cultured	NA	24,700	NA	30,400
Imitation	NA	1,870	NA	1,660
Other precious and semiprecious stones:				
Rough, uncut	971,000	44,100	1,420,000	48,600
Cut, set and unset	NA	94,600	NA	91,500
Other	157	5,000	108,000	8,800
Synthetic:				
Cut but unset	178,000	41,000	160,000	41,200
Other	NA	1,660	NA	1,830
Imitation gemstone 3/	NA	60,900	NA	75,400
Total	XX	6,440,000	XX	6,660,000

NA Not available. XX Not applicable.
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Customs value.
3/ Does not include pearls.

Source: Bureau of the Census.

TABLE 11
NATURAL DIAMOND: WORLD PRODUCTION, BY TYPE AND COUNTRY 1/ 2/

(Thousand carats)

Country	1991			1992		
	Gem e/ 3/	Industrial e/	Total 4/	Gem e/ 3/	Industrial e/	Total 4/
Angola 5/	899	62	961	1,100	80	1,180
Australia	17,978	17,978	35,956	18,078	22,095	40,173
Botswana	11,550	4,950	16,500	11,160	4,790	15,950
Brazil	600	900	1,500 e/	653	665	1,318
Central African Republic	296	82	378	307	107	414
China	200	800	1,000 e/	200	800	1,000 e/
Gabon	400	100	500 e/	400	100	500 e/
Ghana	560	140	700 e/	570	140	710 e/
Namibia	1,170	20	1,190	1,520	30	1,550
Russia	XX	XX	XX	9,000	9,000	18,000
Sierra Leone 6/	160	83	243	180	116	296
South Africa	3,800	4,600	8,400 r/	4,600	5,600	10,200
U.S.S.R. 7/	10,000	10,000	20,000 e/	XX	XX	XX
Venezuela	102 8/	112 8/	214	302 8/	176 8/	478
Zaire	3,000	14,814	17,814	8,934	4,567	13,501
Other	275 r/	166 r/	441 r/	305 r/	218 r/	524 r/
Total	51,000	54,800	106,000	57,300	48,500	106,000

	1993			1994 e/		
	Gem e/ 3/	Industrial e/	Total 4/	Gem 3/	Industrial	Total
Angola 5/	130	15	145	270	30	300
Australia	18,844	23,032	41,876	19,485	23,815	43,300
Botswana	10,310	4,420	14,730	10,550 r/ 8/	5,000	15,550 r/ 8/
Brazil	600	900	1,500 e/	600	900	1,500
Central African Republic	370	125	495	400 r/	131 r/	531 r/
China	230	850	1,080 e/	230	850	1,080
Gabon	400	100	500 e/	400	100	500
Ghana	570	140	710 e/	580	145	725
Namibia	1,120	20	1,140	1,312 r/ 8/	-- r/	1,312 r/ 8/
Russia	8,000	8,000	16,000	8,500	8,500	17,000
Sierra Leone 6/	90	68	158	155	100	255
South Africa	4,600	5,700	10,300	4,340 r/	5,343 r/	9,683 r/
U.S.S.R. 7/	XX	XX	XX	XX	XX	XX
Venezuela	146 r/ 8/	155 8/	301	203 r/ 8/	214 r/ 8/	417 r/ 8/
Zaire	2,006	13,620	15,626	4,000	13,000	17,000
Other	296 r/	218 r/	513 r/	333 r/	221 r/	554 r/
Total	47,700	57,400 r/	105,000	51,400 r/	58,300 r/	110,000 r/

	1995 e/		
	Gem 3/	Industrial	Total
Angola 5/	450	50	500
Australia	18,312	22,381	40,693
Botswana	11,502	5,300	16,802 8/
Brazil	600	900	1,500
Central African Republic	400	130	530
China	230	900	1,130
Gabon	400	100	500
Ghana	580	145	725
Namibia	1,382 8/	--	1,382 8/
Russia	9,000	9,000	18,000
Sierra Leone 6/	113 8/	100	213 8/
South Africa	4,300	5,383	9,683 8/
U.S.S.R. 7/	XX	XX	XX
Venezuela	229 8/	64 8/	293 8/
Zaire	4,000	13,000	17,000
Other	363	246	609
Total	51,900	57,700	110,000

e/ Estimated. r/ Revised. XX Not applicable.

1/ Table includes data available through June 21, 1996.

2/ World totals are rounded to three significant digits; may not add to totals shown.

3/ Includes near-gem and cheap-gem qualities.

4/ Total natural diamond output (gem plus industrial) for each country actually is reported, except where indicated to be an estimate.

5/ Figures do not include smuggled artisanal production.

6/ Figures are estimates based on reported exports and do not include smuggled diamonds.

7/ Dissolved in Dec. 1991.

8/ Reported figure.