

Jewelry and Metals Reference

This is a set of guidance and reference materials designed specifically for persons involved in the **gemstone, jewelry and metals** trades.

The author has qualifications and many years of experience in the Jewelry business, internationally.

It is in searchable book form - all in one place – and is useful for lookup, or to show and impart ideas and spur creativity. There are explanations of terms, tables, cross reference charts and translations that are broken down into 9 different chapters. Each page is bookmarked to tie into the **Table of Contents**.

Brought to you by

Ford K. Dotterer

gem-jam.com

Version 1.035 Copyright 2013

TABLE OF CONTENTS

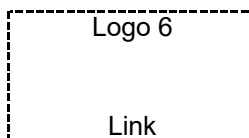
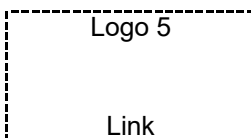
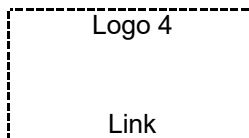
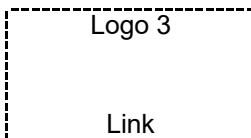
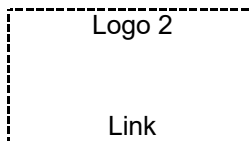
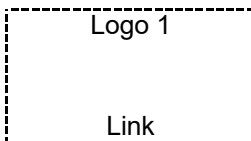
Description	Pages
Cover & Introduction	1
Table of Contents	2 - 3
Recommended Links	4
Disclaimer	5
Diamond	
Color Grading Scale Comparison (L)	6
Clarity Grading Scale Comparison (L)	7
Diamonds Simulants and Properties (L)	8
Size to Weight Conversion (7 Cuts) (L)	9
Sieve Size Weights (Small Round Stones)	10
Pearl Standards	
Pearl Shapes (L)	11
Pearl Size to Weight Estimations	12
Pearl Necklace Length Descriptions	13
Pearl Knot Length Increase Estimation	14
Pearl Twist Length Decrease Estimation	14
No. of Pieces to a Strand - Length and Size	14
Stringing Information and Care	15
Gemology	
Birefringence Table	16
Dispersion Table	17
Fracture Types	17
Gemstone Hardness Table	18
Refractive Index Tables	19
Specific Gravity Tables	20
Gemstones by Color - Transparent Pg. 1	21
Gemstones by Color - Transparent Pg. 2	22
Gemstones by Color - Non-Transparent Pg. 1	23
Gemstones by Color - Non-Transparent Pg. 2	24
Visual Cues: Transparency, Luster, Cleavage	25



Description	Pages
Standard Lengths and Size Conversions	
Ring Size Conversion Table, 6 Standards Pg. 1	26
Ring Size Conversion Table, 6 Standards Pg. 2	27
Ring Size Conversion Table, 6 Standards Pg. 3	28
Size Conversion Formulas & Tips	29
Standard Chain Necklace Lengths	30
Metals / Weights	
Hallmarks & Metal Purity	31
Alloys & Colors	31
Specific Gravity	32
Metal Element Abbreviations	32
Metal to Metal Weight Conversion Chart Pt.1 (L)	33
Metal to Metal Weight Conversion Chart Pt.2 (L)	34
Standard Weight Abbreviations (L)	35
Weight Conversions Cross Reference Pt. 1 (L)	36
Weight Conversions Cross Reference Pt. 2 (L)	37
Wax & Prototype Conversion	38
Temperature Conversion	38
Wire & Other Weight & Surface Calculations	39
Metal Melting Points	40
B&S Wire Gauge	41
Setting Styles - Picture Catalogue	
Bead Setting	42
Prong Setting	43
Mixed & Solitaire Prong Setting	44
Chanel Setting	45
Mixed Bezel Setting	46
Illusion & Plate Setting	47
Solitaire Bezel Setting	48
Solitaire Setting	49
Mixed & Invisible Setting	50



Description	Pages
Cutting & Faceting Styles	
Common Calibrated Styles & Sizes	51
Cut Terminology	51
Light Behavior in a Gemstone	52
Diagram of a Round Brilliant Cut	53
Cutting Standards for Round Brilliants (L)	54
Fancy Cut - Length to Width Ratio (L)	54
Tolkowsky Ideal Proportions & Explanation	55
Picture Catalogue of Cutting Styles	56 to 60
Gemstone Mythology	
Traditional Birthstone list - Month, Day, Hour	61
Country Specific Birthstones by Month	62
Birthstones by Astrological Zodiac Sign (L)	63
Vedic Planet (L)	64
Chinese Birth Year Chart (L)	64
Flowers for the Month & Symbolism (L)	65
Wedding Anniversary Traditional Gifts	66
Healing Powers	67
Greek and Roman Gods and Powers (L)	68
Misc. Information	
Cubic Zirconia Size to Weight Conversion	69
Chinese Names for Gemstones	70 to 72
Determining Value - Beauty, Rarity, Durability	73
Cleaning Tips	73

Links:

5

Disclaimer:

While every effort has been made to check and double check the materials in this reference guide, the information may not correspond exactly to what you may be familiar with. There are, worldwide, many reference works that do not match. In some sections I have attempted to be extremely accurate where the information is based on a calculation. In other cases where there are clear exceptions I have listed both extremes. In cases where there is more than one qualified answer, I have included the multiple solutions

Tips:

- If the page you are looking for has a label (L), it is best viewed in landscape mode.

If you would like to see any additional information included in this reference manual please e-mail

fredhali@gem-jam.com

This e-reference book is brought to you by

Ford K. Dotterer

<https://www.gem-jam.com/>



DIAMOND COLOR GRADING SCALE COMPARISON

SYSTEMS & INSTITUTIONS												
GENERAL DESCRIPTION	Colorless			Near Colorless			Slightly Tinted					Very Light Yellow
Traditional Terms	Jager	River		Top Wesselton	Wesselton	Top Crystal	Crystal	Top Cape	Cape	Low Cape	Light Yellow	
United Kingdom (Old)	Blue White	Top Fine White		Fine White		White	Commercial White	Crystal		Top Cape		Cape
CIBJO	Exceptional White			Rare White	White	Slightly Tinted White	Tinted White			Slightly Yellowish	Yellowish	
Switzerland	River		Top Wesselton	Wesselton		Top Crystal	Crystal		Top Cape		Cape	
United Kingdom	Finest White			Fine White		White	Commercial White	Top Silver Cape		Silver Cape		Light Cape
Gemological Institute of America	D	E	F	G	H	I	J	K	L	M	N	
Antwerp	0+	0	1+	1	2	3	4	5	6	7	8	9
South Africa	0		1		1.5	2	3	4	5	6	7	8
AGS	0			1		2	3	4	5		6	7
Colorimeter	0.25	0.75	1.25	2.25	2.75			3.25	3.75	4.25	4.75	5.25
Hong Kong	100	99	98 - 97		96	95	94	93	92	91	90	89

GIA	D E F	G H I J	K L M	N O P Q R	S T U V W X Y Z
color grading scale	colorless	nearly colorless	faint yellow	very light yellow	light yellow to strong yellow



DIAMOND CLARITY GRADING SCALE CONVERSION

GEMOLOGICAL INSTITUTE OF AMERICA	FL	IF	VVS 1	VVS 2	VS 1	VS 2	SI 1	SI 2	I 1	I 2	I 3
CIBJO	FL	IF	VVS		VS		SI	PIQUE 1	PIQUE 2	PIQUE 3	
TRANSLATION	FLAWLESS	INTERNALLY FLAWLESS	VERY VERY SMALL INCLUSIONS		VERY SMALL INCLUSIONS		SMALL INCLUSIONS		INCLUSIONS		
DESCRIPTION	No inclusions with 10X magnification		Very difficult to see inclusions with 10X magnification		Difficult to see inclusions with 10X magnification		Small inclusions can be seen but do not interfere		Inclusions begin to interfere with transparency and durability		



Diamond Simulants - Gemological Properties

Material	Refractive Index	Doubling Yes \ No	Dispersion	Hardness (Mohs')	Density (g/cm ³)	Ultraviolet Reaction	Thermal Conductivity	Market Introduction
Diamond	2.417	N	0.044	10	3.52	None to Strong	Excellent	1476 -
Artificial Simulants:								
Glasses	1.47 - 1.7	N	> 0.098	< 6	2.4 - 4.2	Variable	Poor	1700 -
Cubic Zirconia	2.15 - 2.2	N	0.06	8.3 - 8.5	5.7 - 5.8	None to Strong	Poor	1976 -
GGG	1.97	N	0.045	6.5 - 7	7.02 - 7.05	None to Strong	Poor	1973-1975
Strontium titanate	2.41	N	0.19	5.5	5.13	None	Poor	1955-1970
Syn. Moissanite	2.648 - 2.691	Y	0.104	8.5-9.25	3.22	None to Weak	High	1998 -
Syn. Rutile	2.62 - 2.9	Y	0.33	6 - 6.5	4.25	None	Poor	1947-1955
Syn. Sapphire	1.762 - 1.770	Y	0.018	9	3.97 - 4	None to Weak	Poor	1900-1947
Syn. Spinel	1.727	N	0.02	8	3.6 - 3.64	None to Strong	Poor	1920-1947
YAG	1.83	N	0.028	8.25	4.55 - 4.65	None to Moderate	Poor	1970-1975



Diamond Size Estimations for Various Weights for Fancy Cuts

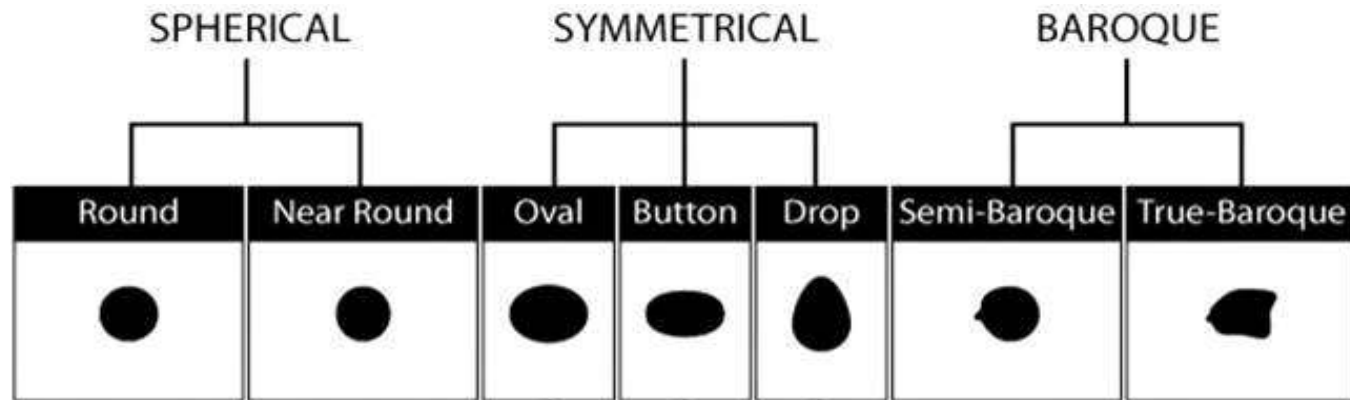
		Fancy Cuts - Millimeters (mm)						
		Marquise	Emerald	Pear	Oval	Princess	Heart (Width)	Round
C T W E I G H T	0.20	5.0 x 2.0	4.0 x 3.0	4.0 x 2.0	4.0 x 3.0	3.15	3.80	3.85
	0.25	5.5 x 2.5	4.5 x 3.0	4.3 x 2.5	5.0 x 3.0	3.40	4.00	4.10
	0.50	8.0 x 4.0	5.5 x 3.5	6.0 x 4.0	6.0 x 4.0	4.40	5.00	5.20
	0.75	9.0 x 4.5	6.5 x 4.5	7.0 x 5.0	6.75 x 5.0	4.90	5.80	5.90
	1.00	10.0 x 4.75	7.0 x 5.0	8.0 x 5.5	7.25 x 5.5	5.50	6.50	6.50
	1.25	10.5 x 5.0	7.5 x 5.5	8.5 x 5.75	7.75 x 6.0	6.00	6.75	7.00
	1.50	11.0 x 5.2	8.0 x 6.0	9.0 x 6.0	8.25 x 6.5	6.50	7.25	7.40
	2.00	12.0 x 6.0	8.5 x 6.5	10.0 x 6.5	8.75 x 7.5	7.50	8.00	8.20
	2.50	13.0 x 6.5	9.0 x 7.0	11.0 x 7.0	9.0 x 7.75	8.00	8.50	9.00
	3.00	14.0 x 7.0	10.0 x 8.0	12.0 x 8.0	10.0 x 8.0	8.30	9.00	9.40
4.00	16.0 x 8.0	11.0 x 9.0	14.0 x 9.0	11.0 x 9.0	9.00	10.00	10.20	
5.00	17.0 x 9.0	12.0 x 10.0	15.0 x 9.5	12.0 x 10.0	9.50	11.00	11.00	



Sieve No.	Approximate pieces p\ct	Carats	Approximate size (mm)
000	375	0.0025	0.80
00	265 / 275	0.0033	0.90
0	200	0.005	1.10
1	175 /180		1.15
1.5	150		1.20
2	125 /130		1.25
2.5	110/115		1.30
3	100	0.01	1.35
3.5	90		1.40
4	75 / 80		1.45
4.5	70		1.50
5	60		1.55
5.5	50	0.02	1.60
6	48		1.70
6.5	45		1.80
7	35 / 40		1.90
7.5	33	0.03	2.00
8	30		2.10
8.5	25	0.04	2.20
9	22		2.30
9.5	20	0.05	2.40
10	18		2.50
10.5	17	0.06	2.60
11	16	0.06 to 0.07	2.70
11.5	15		2.80
12	13	0.07 to 0.08	2.90
12.5	11	0.09	3.00
13	10	0.10	3.10
13.5	9	0.11	3.20
14	8	0.12	3.30
14.5	7.5	0.13	3.40
15	6.5	0.15	3.50
15.5	6	0.17	3.60
16	5.5	0.18	3.70
16.5	5.25	0.19	3.80
17	4.75	0.21	3.90
17.5	4.50	0.22	4.00
18	4.25	0.23	4.10
18.5	4	0.25	4.20
19	3.7	0.27	4.30
19.5	3.33	0.30	4.40
20	3	0.33	4.50



Pearl Shapes



Round



Near Round



Oval



Button



Drop



Baroque

Pearl Size to Weight Estimation

Size	Grains P\Pce		Grams P\Pce		Carats P\Pce		Pcs P\ Momme
	From	To	From	To	From	To	
2.00	0.25	0.26	0.01	0.01	0.06	0.07	
2.0-2.5	0.33		0.02		0.08		227
2.50	0.47	0.50	0.02	0.03	0.12	0.13	160
2.5-3.0	0.64		0.03		0.16		120
3.00	0.75	0.83	0.04	0.04	0.19	0.21	90
3.0-3.5	1.00		0.05		0.25		75
3.50	1.19	1.25	0.06	0.06	0.30	0.31	63
3.5-4.0	1.52		0.08		0.38		50
4.00	1.75	1.88	0.09	0.09	0.44	0.47	40
4.0-4.5	2.16		0.11		0.54		35
4.50	2.50	2.78	0.13	0.14	0.63	0.69	27
4.5-5.0	3.12		0.16		0.78		24
5.00	3.50	3.95	0.18	0.20	0.88	0.99	19
5.0-5.5	4.16		0.21		1.04		18
5.50	4.75	5.00	0.24	0.25	1.19	1.25	15
5.5-6.0	5.36		0.27		1.34		14
6.00	6.00	6.25	0.30	0.31	1.50	1.56	12
6.0-6.5	7.16		0.36		1.79		10.5
6.50	7.75	8.06	0.39	0.40	1.94	2.02	9.3
6.5-7.0	8.84		0.44		2.21		8.5
7.00	9.75	10.71	0.49	0.54	2.44	2.68	7.0
7.0-7.5	11.04		0.55		2.76		6.8
7.50	12.00	12.50	0.60	0.63	3.00	3.13	6.0
7.5-8.0	13.88		0.69		3.47		5.4
8.00	14.50	15.00	0.73	0.75	3.63	3.75	5.0
8.0-8.5	16.32		0.82		4.08		4.6
8.50	17.00	17.86	0.85	0.89	4.25	4.46	4.2
8.5-9.0	19.24		0.96		4.81		3.9
9.00	19.50	21.43	0.98	1.07	4.88	5.36	3.5
9.0-9.5	22.72		1.14		5.68		3.3
9.50	23.00	25.00	1.15	1.25	5.75	6.25	3.0
9.5-10	26.80		1.34		6.70		2.8
10.00	28.00	30.00	1.40	1.50	7.00	7.50	2.5



Pearl Necklace Lengths

- Dog Collar** Necklace of multiple strands (3 to 5) of nearly the same length.
App. 12 to 13 inches. Single clasp, worn high around the neck.
- Choker** Single strand, 14 to 16 inches.
Single Clasp. Rests at base of the neck.
Worn with open collar, low necklines and V-necks.
- Standard** Simple necklace of one strand of the standard 16 inch length.
Single Clasp. Rests loosely at base of the neck or at the collarbone.
- Bib** Necklace of multiple strands (3+), each of different length.
Shortest strand is app. 20 inches, graduating to 26 inches.
Single clasp. Worn outside the collar.
- Princess** Single strand 17 to 22 inches.
Single Clasp. Classic and versatile, worn outside the collar, with high necklines and jumpers.
- Matinee** Longer single strand, 20 to 26 inches.
Single Clasp. Semi - formal, suiting suits and dresses.
- Opera** Longer still, usually two standard strands strung together.
28 to 36 inches. Single clasp but can be doubled around the neck.
Formal, worn outside the collar, falls below bust line.
- Rope \ Lariat** As many as three standard strands.
36 to 60 inches. Single Clasp. Can be looped, twisted or doubled.
- Torsade** Multi-strand twisted. Maybe different shapes sizes or colors.
- Uniform Strand** All pearls of nearly equal size and shape.
- Graduated Strand** Pearls of different sizes strung with larger pearls toward the center.



Estimation of Length Increases Due To Knots

Strand Length Inches	Strand Length (mm)	Pearl or Bead Size (mm)	Avg. No. of Pearls	Length Increase Inches	Length Increase (mm)
14	355	5 - 6	64	1.75	45
16	405	5 - 6	74	2	50
16	405	6 - 7	62	1.75	45
16	405	7 - 8	54	1.5	40
14	355	8 - 9	48	1.25	35

Estimation of Length Decrease Due To Twisting

Strand Length Inches	Strand Length (mm)	Pearl or Bead Size (mm)	Number of Strands	Length Decrease Inches	Length Decrease (mm)
16	405	4	2	.5 - 1.0	12 - 25
16	405	4	4	1.0 - 1.5	25 - 38
16	405	4	6	1.5 - 2.0	38 - 51
16	405	6	3	2.0 - 2.5	51 - 63
16	405	6	4	2.5 - 3.0	63 - 76

App. Number of Pieces Per Strand

Size (mm)	14" Strand (pieces)	16" Strand (pieces)
2 - 2.5	160	185
2.5 - 3	130	148
3 - 3.5	110	125
3.5 - 4	95-97	110
4 - 4.5	83	95
4.5 - 5	74-76	87
5 - 5.5	68-70	80
5.5 - 6	63	72
6 - 6.5	57	64-65
6.5 - 7	53	60
7 - 7.5	50	55-57
7.5 - 8	46	51-52
8 - 8.5	43	48-49
8.5 - 9	41	45-47
9 - 9.5	39	43-44
9.5 - 10	36	41



Stringing Information

Thread:

Threads can be silk or a silk blend with synthetics. In the main the thread should be strong and not easy to stretch.

Thicker cotton thread can be used for heavier beads. It comes in many colors supplied on large spools.

Use the thickest thread that will pass double through the drill hole.

If available use thread size #9 or #10 for pearls up to 6.0 mm and use thread size #12 for pearls over 6.0 mm in size.

Length:

The increase in length of a necklace will depend on **a)** the number of knots **b)** the type of knot and **c)** the thickness of the thread.

The decrease in length of a twisted necklace will depend on **a)** the number of strands **b)** the size of the beads in each strand and **c)** how tightly the strands are twisted.

On non-twisted multistrand necklaces, the adjacent strands should not touch each other.

Caring for your Pearls

- 1) The number one care tip is that you must always remember that your pearls are organic and soft. The surface of **nacre** can be worn-down with constant rubbing or by chemical reaction to perfumes and creams.
- 2) Put your perfume on before you put on your pearls and hand cream on before your rings.
- 3) After you remove your pearls wipe them with a soft damp cloth.
- 4) Store your pearls in the boxes or pouches provided when you bought them. Don't let them rub against harder jewels in a drawer or box.
- 5) Periodically inspect the string and replace if necessary. All strands should be knotted in case of accidental breakage, (you will not lose all of your pearls if the string breaks).



Birefringence Table			
Zircon (L)	0.000 - 0.008	Jadeite	0.012 - 0.020
Emerald (flux)	0.003 - 0.005	Serpentine	0.014
Idocrase	0.003 - 0.018	Spodumene	0.014 - 0.027
Chalcedony	0.004	Diopside	0.024 - 0.031
Beryl	0.004 - 0.009	Nephrite (Jade)	0.027
Zoisite	0.004 - 0.009	Peridot (Olivine)	0.033 - 0.038
Orthoclase (Feldspar)	0.005 - 0.008	Zircon (H)	0.036 - 0.059
Iolite	0.005 - 0.018	Turquoise	0.04
Oligoclase (Feldspar)	0.007	Turquoise	0.04
Andalusite	0.007 - 0.013	Benitoite	0.047
Corundum	0.008 - 0.009	Dioptase	0.053
Microline (Feldspar)	0.008 - 0.010	Pearl	0.155
Topaz	0.008 - 0.011	Coral	0.16
Chrysoberyl	0.008 - 0.012	Calcite	0.172 - 0.190
Zircon (M)	0.008 - 0.043	Tourmaline	0.180 - 0.020
Quartz (all colors)	0.009	Rhodochrosite	0.201 - 0.220
Rhodonite	0.010 - 0.014	Smithsonite	0.227
Albite (Feldspar)	0.011	Malachite	0.25
Labradorite (Feldspar)	0.012	Hematite	0.28



DISPERSION TABLE

Orthoclase Feldspar	0.012	Spinel	0.02
Quartz	0.013	Almandite Garnet	0.024
Beryl	0.014	Rhodolite Garnet	0.026
Topaz	0.014	Pyrope Garnet	0.027
Chrysoberyl	0.015	Spessartite Garnet	0.027
Tourmaline	0.017	Grossularite Garnet	0.028
Spodumene	0.017	Zircon	0.038
Corundum	0.018	Diamond	0.044
Kornerupine	0.019	Andradite Garnet	0.057
Idocrase	0.019	Strontium Titanate	0.109
Peridot	0.02	Synthetic Rutile	0.33

DESCRIPTION OF FRACTURE TYPES

Conchoidal - Fracture resembling a semicircular shell, with a smooth, curved surface. An example of conchoidal fracture can be seen in broken glass.

Subconchoidal - Fracture that falls somewhere between *conchoidal* and *even*; smooth with irregular rounded corners.

Even or smooth - Fracture that forms a smooth surface.

Uneven - Fracture that leaves a rough or irregular surface.

Hackly - Fracture that resembles broken metal, with rough, jagged, points. True metals exhibit this fracture. (This fracture is also known as "jagged")

Splintery - Fracture that forms elongated splinters. All fibrous minerals fall into this category.

Earthy or crumbly - Fracture of minerals that crumble when broken.



Gem Material Hardness (Ref. Moh's Scale)

Hardness\Range		Gemstone Material
1		Talc
	1 - 1.5	Soapstone
2		Gypsum
	2 - 2.5	Amber
2.5		Turtle Shell, Ivory
	2.5 - 4	Jet
	2.5 - 4.5	Pearl
3		Calcite
	3 - 3.5	Amber
3.5		Coral, Shell
	3.5 - 4	Coral, Malachite, Rhodochrosite
4		Fluorite
5		Apatite
	5 - 6.0	Lapis Lazuli, Turquoise, Sodalite, Strontium Titanate, Diopside
	5 - 6.5	Opal
5.5		Enstatite
	5.5 - 6.5	Hematite, Rhodonite
6		Labradorite (Feldspar)
	6 - 6.5	Nephrite (Jade), Microcline - Orthoclase - Oligoclase (Feldspars), Pyrite, Benitoite, Rutile, Marcasite
6.5		Scapolite
	6 - 7.0	Spodumene
	6.5 - 7	Peridot, Chalcedony (Quartz), Jadeite (Jade), Andradite(Garnet), Synthetic Rutile
7		Quartz, Danburite, Grossularite - Spessartine - Uvavorite (Garnet), Dumortierite
	7 - 7.5	Tourmaline, Zircon, Rhodolite - Pyrope (Garnet), Iolite, Staurolite, Andalusite
7.5		Almandine (Garnet)
	7.5 - 8	Aquamarine - Emerald (Beryl), Synthetic Emerald
8		Topaz, Spinel, Synthetic Spinel
8.5		Cat's Eye - Alexandrite (Chrysoberyl)
9		Ruby - Sapphire (Corundum), Synthetic Corundum
10		Diamond



Refractive Index of Common Gemstones

Stone	R.I.	Stone	R.I.
Hematite	2.940 - 3.220	Andalusite	1.627 - 1.650
Diamond	2.417	Turquoise	1.610 - 1.650
Zircon (High)	1.925 - 2.025	Topaz	1.607 - 1.643
Andradite (Garnet)	1.875 - 1.940	Nephrite	1.600 - 1.638
Zircon (Medium)	1.875 - 1.905	Tourmaline	1.603 - 1.655
Spessartite (Garnet)	1.790 - 1.810	Rhodochrosite	1.578 - 1.840
Zircon (Low)	1.777 - 1.850	Beryl	1.560 - 1.620
Corundum	1.762 - 1.779	Labradorite (Feldspar)	1.559 - 1.572
Almandine (Garnet)	1.750 - 1.830	Quartz	1.532 - 1.553
Hessonite (Garnet)	1.742 - 1.748	Oligoclase (Feldspar)	1.539 - 1.547
Chrysobery	1.740 - 1.777	Chalcedony	1.535 - 1.553
Rhodolite (Garnet)	1.740 - 1.770	Ivory	1.535 - 1.555
Uvarovite (Garnet)	1.740 - 1.870	Iolite	1.533 - 1.596
Pyrope (Garnet)	1.730 - 1.766	Pearl	1.520 - 1.685
Grossular (Garnet)	1.720 - 1.940	Shell	1.530 - 1.686
Spinel	1.712 - 1.735	Albite (Feldspar)	1.525 - 1.538
Rhodonite	1.711 - 1.752	Orthoclase (Feldspar)	1.518 - 1.526
Zoisite (Tanzanite)	1.685 - 1.725	Microcline (Feldspar)	1.514 - 1.539
Diopside	1.664 - 1.730	Lapis-Lazuli	1.500
Idocrase	1.655 - 1.761	Serpentine	1.490 - 1.575
Malachite	1.655 - 1.910	Coral	1.486 - 1.658
Spodumene	1.653 - 1.682	Opal	1.450 - 1.450
Jadeite	1.640 - 1.680	Amber	1.390 - 1.545
Peridot	1.635 - 1.700		

These values are the extremes at which one can find readings. There may be a range given even for singularly refractive stones.

The low and the high values are not indicative of the birefringence value.



SPECIFIC GRAVITY OF GEMSTONE SPECIES

Stone	S.G.		Stone	S.G.
Amber	1.04 - 1.10	:	Zoisite	3.20 - 3.40
Opal	1.98 - 2.25	:	Peridot	3.22 - 3.48
Turquoise	2.30 - 2.90	:	Malachite	3.25 - 4.10
Lapis Lazuli	2.45 - 3.00	:	Diopside	3.26 - 3.02
Chalcedony	2.55 - 2.70	:	Idocrase	3.30 - 3.50
Feldspar	2.55 - 2.76	:	Garnet	3.30 - 4.30
Iolite	2.56 - 2.66	:	Topaz	3.50 - 3.60
Beryl	2.63 - 2.91	:	Diamond	3.51 - 3.52
Quartz	2.65 - 2.66	:	Spinel	3.58 - 4.06
Coral	2.65 - 2.70	:	Chrysoberyl	3.68 - 3.78
Pearl	2.68 - 2.85	:	Rhodochrosite	3.70
Nephrite	2.90 - 3.10	:	Corundum	3.94 - 4.05
Jadeite	2.90 - 3.50	:	Zircon - (L)	3.95 - 4.07
Tourmaline	3.01 - 3.25	:	Zircon - (M)	4.08 - 4.55
Andalusite	3.10 - 3.21	:	Zircon - (H)	4.65 - 4.73
Spodumene	3.15 - 3.21	:	Hematite	5.12 - 5.28

These values describe the lower and upper limits. For **varieties** within the **species** please refer to a more comprehensive list.



Transparent Violet Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Almandite (Gar)		Quartz	Amethyst
Andalusite		Rhodolite (Gar)	
Apatite		Spinel	
Beryl	Morganite	Spodumene	Kunzite
Corundum	Sapphire	Topaz	
Diamond		Tourmaline	
Iolite		Zircon	
Pyrope (Gar)		Zoisite	

Transparent Blue Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Apatite		Opal	
Beryl	Aquamarine	Sodalite	
Chalcedony		Spinel	
Corundum	Sapphire	Topaz	
Diamond		Tourmaline	
Iolite		Zircon	
Kyanite		Zoisite	

Transparent Green Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Andalusite		Grossularite (Gar)	
Andradite (Gar)	Demantoid	Peridot	
Apatite		Quartz	
Beryl	Emerald	Spinel	
Chalcedony	Chrysoprase	Spodumene	
Chrysoberyl		Topaz	
Corundum	Sapphire	Tourmaline	
Diamond		Zircon	

Transparent Yellow Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Amber		Peridot	
Apatite		Quartz	Citrine
Beryl		Spessartite (Gar)	
Chrysoberyl		Spinel	
Corundum	Sapphire	Spodumene	
Diamond		Topaz	
Grossularite (Gar)	Hessonite	Tourmaline	
Opal		Zircon	



Transparent Orange to Brown Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Amber		Opal	
Andalusite		Peridot	
Beryl		Quartz	Smoky
Chalcedony		Spessartite (Gar)	
Chrysoberyl		Spinel	
Corundum	Sapphire	Topaz	Smoky
Diamond		Tourmaline	
Grossularite (Gar)	Hessonite	Zircon	
Obsidian			

Transparent Pink to Red Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Almandite (Gar)		Opal	
Amber		Pyrope (Gar)	
Andalusite		Quartz	Rose
Apatite		Rhodolite (Gar)	
Beryl	Morganite	Spessartite (Gar)	
Chalcedony	Carnelian	Spinel	
Chalcedony	Sard	Spodumene	Kunzite
Chrysoberyl	Alexandrite	Topaz	
Corundum	Sapphire	Tourmaline	
Corundum	Ruby (Red)	Zircon	
Diamond			

Transparent Colorless Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Albite (Feld)	Moonstone	Spodumene	
Apatite		Strontium Titanate	
Beryl		Synthetic Corundum	
Corundum	Sapphire	Synthetic Rutile	
Diamond		Synthetic Spinel	
Grossularite (Gar)		Topaz	
Opal		Tourmaline	
Quartz		Y.A.G.	
Spinel		Zircon	



Non- Transparent Violet Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Almandite (Gar)		Chalcedony	
Corundum	Sapphire	Jadeite	

Non- Transparent Blue Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Azurite		Lazurite	Lapis Lazuli
Chalcedony	Chrysocolla	Opal	
Corundum	Sapphire	Sodalite	
Jadeite		Turquoise	
Labradorite (Feld)			

Non - Transparent Green Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Beryl		Labradorite (Feld)	
Chalcedony	Chrysoprase	Malachite	
Chalcedony	Bloodstone	Microline (Feld)	Amazonite
Chrysoberyl	Cat's Eye	Nephrite	
Corundum		Opal	
Grossularite (Gar)		Quartz	Aventurine
Idocrase		Tourmaline	
Jadeite		Turquoise	

Non - Transparent Yellow Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Amber		Coral	
Chalcedony		Jadeite	
Chrysoberyl		Smithsonite	

Non - Transparent Orange to Brown Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Albite (Feld)	Sunstone	Jadeite	
Amber		Opal	
Chalcedony		Quartz	Tiger's Eye
Chrysoberyl	Cat's Eye	Smithsonite	
Coral			



Non - Transparent Brown to Orange Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Almandite (Gar)		Jadeite	
Chalcedony	Sard	Quartz	
Chalcedony	Sardonyx	Rhodochrosite	
Chalcedony	Carnelian	Rhodonite	
Coral		Scapolite	
Corundum		Thomsonite	
Grossularite (Gar)		Zoisite	Thulite

Non - Transparent White Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Alabaster		Grossularite (Gar)	
Albite (Feld)	Moonstone	Jadeite	
Chalcedony		Nephrite	
Coral		Onyx	
Corundum	Sapphire	Opal	

Non - Transparent Black Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Andradite (Gar)	Melanite	Hemetine	
Chalcedony	Onyx	Jadeite	
Coral		Jet	
Corundum	Sapphire	Nephrite	
Diamond		Obsidian	
Diopside		Opal	
Hematite		Tourmaline	

Non - Transparent Grey Gemstones

<i>Species</i>	<i>Variety</i>	<i>Species</i>	<i>Variety</i>
Chalcedony	Agate	Jadeite	
Corundum	Sapphire	Labradorite (Feld)	
Hematite		Nephrite	
Hemetine			



Transparency \ Diaphaneity :

Refers to the ability of a gemstone to absorb or reflect light.

Transparent (TP): Light passes through the material.

Semi-Transparent (ST): Light passes deep into the material but little passes out.

Translucent (TL): Light penetrates to a shallow depth.

Opaque (O): No light passes the surface. It is all reflected.

Luster : Common Fracture and Surface Luster Descriptions.**Appears:**

Adamantine | highly reflective (diamond like)

Vitreous | like glass (most common for gemstones)

Metallic | like reflective metal

Submetallic | dull or non reflective metal

Pearly | lustrous (like a pearl)

Resinous | like dried resin

Fibrous \ Silky | fibrous \ coarse or fine

Dull | non- reflective at all

Earthy | like caked dirt or dried mud

Waxy | like wax

Greasy | like it is coated with a thin layer of oil

Cleavage : Breaking of a material along a crystal axis.

Perfect \ Excellent: Cleaving occurs along a perfectly smooth plane.

Calcite

Kyanite

Diamond

Rhodochrosite

Diopside

Spodumene

Feldspar

Topaz

Fluorite

Zoisite

Good \ Distinct: Occurs along a clear or distinct plane.

Chrysoberyl

Iolite

Phrenite

Existing but usually obscured:

Jadeite

Rhodonite

Nephrite

Sodalite



Ring Size Conversion (Pg. 1 of 3)

Internal Diameter (mm)	Internal Circumference (mm) DE (old)	Internal Diameter (inches)	Internal Circumference (inches)	USA, CAN	UK	IT, ESP, ND, CH	JP
14.78	46.44	0.582	1.828	4			
14.80	46.50	0.583	1.831			6.5	
14.82	46.56	0.584	1.833		H		
14.96	47.00	0.589	1.850			7	
15.00	47.12	0.590	1.855				7
15.12	47.50	0.595	1.870			7.5	
15.16	47.64	0.597	1.876				7.5
15.19	47.72	0.598	1.879	4.5			
15.21	47.80	0.599	1.882		I		
15.28	48.00	0.602	1.890			8	
15.33	48.16	0.604	1.896				8
15.44	48.50	0.608	1.909			8.5	
15.50	48.69	0.610	1.917				8.5
15.60	48.99	0.614	1.929	5			
15.60	49.00	0.614	1.929			9	
15.61	49.04	0.615	1.931		J		
15.66	49.21	0.617	1.937				9
15.76	49.50	0.620	1.949			9.5	
15.83	49.73	0.623	1.958				9.5
15.92	50.00	0.627	1.969			10	
16.00	50.26	0.630	1.979				10
16.00	50.27	0.630	1.979	5.5			
16.00	50.27	0.630	1.979		K		
16.07	50.50	0.633	1.988			10.5	
16.16	50.78	0.636	1.999				10.5
16.23	51.00	0.639	2.008			11	
16.33	51.30	0.643	2.020				11
16.39	51.50	0.645	2.028			11.5	
16.40	51.51	0.646	2.028		L		
16.41	51.55	0.646	2.029	6			
16.50	51.83	0.649	2.040				11.5
16.55	52.00	0.652	2.047			12	
16.66	52.35	0.656	2.061				12
16.71	52.50	0.658	2.067			12.5	
16.79	52.75	0.661	2.077		M		
16.81	52.82	0.662	2.080	6.5			



Ring Size Conversion (Pg. 2 of 3)

Internal Diameter (mm)	Internal Circumference (mm) DE (old)	Internal Diameter (inches)	Internal Circumference (inches)	USA, CND	UK	IT, ESP, ND, SW	JP
16.83	52.87	0.663	2.082				12.5
16.87	53.00	0.664	2.087			13	
17.00	53.39	0.669	2.102				13
17.03	53.50	0.670	2.106			13.5	
17.16	53.92	0.676	2.123				13.5
17.18	53.98	0.677	2.125		N		
17.19	54.00	0.677	2.126			14	
17.22	54.10	0.678	2.130	7			
17.33	54.44	0.682	2.143				14
17.35	54.50	0.683	2.146			14.5	
17.50	54.96	0.689	2.164				14.5
17.51	55.00	0.689	2.165			15	
17.58	55.22	0.692	2.174		O		
17.63	55.38	0.694	2.180	7.5			
17.66	55.49	0.695	2.185				15
17.67	55.50	0.696	2.185			15.5	
17.83	56.00	0.702	2.205			16	
17.83	56.01	0.702	2.205				15.5
17.97	56.46	0.708	2.223		P		
17.98	56.50	0.708	2.224			16.5	
18.00	56.53	0.708	2.226				16
18.03	56.65	0.710	2.231	8			
18.14	57.00	0.714	2.244			17	
18.16	57.06	0.715	2.246				16.5
18.30	57.50	0.721	2.264			17.5	
18.33	57.58	0.722	2.267				17
18.36	57.69	0.723	2.271		Q		
18.44	57.93	0.726	2.281	8.5			
18.46	58.00	0.727	2.284			18	
18.49	58.10	0.728	2.288				17.5
18.62	58.50	0.733	2.303			18.5	
18.66	58.63	0.735	2.308				18
18.76	58.93	0.739	2.320		R		
18.78	59.00	0.739	2.323			19	
18.83	59.15	0.741	2.329				18.5
18.85	59.21	0.742	2.331	9			



Ring Size Conversion (Pg. 3 of 3)

Internal Diameter (mm)	Internal Circumference (mm) DE (old)	Internal Diameter (inches)	Internal Circumference (inches)	USA, CND	UK	IT, ESP, ND, SW	JP
18.94	59.50	0.746	2.343			19.5	
18.99	59.67	0.748	2.349				19
19.10	60.00	0.752	2.362			20	
19.15	60.17	0.754	2.369		S		
19.16	60.19	0.754	2.370				19.5
19.25	60.48	0.758	2.381	9.5			
19.26	60.50	0.758	2.382			20.5	
19.33	60.72	0.761	2.391				20
19.42	61.00	0.764	2.402			21	
19.49	61.24	0.767	2.411				20.5
19.55	61.40	0.770	2.418		T		
19.58	61.50	0.771	2.421			21.5	
19.66	61.76	0.774	2.432	10			
19.66	61.76	0.774	2.432				21
19.74	62.00	0.777	2.441			22	
19.83	62.29	0.781	2.452				21.5
19.89	62.50	0.783	2.461			22.5	
19.94	62.64	0.785	2.466		U		
19.99	62.81	0.787	2.473				22
20.05	63.00	0.790	2.480			23	
20.07	63.04	0.790	2.482	10.5			
20.16	63.33	0.794	2.493				22.5
20.21	63.50	0.796	2.500			23.5	
20.33	63.86	0.800	2.514				23
20.33	63.88	0.801	2.515		V		
20.37	64.00	0.802	2.520			24	
20.47	64.31	0.806	2.532	11			
20.49	64.38	0.807	2.535				23.5
20.53	64.50	0.808	2.539			24.5	
20.66	64.90	0.813	2.555				24
20.69	65.00	0.815	2.559			25	
20.73	65.11	0.816	2.564		W		
20.83	65.43	0.820	2.576				24.5
20.85	65.50	0.821	2.579			25.5	
20.88	65.59	0.822	2.582	11.5			
20.99	65.95	0.826	2.596				25



RING SIZE CONVERSION

**For Internal Diameter in mm
(Conversion from Ring Size)**

U.S.A. : (Size -1) X 0.8128 + 12.344

Japan : (Size - 1) X 0.3937 + 12.065

New EUR : Size / 3.1416

***U.K. :** (Size - 1) X .333 + 12.065

* H = 8, I = 9, J = 10, K = 11 etc.

Circumference = Diameter X 3.1416

Diameter = Circumference / 3.1416

Measure your Ring Size:

- 1) At the end of a warm day when your fingers are at their largest, wrap a piece of string or paper around a finger and mark where the two ends meet.
- 2) Measure the string or paper to obtain the circumference of your finger.
- 3) Divide the circumference by 3.1416 to obtain your diameter.
- 4) Look up your ring size using the table provided.

Note: The width of a ring is important -
a wide ring may require a larger size.

Note:

Some european sizes were based on the internal ring circumference in mm before the International standard

ISO 8653 was introduced in 1986.

Swiss and German sizes were different again

While a great deal of effort has been made to accurately measure the differences of the sizing systems, because of the differences in rounding inches and millimeters and because there is a great deal of inconsistency in the available reference materials these tables cannot be said to be 100% accurate.



Standard Chain Necklace Lengths

Women

Inches	Description
16	Choker
17-18	On Collarbone
20	Below Collarbone
22	Neckline
24	Below Neckline
30	Above Sternum
36	Bustline

Men

Inches	Description
18	Neck Base
20	Collarbone
22	Below Collarbone
24	Above Sternum



HALLMARKS AND PURE METAL CONTENTS**GOLD CONTENTS**

Hallmark USA	Purity Hallmark International	Pure Gold %
8K	333	33.33%
9K	375	37.50%
10K	416	41.66%
14K	585	58.50%
18K	750	75.00%
22K	916	91.67%

PLATINUM CONTENTS

Hallmark	Purity Hallmark International	Pure Platinum %
PT \ Pt	950	95%
PT \ Pt	900	90%
PT \ Pt	850	85%
PT \ Pt	800	80%

SILVER CONTENTS

Hallmark U.K.	Purity by Hallmark International	Pure Silver %
Sterling	950	95%
Sterling	925	92%
	900	90%

ALLOYS USED FOR COLOR

Alloy Metal	Color
Copper	Pink
Copper \ Silver	Yellow
Cadmium \ Silver	Green
Silver	Green
Copper \ Zinc	Green
Iron	Blue
Copper \ Zinc \ Palladium	White
Aluminum \ Zinc	Purple



SPECIFIC GRAVITY OF METALS

Metal	S.G.	Metal	S.G.
10% Irid Plat	21.54	Iron	7.87
15% Irid Plat	21.59	Lead	11.34
5% Irid Plat	21.50	Magnesium	1.75
Aluminum	2.70	Manganese	7.43
Antimony	6.62	Molybdenum	10.20
Beryllium	1.82	Nickel	8.90
Bismuth	9.80	Osmium	22.50
Brass	8.50	Palladium	12.00
Cadmium	8.65	Pewter	9.50
Carbon	2.22	Phosphorus	1.82
Chromium	7.19	Platinum, Pure	21.45
Cobalt	8.90	Rhodium	12.44
Copper	8.94	Ruthenium	12.20
Gold 375	11.30	Silicon	2.33
Gold 585	13.40	Silver, Coin	10.31
Gold 750	15.58	Silver, Pure	10.49
Gold 916	17.70	Silver, Sterling	10.36
Gold 999	19.36	Tin	7.30
Iridium	22.41	Wax	1.00
Iron	7.87	Zinc	7.14

ELEMENT SYMBOLS FOR METALS

Metal	Symbol	Metal	Symbol
Aluminum	Al	Manganese	Mn
Antimony	Sb	Molybdenum	Mo
Beryllium	Be	Nickel	Ni
Bismuth	Bi	Osmium	Os
Cadmium	Cd	Palladium	Pd
Carbon	C	Phosphorus	P
Chromium	Cr	Platinum, Pure	Pt
Cobalt	Co	Rhodium	Rh
Copper	Cu	Ruthenium	Ru
Gold, 24K Pure	Au	Silicon	Si
Iridium	Ir	Silver, Pure	Ag
Iron	Fe	Tin	Sn
Lead	Pb	Zinc	Zn
Magnesium	Mg		



METAL & WAX WEIGHT CONVERSION - CROSS REFERENCE CHART (Pt. 1)

X	Y								
	Pt	Pt950	Pt900	F.G.	22kt	18kt(W)	18kt(Y)	14kt(W)	14kt(Y)
Pt	X	0.970	0.956	0.901	0.828	0.765	0.727	0.671	0.625
Pt 950	1.031	X	0.986	0.929	0.853	0.788	0.750	0.692	0.644
Pt 900	1.046	1.015	X	0.943	0.866	0.800	0.761	0.702	0.654
F.G	1.110	1.076	1.061	X	0.918	0.848	0.807	0.745	0.693
22kt	1.208	1.172	1.155	1.089	X	0.924	0.879	0.811	0.755
18kt (W)	1.308	1.268	1.250	1.179	1.082	X	0.951	0.878	0.817
18kt (Y)	1.375	1.333	1.314	1.239	1.138	1.051	X	0.923	0.859
14kt (W)	1.490	1.444	1.424	1.342	1.233	1.139	1.083	X	0.931
14kt (Y)	1.601	1.552	1.530	1.443	1.325	1.224	1.164	1.075	X
Rhodium	1.726	1.673	1.649	1.555	1.428	1.319	1.255	1.158	1.078
Palladium	1.785	1.730	1.705	1.608	1.477	1.364	1.298	1.198	1.115
10kt	1.873	1.817	1.790	1.688	1.550	1.432	1.362	1.258	1.170
9kt	1.890	1.833	1.806	1.703	1.564	1.445	1.374	1.269	1.181
F.S.	2.043	1.981	1.952	1.841	1.690	1.562	1.486	1.371	1.276
Stg. Silver	2.070	2.008	1.979	1.866	1.713	1.583	1.506	1.390	1.293
Pewter	2.258	2.189	2.158	2.035	1.868	1.726	1.642	1.516	1.411
Brass	2.494	2.419	2.384	2.248	2.064	1.907	1.814	1.674	1.558
Wax	21.450	20.800	20.500	19.330	17.750	16.400	15.600	14.400	13.400

Key:

Pt.	Platinum	Pt. 950	95% Platinum
F.G.	Fine Gold	Pt. 900	90% Platinum
22kt	22 karat	(W)	White
18kt	18 karat	(Y)	Yellow
14kt	14 karat	Rho.	Rhodium
10kt	10 karat	Pal.	Palladium
9kt	9 karat	Pew.	Pewter
F.S.	Fine Silver	Br.	Brass
Stg.	Sterling Silver	Wax	Casting Wax

Example: 2 gm of 18kt (Y) = 1.468 gm 10kt

X x Y = Y 2 x .734 = 1.468



METAL & WAX WEIGHT CONVERSION - CROSS REFERENCE CHART (Pt. 2)

X	Y								
	Rho.	Pal.	10kt	9kt	F.S	Stg.	Pew.	Br.	Wax
Pt	0.579	0.560	0.534	0.529	0.490	0.483	0.443	0.401	0.047
Pt 950	0.598	0.578	0.550	0.546	0.505	0.498	0.457	0.413	0.048
Pt 900	0.606	0.586	0.559	0.554	0.512	0.505	0.463	0.420	0.049
F.G.	0.643	0.622	0.592	0.587	0.543	0.536	0.491	0.445	0.052
22kt	0.700	0.677	0.645	0.639	0.592	0.584	0.535	0.485	0.056
18kt (W)	0.758	0.733	0.698	0.692	0.640	0.632	0.579	0.524	0.061
18kt (Y)	0.797	0.771	0.734	0.728	0.673	0.664	0.609	0.551	0.064
14kt (W)	0.863	0.835	0.795	0.788	0.729	0.719	0.660	0.597	0.069
14kt (Y)	0.928	0.897	0.854	0.847	0.784	0.773	0.709	0.642	0.075
Rhodium	X	0.967	0.921	0.913	0.845	0.833	0.764	0.692	0.080
Palladium	1.034	X	0.953	0.944	0.874	0.862	0.790	0.715	0.083
10kt	1.086	1.050	X	0.991	0.917	0.905	0.830	0.751	0.087
9kt	1.095	1.059	1.009	X	0.925	0.913	0.837	0.758	0.088
F.S.	1.184	1.145	1.090	1.081	X	0.987	0.905	0.819	0.095
Stg. Silver	1.200	1.160	1.105	1.096	1.014	X	0.917	0.830	0.097
Pewter	1.308	1.265	1.205	1.195	1.105	1.091	X	0.905	0.105
Brass	1.445	1.398	1.331	1.320	1.221	1.205	1.105	X	0.116
Wax	12.430	12.020	11.450	11.350	10.500	10.360	9.500	8.600	X

*** Note: There are many variations of alloys that can be used to reach these purity indicators. These cross references may vary depending on the alloy. In the case of the lower purities of the precious metals the variance may be considerable. This reference is for guidance only.

Example: Weight of the metal in the vertical column (X) multiplied by the corresponding value on the same horizontal line referencing the desired metal at the top (Y), will provide a rough indicator of the weight of the same volume as the referenced material.

Example: 2 gm of 18kt (Y) = 1.468 gm 10kt

$X \times Y = Y$ $2 \times .734 = 1.468$



Standard Weight Abbreviations

Weight Measure	Abbreviations	Note:
Pound Troy	lb.t.	British system specifically for precious metals and jewels.
Ounce Troy	oz.t.	British system specifically for precious metals and jewels.
Ounce Avoirdupois	oz.av.	International default ounce.
Pound Avoirdupois	lb.av.	International default pound.
Tonne	t	Metric system of weights.
Kilogram	kg	Metric system of weights.
Gram	gm	Metric system of weights.
Milligram	mg	Metric system of weights.
Carat	c. or ct	Standard used by dealers worldwide for gemstones.
Point	pt	Term describing one hundredth of a carat applied to gemstones.
Pearl Grain	gi	Standard used dealers worldwide for pearls.
Momme	mme	Standard used dealers worldwide for pearls.
Kan	kan	Standard used dealers worldwide for pearls.
Tael	tl	Weight for metals common in Hong Kong and Singapore.
Baht	bt	Weight for metals common in Thailand.
Tola	tola	Weight for metals common in India.
Pennyweight	dwt \ pwt	Weight for metals common in USA.
Grain	gr	Weight for metals common in USA. (Troy)

*** Note: kt is the standard abbreviation for metal purities.



Weight Conversion Chart (Pt. 1) X x Y = Y

X	Abr.	Y Stones		Y Pearls		
		ct	pt	kan	mme	gi
Stones						
ct	Carat (Metric)	X	100		0.0533	4
pt	Point	0.01	X		0.0005	0.04
Pearls						
kan	Kan	18,750		X	1,000	75,000
mme	Momme	18.75	1,875	0.001	X	75
gi	Grain (Pearl)	0.25	25		0.0133	X
Metals						
mg	Milligram	0.005	0.5		0.0027	0.2
gr	Grain (Troy)	0.324	32.40		0.0173	1.296
dwt \ pwt	Pennyweight	7.776	777.587		0.4147	31.104
gm	Gram	5	500	0.0003	0.2667	20
bt	Baht (Thailand)	76.22	7,622	0.0041	4.065	304.88
tola	Tola (India)	58.319	5,831.90	0.0031	3.110	233.28
oz.av.	Ounce Av.	141.75	14,174.76	0.0076	7.560	566.99
oz.t.	Ounce Troy	155.52	15,551.74	0.0083	8.294	622.07
lb.t.	Pound Troy	1,866.21	186,620.9	0.0995	99.53	7,464.83
lb.av.	Pound Av.	2,267.96	226,796.2	0.121	120.96	9,071.85
kg	Kilogram	5,000	500,000	0.267	266.67	20,000

Note: Grain (Troy) is equal to Grain (Avoirdupois)



Weight Conversion Chart (Pt. 2) X x Y = Y

X	Y Metals											
		mg	gr	dwt \ pwt	gm	bt	tola	oz.av.	oz.t.	lb.t.	lb.av.	kg
Stones												
ct	Carat (Metric)	200	3.086	0.1286	0.2	0.1312	0.0171	0.0071	0.0064	0.0005	0.0004	0.0002
pt	Point	0.2	0.0309	0.0013	0.002	0.0001						
Pearls												
kan	Kan		57,871.30	2,411.30	3,750	246	321.51	132.28	120.57	10.471	8.267	3.75
mme	Momme	3,750	57.871	2.411	3.750	0.246	0.3215	0.1323	0.1206	0.01	0.0083	0.0038
gi	Grain (Pearl)	50	0.7716	0.0322	0.05	0.0033	0.0043	0.0018	0.0016			
Metals												
mg	Milligram	X	0.01543	0.0006	0.001							
gr	Grain (Troy)	64.80	X	0.0417	0.0648	0.0043	0.0056	0.0023	0.0021			
dwt \ pwt	Pennyweight	1,555.17	24	X	1.555	0.102	0.133	0.0549	0.05	0.0042	0.0034	
g	Gram	1,000	15.432	0.643	X	0.0656	0.0857	0.0353	0.0322	0.0027	0.0022	0.001
bt	Baht (Thailand)	15,244	235.25	9.802	15,244	X	1.307	0.5377	0.49	0.0408	0.0336	0.0152
tola	Tola (India)	11,663.80	180	7.5	11,664	0.7651	X	0.4125	0.376	0.0313	0.0258	0.1166
oz.av.	Ounce Av.	28,349.52	437.50	18,229	28,35	1.8597	2.431	X	0.9115	0.076	0.0625	0.0283
oz.t.	Ounce Troy	31,103.48	480	20.0	31,103	2.04	2.667	1.097	X	0.0833	0.0686	0.0311
lb.t.	Pound Troy	373,241.7	5,760	240.00	373.24	24.485	32	13.166	12	X	0.8229	0.3732
lb.av.	Pound Av.	453,592.4	7,000	291.67	453.59	29.755	38.89	16	14.583	1.215	X	0.4536
kg	Kilogram	1,000,000	15,432.36	643	1,000	65.6	85.74	35.274	32.151	2.67	2.205	X

Note: Grain (Troy) is equal to Grain (Avoirdupois)



WAX CONVERSION TO METAL

X	Y					
Wax Wt.	8kt	9kt\10kt	14kt	18kt	PT 900	PT 950
?	10.5	11	14	15	16	16.7

Wax Weight (X) multiplied by factor (Y)= Metal weight
Approximate

NICKEL SILVER PROTOTYPE CONVERSION TO METAL

X	Y					
Prototype Wt.	8kt	9kt\10kt	14kt	18kt	PT 900	PT 950
?	1.02	1.15	1.3	1.54	2.1	2.19

** Note: Also known as German Silver

Prototype Weight (X) multiplied by factor (Y)= Metal weight
Approximate

TEMPERATURE CONVERSION

$$\text{Centigrade} = 5 \div 9 (F - 32)$$

$$\text{Fahrenheit} = 9 \div 5 C + 32$$

$$\text{Example: } 500 \text{ C} = ? \text{ F}$$

$$9 \div 5 \times 500 + 32 = 932 \text{ F}$$

$$\text{Example: } 500 \text{ F} = ? \text{ C}$$

$$500 - 32 \times 5 \div 9 = 260 \text{ C}$$



Calculate Estimated Weights and Volumes

Plate or Square Wire:

Formula: Length x width x thickness x specific gravity (SG)

Example: 18ct Yellow Gold Plate 40 mm x 20 mm x 1 mm
 $= 4 \times 2 \times 1 \times 15.58 = 12,464 \text{ mg or } 12.464 \text{ gm}$

Round Wire:

Formula: Radius x Radius x 3.142 x length x specific gravity (SG)

Example: 18ct Yellow Gold Wire 1.5 mm diameter, 60 mm long
 $= 0.75 \times 0.75 \times 3.142 \times 60 \times 15.58 = 1,652.14 \text{ mg or } 1.652 \text{ gm}$

Finished Length of Worked Plate or Square Wire:

Formula: Present thickness divided by finished thickness
 then multiplied by present length = finished length

Example: Present plate 3.5 mm thickness, 50 mm long.

Length be when rolled to 1.5 mm?

$= 3.5 \text{ divided by } 1.5 \times 50 = 116.66 \text{ mm}$

Note: Gains in width reduce gains in length

Radius of a circle:

Center point to side or width\thickness\diameter divided by 2

Circumference of a circle:

Circumference = Diameter multiplied by 3.142

Area of a circle:

Radius multiplied by radius then multiplied by 3.142

Volume of a cylinder:

Radius multiplied by radius then multiplied by 3.142,
 then multiplied by the height

Convert Known Weight of an Alloy to the Weight of Another:

Specific gravity (SG) of alloy required

divided by SG of alloy in hand multiplied by weight in
 hand equals weight in required alloy.

Example: What will a 2 gm ring in 14k gold weigh in 18k gold?

$15.58 \text{ divided by } 13.4 \times 2 = 2.325 \text{ gm}$



Melting Point of Metals

Metal	Celsius	Fahrenheit	Metal	Celsius	Fahrenheit
10% Irid Plat	1,788.0	3,250.0	Iron	1,539.0	2,802.0
15% Irid Plat	1,821.0	3,310.0	Lead	327.0	621.0
5% Irid Plat	1,779.0	3,235.0	Magnesium	650.0	1,202.0
Aluminum	660.0	1,220.0	Manganese	1,245.0	2,273.0
Antimony	630.0	1,167.0	Molybdenum	2,625.0	4,760.0
Beryllium	1,280.0	2,340.0	Nickel	1,455.0	2,651.0
Bismuth	271.0	520.0	Osmium	2,700.0	4,892.0
Brass	940.0	1,724.0	Palladium	1,555.0	2,831.0
Cadmium	321.0	610.0	Phosphorus	44.0	111.0
Carbon	-	-	Platinum	1,773.0	3,223.4
Chromium	1,830.0	3,326.0	Rhodium	1,955.0	3,551.0
Cobalt	1,132.2	2,070.0	Ruthenium	2,450.0	4,442.0
Copper	1,083.0	1,981.4	Silicon	1,430.0	2,605.0
Gold 375	830.0	1,526.0	Silver 925	893.0	1,639.4
Gold 585	838.0	1,540.4	Silver 999	961.0	1,761.8
Gold 750	905.0	1,661.0	Silver, Coin	879.0	1,615.0
Gold 916	1,003.0	1,837.4	Tin	232.0	449.6
Gold 999	1,063.0	1,945.4	Zinc	419.0	786.2
Iridium	2,454.0	4,449.2			

* Melting points for alloyed metals may vary according to metal component contents and quantity thereof.

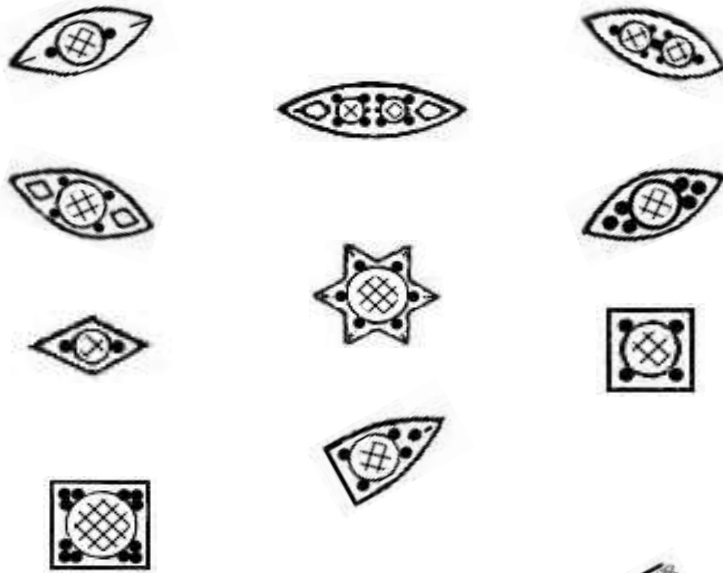


U.S. Wire Gauge Measurements

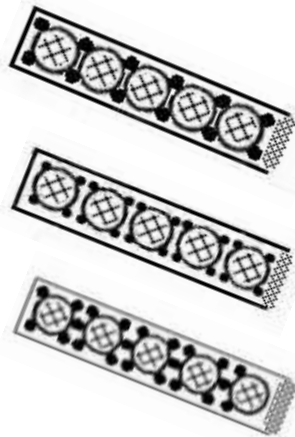
B&S Gauge	Inches	mm	B&S Gauge	Inches	mm
0000	0.46	11.684	19	0.036	0.912
000	0.41	10.400	20	0.032	0.812
00	0.365	9.270	21	0.028	0.723
0	0.325	8.255	22	0.025	0.644
1	0.289	7.348	23	0.023	0.573
2	0.258	6.543	24	0.02	0.511
3	0.229	5.827	25	0.018	0.455
4	0.204	5.189	26	0.016	0.405
5	0.182	4.621	27	0.014	0.360
6	0.162	4.115	28	0.013	0.321
7	0.144	3.665	29	0.011	0.286
8	0.125	3.264	30	0.01	0.255
9	0.114	2.906	31	0.009	0.226
10	0.102	2.588	32	0.008	0.202
11	0.091	2.305	33	0.007	0.180
12	0.081	2.052	34	0.006	0.160
13	0.072	1.828	35	0.006	0.142
14	0.064	1.628	36	0.005	0.127
15	0.057	1.449	37	0.004	0.113
16	0.051	1.291	38	0.004	0.100
17	0.045	1.149	39	0.004	0.090
18	0.04	1.024	40	0.003	0.080



Bead Setting Styles



Bead Set Ends

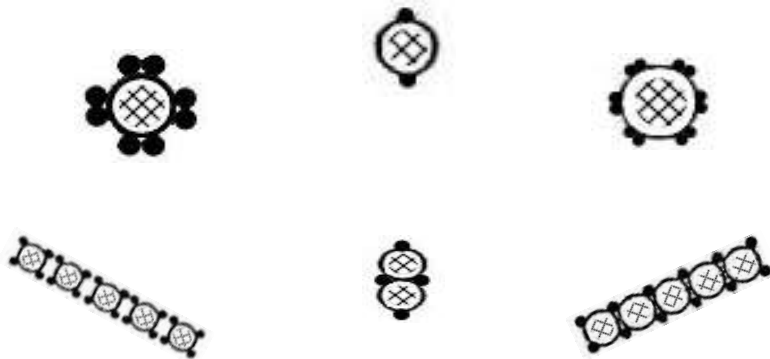


Inline Bead Setting

Prong Setting Styles



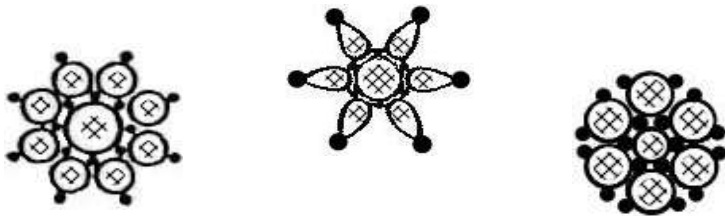
Single Stone \ Multiple prongs



Multiple Stone \ Equal Sizes



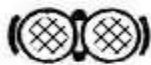
Multiple Stones \ Sizes \ Shapes



Mixed Style Setting



Multiple Stone



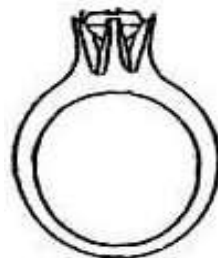
Combinations Prong, V, Half-Bezel



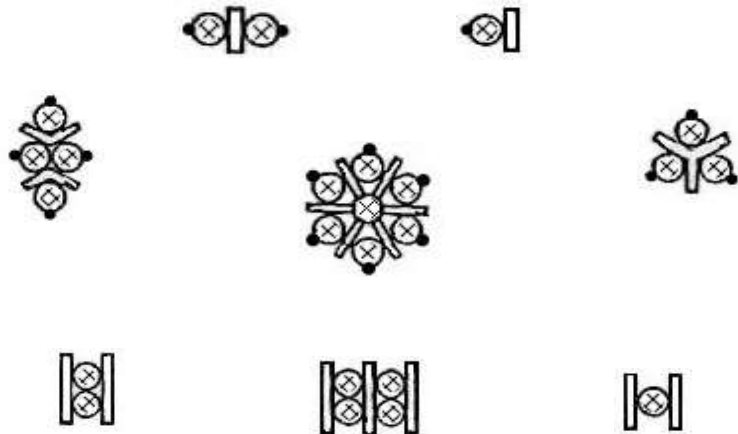
Solitaire Setting



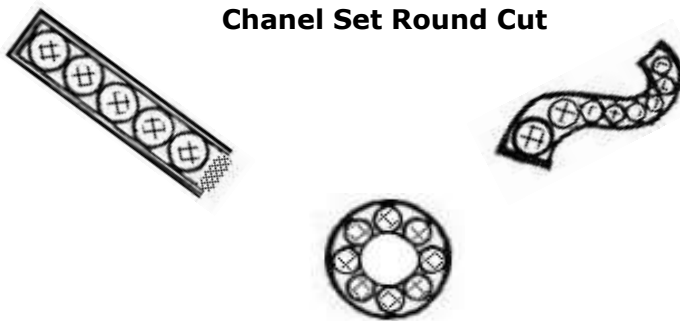
Prong \ Bezel Set



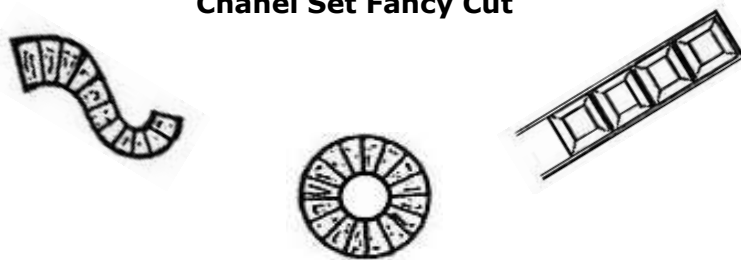
Chanel and Prong Setting Combined



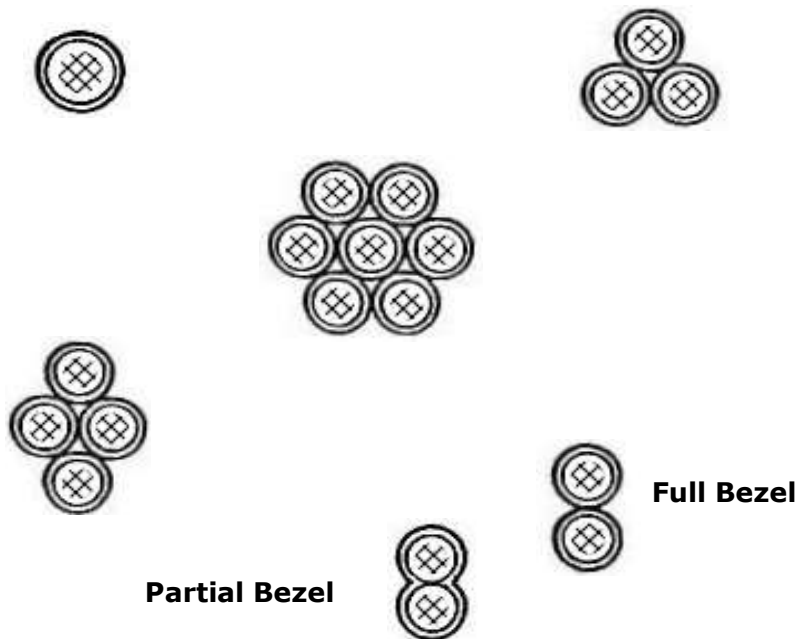
Chanel Set Round Cut



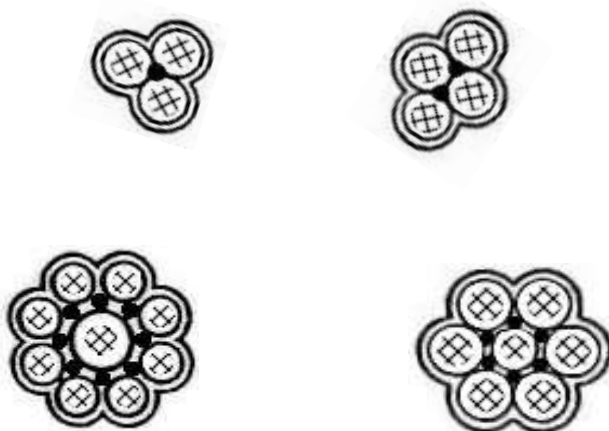
Chanel Set Fancy Cut



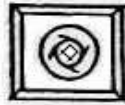
Bezel Setting



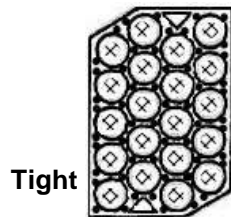
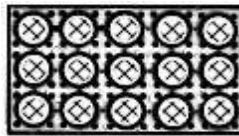
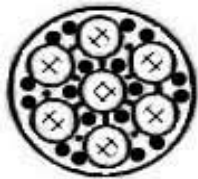
Bezel and Prong Setting



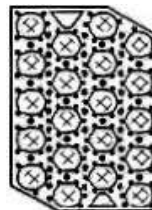
Illusion Setting Styles



Beads on Drilled Plates



Tight



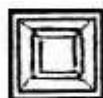
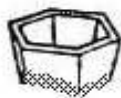
Loose

Bezel Setting

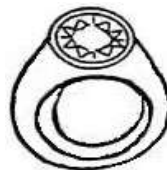
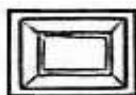
Cabochon



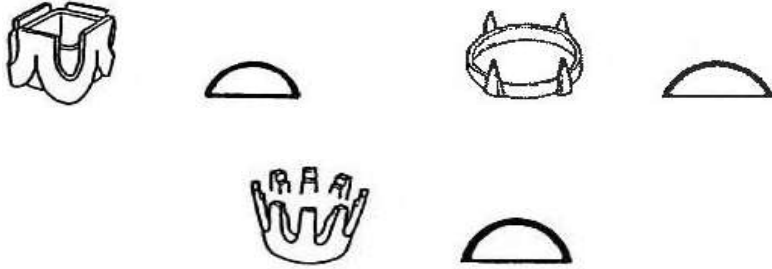
Faceted



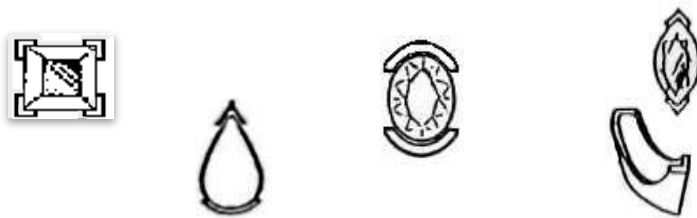
Wire



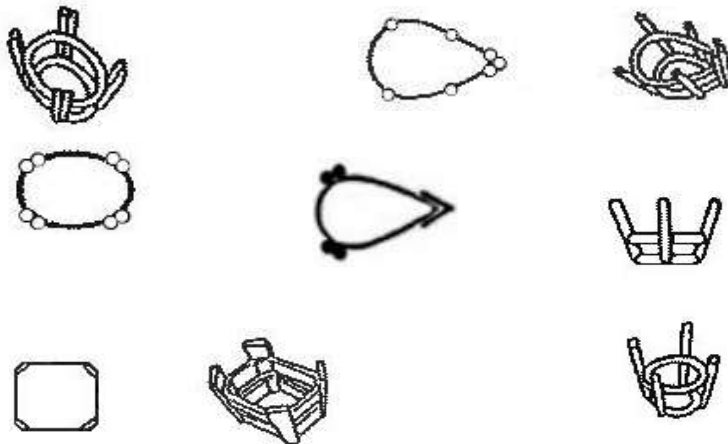
Cabochon Solitaire Setting



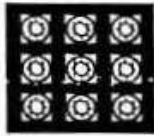
Split bezel Setting \ Boat



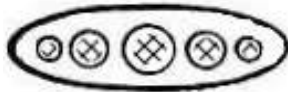
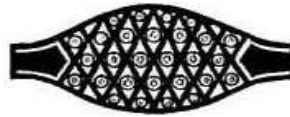
Faceted Solitaire Prong Setting



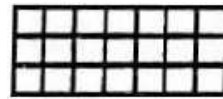
Mixed Styles



Chanel Set surfaces



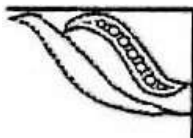
Flush Bezel Set



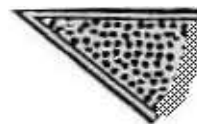
Invisible Setting



Prong set Dome



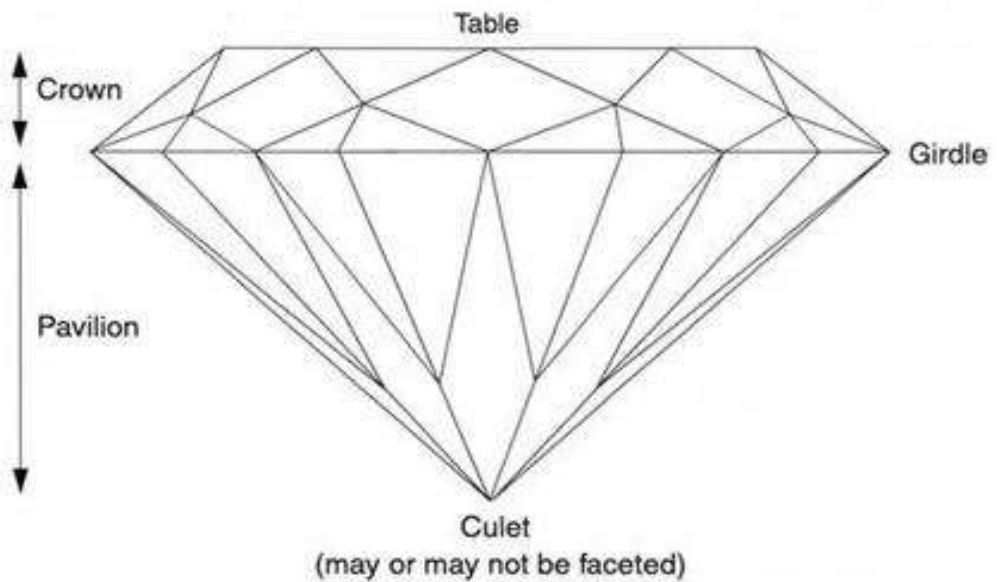
Cut up end treatments



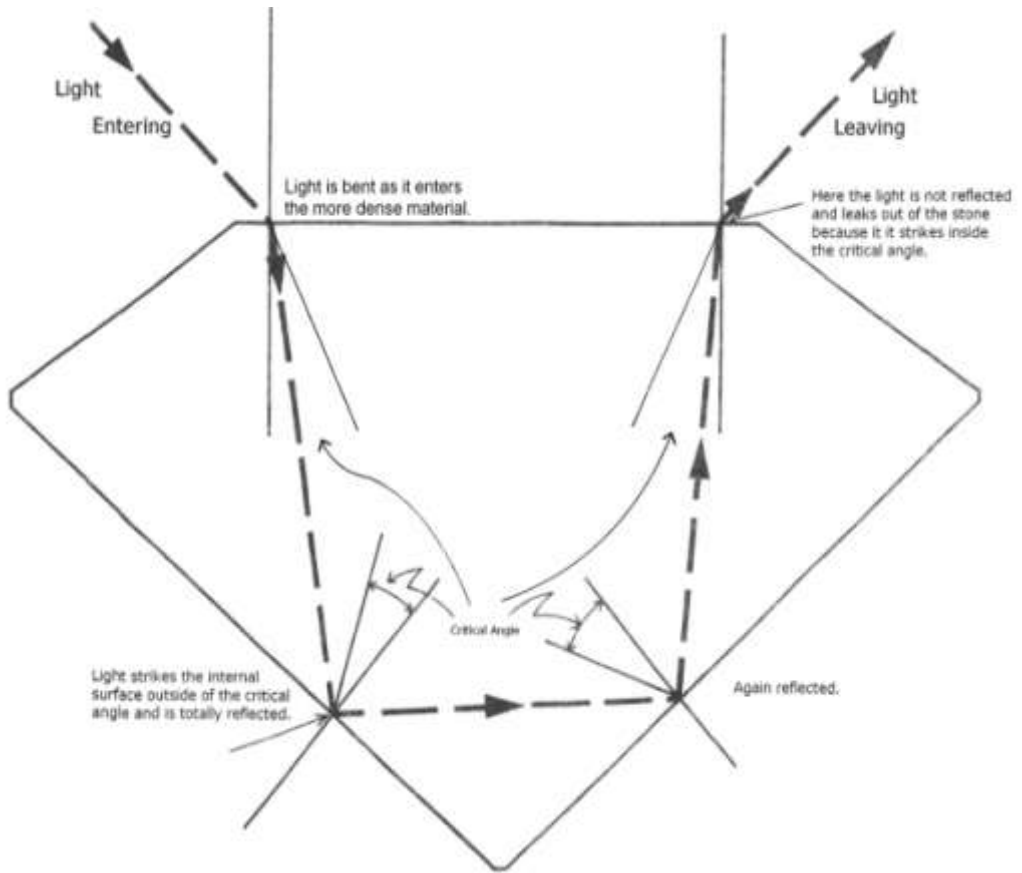
Common Calibrated Stone Sizes (mm)

Square:	1.6	Oval:	4 x 3
	1.8		5 x 3
	2.0		5 x 3.5
	2.2		5 x 4
	2.4		6 x 4
	2.5		7 x 5
	2.6		8 x 6
	2.8		
	3.0	Pear:	4 x 3
			5 x 3
Marquise:	4 x 2		5 x 3.5
	4.5 x 2.5		5 x 4
	5 x 2.5		6 x 4
	5 x 3		7 x 5
	6 x 3		

Cut Terminology



Light Behavior in a Well Cut Stone



Light Behavior in a Poorly Cut Stone



Diagram of a Round Brilliant Cut

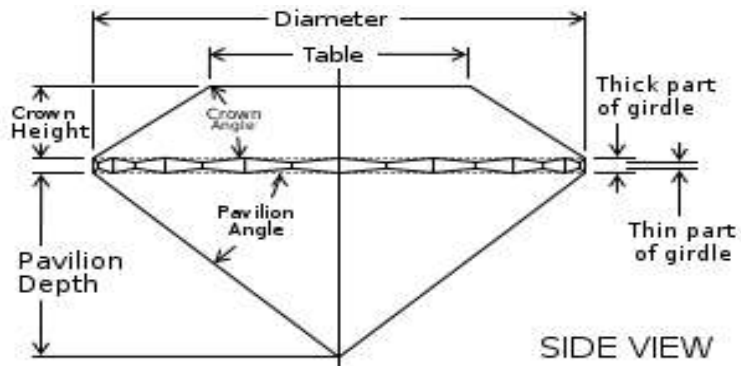
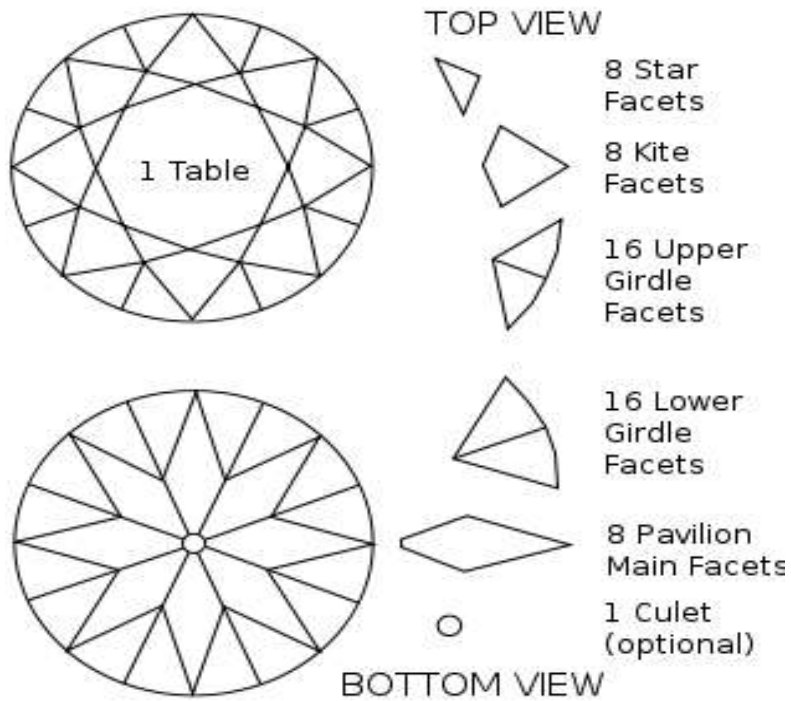


Figure 1: Diamond Proportions



Cutting Standards for Round Brilliant Diamonds of Different Origins

Benchmark	Crown Height	Pavilion Depth	Table Diameter	Crown Angle	Pavilion Angle	Brilliance Grade
American Standard	16.20%	43.10%	53.00%	34.5°	40.75°	99.50%
Practical Fine Cut	14.40%	43.20%	56.00%	33.2°	40.8°	99.95%
Scandinavian Cut	14.60%	43.10%	57.50%	34.5°	40.75°	99.50%
Eulitz Brilliant	14.45%	43.15%	56.50%	33.36°	40.48°	100%
Ideal Brilliant	19.20%	40.00%	56.10%	41.1°	38.7°	98.40%
Parker Brilliant	10.50%	43.40%	55.90%	25.5°	40.9°	Low
AGA	14.0-16.3%	42.8-43.2%	53-59%	34.0-34.7°	N/A	100%

Note: Eulitz Brilliant cut allows 1.5% girdle thickness.

Fancy Cut - Length to Width Ratio:

Emerald	Heart
1.35 - 1.65 to 1	1 - 1.2 to 1

Oval	Pear
1.3 - 1.7 to 1	1.35 - 1.65 to 1

Marquise
1.7 - 2.15 to 1

Princess	Radiant
1 - 1.15 to 1	1 - 1.35 to 1

Assher	Cushion
1 - 1.15 to 1	1 - 1.35 to 1

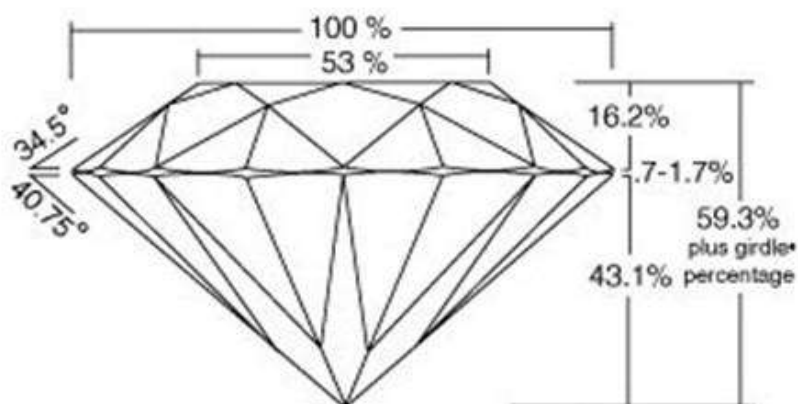


The Tolkowsky Ideal Cut Proportion

In 1919, Marcel Tolkowsky published Diamond Design. He systematically analyzed the optics of a diamond and estimated the best proportion for cutting round brilliant diamonds. With minor changes, today's standards for "ideal cut" diamonds are based on Tolkowsky's book.

Tolkowsky suggested that the diamond proportions pictured below will produce a diamond with the best brilliance, fire and scintillation.

This is a balancing act. Striving for the best in one of those qualities may compromise another. Brilliance refers to how much light is reflected back out of the crown and table of a stone. Fire refers to the flashes of different colors seen in the reflections due to the breaking up of light into its component colors as it passes through the stone. Scintillation refers to the blinking of light seen as the stone is moved relative to the source of light.

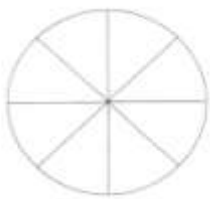


Tolkowsky Ideal Cut

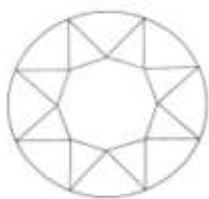




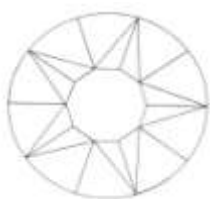
Single



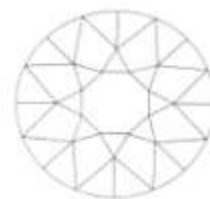
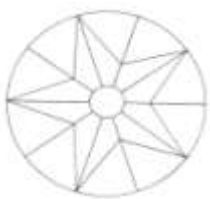
Swiss



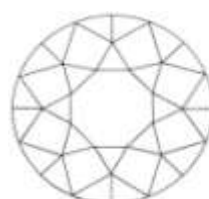
Split



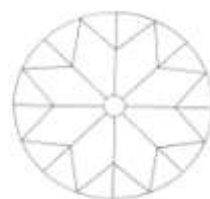
Round Brilliant



Old Europe Round



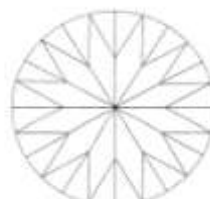
King



Magna

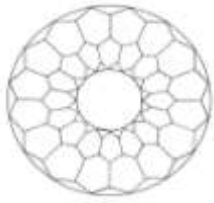


Spiral

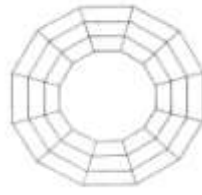
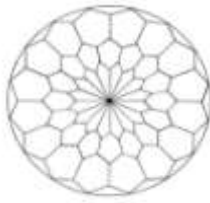


Portuguese

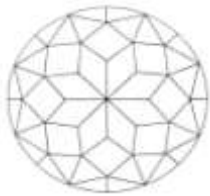
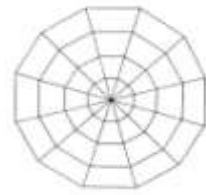




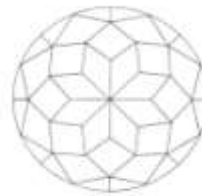
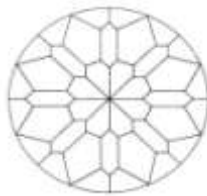
Honeycomb



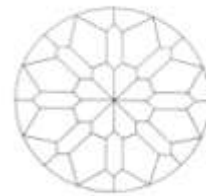
Round Step Cut Trap



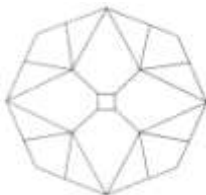
20th Century



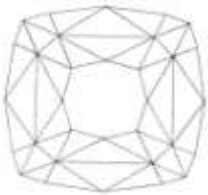
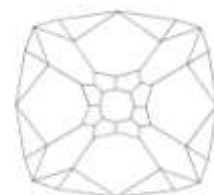
Jubilee



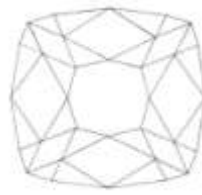
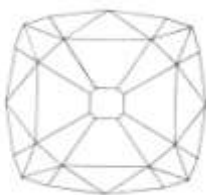
Double



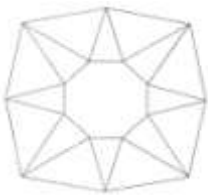
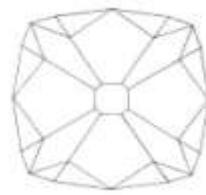
Brazilian



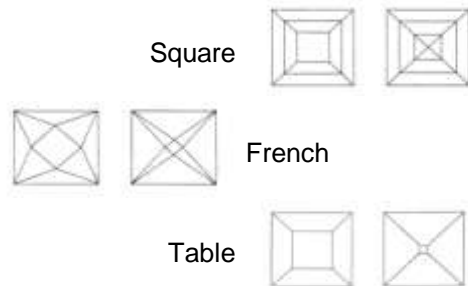
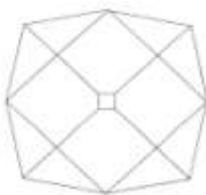
Lisbon

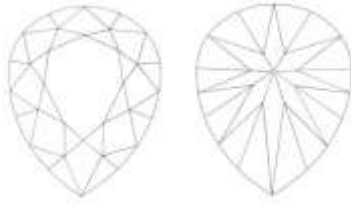


Antique Square (Old Mine)

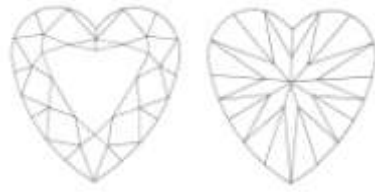


English Square

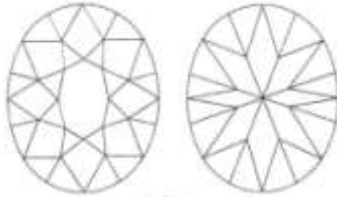




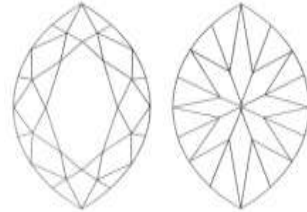
Pear



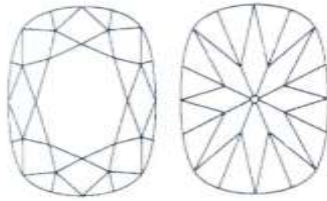
Heart



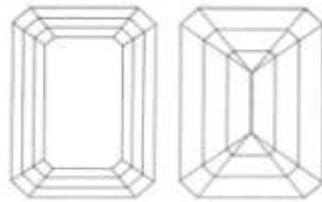
Oval



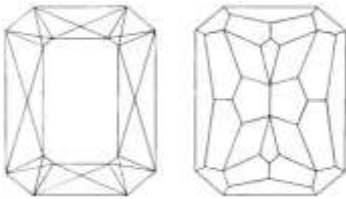
Marquise



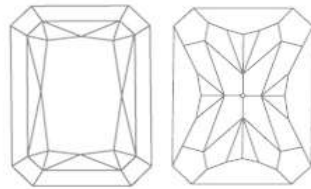
Cushion



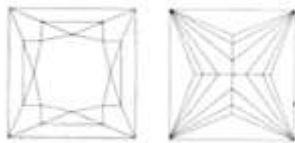
Emerald



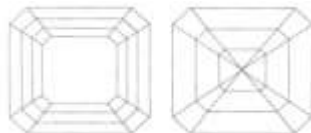
Scissors



Radiant



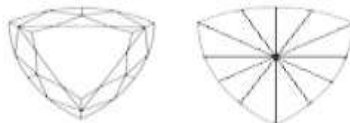
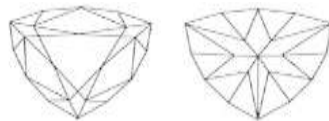
Princess

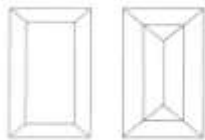


Square Emerald

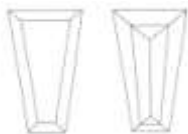


Trillion \ Trilliant Variations

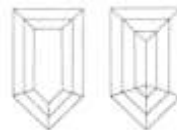




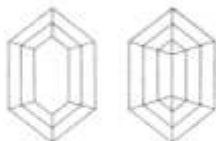
Baguette



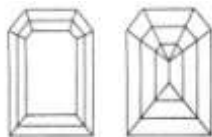
Tapered Baguette



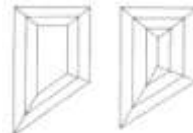
Bullet



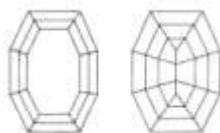
Long Hexagon



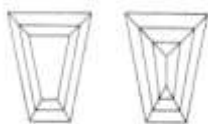
Window



Whistle



Long Octagon



Keystone



Shield



Calf's Head



Triangle



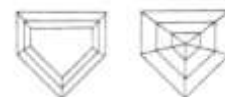
Hexagon



Pentagon



Cardinal Triangle



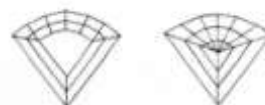
Epaulette



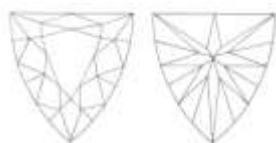
Trapeze



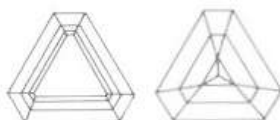
Tapered Pentagon



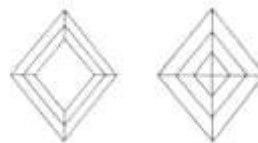
Fan



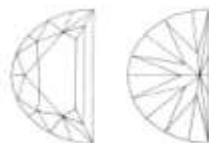
Semi-Navette



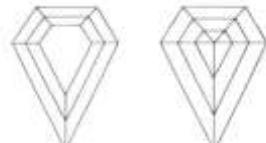
3 Cut Corner Triangle



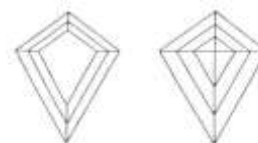
Lozenge



Half-Moon



2 Cut Corner Triangle

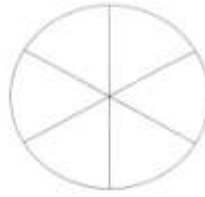


Kite





3 Facet Rose



6 Facet Rose



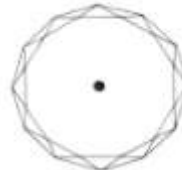
Boat Shaped Rose



Pear Shaped Rose



Holland Rose



Rondelle



Step Cut Bead



Buff Top



Star

Birthstones by Month (Modern Day)

Month	Traditional and Modern
January	Garnet
February	Amethyst
March	Bloodstone, Aquamarine
April	Diamond, Rock Crystal (U.K.)
May	Emerald, Chrysoprase (U.K.)
June	Pearl, Moonstone, Alexandrite
July	Ruby, Carnelian (U.K.)
August	Peridot, Sardonyx
September	Sapphire, Lapis Lazuli (U.K.)
October	Opal, Tourmaline
November	Yellow Topaz, Citrine
December	Turquoise, Blue Zircon, Blue Topaz, Tanzanite, Lapis Lazuli

Stones for Week Day Stones

Day	Stone
Sunday	Topaz
Monday	Pearl, Moonstone
Tuesday	Ruby
Wednesday	Amethyst
Thursday	Sapphire
Friday	Emerald
Saturday	Turquoise

Stones for Hours of the Day

Time AM	Stone	Time PM	Stone
1:00 AM	Smokey Quartz	1:00 PM	Zircon
2:00 AM	Hematite	2:00 PM	Emerald
3:00 AM	Malachite	3:00 PM	Beryl
4:00 AM	Lapis-Lazuli	4:00 PM	Topaz
5:00 AM	Turquoise	5:00 PM	Ruby
6:00 AM	Tourmaline	6:00 PM	Opal
7:00 AM	Chrysolite	7:00 PM	Sardonyx
8:00 AM	Amethyst	8:00 PM	Chalcedony
9:00 AM	Kunzite	9:00 PM	Jade
10:00 AM	Sapphire	10:00 PM	Jasper
11:00 AM	Garnet	11:00 PM	Magnetite
Noon 12:00 AM	Diamond	Midnight 12:00 PM	Onyx



BIRTHSTONE BY COUNTRY AND CULTURE

Month	Poland	Russia
January	Garnet	Garnet, Zircon
February	Amethyst	Amethyst
March	Bloodstone	Jasper
April	Diamond	Sapphire
May	Emerald	Emerald
June	Agate, Chalcedony	Agate, Chalcedony
July	Ruby	Ruby, Sardonyx
August	Sardonyx	Alexandrite
September	Peridot	Peridot
October	Aquamarine	Aquamarine
November	Topaz	Topaz
December	Turquoise	Turquoise, Chrysoprase

Month	Arabia	Roman
January	Garnet	Garnet
February	Amethyst	Amethyst
March	Bloodstone	Bloodstone
April	Sapphire	Sapphire
May	Emerald	Agate
June	Agate	Emerald
July	Carnelian	Onyx
August	Sardonyx	Carnelian
September	Peridot	Peridot
October	Aquamarine	Aquamarine
November	Topaz	Topaz
December	Ruby	Ruby

Month	Hebrew	Mystical	Hindu
January	Garnet	Emerald	Serpent stone *
February	Amethyst	Bloodstone	Chandrakanta *
March	(Bloodstone), Jasper	Jade	The gold Siva-linga *
April	Sapphire	Opal	Diamond
May	Agate, Carnelian, Chalcedony	Sapphire	Emerald
June	Emerald	Moonstone	Pearl
July	Onyx	Ruby	Sapphire
August	Carnelian	Diamond	Ruby
September	Peridot	Agate	Zircon
October	Aquamarine	Jasper	Coral
November	Topaz	Pearl	Cat's-eye
December	Ruby	Onyx	Topaz

* Kunz, George F (1913) A Curious Lore of Precious Stones



Birthstone by Astrology

Calendar	Zodiac	Assoc.	Stone	Trade	Planet
December 22 to January 20	Capricorn	Sea Goat	Ruby	Ambassador	Saturn
January 21 to February 19	Aquarius	Water Bearer	Garnet	Truth Seeker	Uranus
February 20 to March 20	Pisces	Fish	Amethyst	Poet	Neptune
March 21 to April 20	Aries	Ram	Bloodstone	Pioneer	Mars
April 21 to May 21	Taurus	Bull	Sapphire	Builder	Venus
May 22 to June 21	Gemini	Twins	Agate	Artist	Mercury
June 22 to July 22	Cancer	Crab	Emerald	Teacher	Moon
July 23 to August 22	Leo	Lion	Onyx	King	Sun
August 23 to September 23	Virgo	Maiden	Carnelian	Craftsman	Mercury
September 24 to October 23	Libra	Scales	Peridot	Statesman	Venus
October 24 to November 22	Scorpio	Scorpion	Aquamarine	Inspector	Pluto
November 23 to December 21	Sagittarius	Archer	Topaz	Counselor	Jupiter



VEDIC ASTROLOGY \ PLANETARY STONES

PLANET	STONE
Sun (Red)	Ruby, Red Spinel, Pink Tourmaline, Red Garnets
Moon (White)	Pearl, Moonstone, White Coral
Jupiter (Yellow)	Yellow Sapphire, Yellow Topaz, Yellow Beryl, Yellow Zircon, Citrine
Mercury (Green)	Emerald, Tsavorite, Green Tourmaline, Green Jade, Peridot, Aquamarine
Venus (White)	Diamond, White Sapphire, White Topaz, White Zircon, Quartz
Saturn (Blue & Purple)	Blue Sapphire, Tanzanite, Blue Spinel, Iolite, Amethyst, Lapis Lazuli
Mars	Red Coral, Carnelian, Bloodstone
Rahu	Orange Zircon, Golden Hessonite Garnet
Ketu	Cat's Eye Chrysoberyl, Tiger Eye

LUNAR NEW YEAR CALENDAR

CHINESE HOROSCOPE	BIRTH YEAR									
	Rat	1900	1912	1924	1936	1948	1960	1972	1984	1996
Ox	1901	1913	1925	1937	1949	1961	1973	1985	1997	2009
Tiger	1902	1914	1926	1938	1950	1962	1974	1986	1998	2010
Hare	1903	1915	1927	1939	1951	1963	1975	1987	1999	2011
Dragon	1904	1916	1928	1940	1952	1964	1976	1988	2000	2012
Serpent	1905	1917	1929	1941	1953	1965	1977	1989	2001	2013
Horse	1906	1918	1930	1942	1954	1966	1978	1990	2002	2014
Ram	1907	1919	1931	1943	1955	1967	1979	1991	2003	2015
Monkey	1908	1920	1932	1944	1956	1968	1980	1992	2004	2016
Rooster	1909	1921	1933	1945	1957	1969	1981	1993	2005	2017
Dog	1910	1922	1934	1946	1958	1970	1982	1994	2006	2018
Pig / Boar	1911	1923	1935	1947	1959	1971	1983	1995	2007	2019



FLOWERS BY MONTH AND THEIR SYMBOLISM

Month	Britain	USA	Symbolizing
January	Carnation	Snowdrop	love, pride, beauty, purity, distinction, loyalty and fascination,
February	Violet	Primrose	faithfulness, wisdom and hope (UK), modesty, distinction, and virtue (USA)
March	Daffodil	Daffodil	rebirth, respect, regard and unrequited love
April	Sweet Pea	Daisy/Peony	modesty and simplicity distinction, virtue
May	Lily of the Valley	Hawthorn/Lily of the Valley	humility, chastity, and sweetness
June	Rose	Rose/Honeysuckle	love and appreciation - other meanings depend on individual color
July	Larkspur	Water Lily/Delphinium/Larkspur	levity and lightness fickleness and joyfulness
August	Poppy	Poppy/Gladiolus	remembrance (UK), moral integrity (USA)
September	Aster/Forget-me-not	Morning glory/Aster	patience, daintiness and remembrance (UK), love, magic (USA)
October	Marigold/Hops/Calendula	Marigold/Hops/Calendula	winning grace, grief, hopefulness
November	Chrysanthemum	Chrysanthemum	compassion, friendship, secret love, cheerfulness, and abundance
December	Narcissus	Holly/Narcissus	reflects the sweetness of the receiver, vanity, and self-esteem



WEDDING ANNIVERSARIES

YEAR	TRADITIONAL GIFT	GEMSTONE	MODERN GIFT CHOICES
1	Paper	Gold Jewelry	Clock
2	Cotton	Garnet	China
3	Leather	Pearls	Crystal, glass
4	Linen, Silk, Fruit, Flowers	Blue Topaz	Appliances (electrical)
5	Wood	Sapphire	Silverware
6	Iron, Candy	Amethyst	Wood objects
7	Wool	Onyx	Pen and pencil sets
8	Bronze, Salt	Tourmaline	Linens, lace
9	Copper, Pottery	Lapis Lazuli	Leather goods
10	Tin	Diamonds	Diamond jewelry
11	Steel	Turquoise	Fashion jewelry, accessories
12	Silk, Linen	Jade, Agate	Pearls, colored gems
13	Lace	Citrine	Textiles, furs
14	Ivory	Opal, Moss Agate	Gold jewelry
15	Crystal	Ruby	Watches
16		Peridot	Silver hollowware
17		Amethyst	Furniture
18		Crysoberyl Cat's Eye	Porcelain
19		Aquamarine	Bronze
20	China	Emerald	Platinum
21		Iolite	Brass, Nickel
22		Spinel	Copper
23		Imperial Topaz, Yellow Sapphire	Silver plate
24		Tanzanite	Musical instruments
25	Silver	Silver Jubilee	
30	Pearl	Diamond	Diamond
35	Coral	Emerald	Jade
40	Ruby	Ruby	
45	Sapphire	Sapphire	Sapphire
50	Gold	Golden Jubilee	
55	Emerald	Emerald, Alexandrite	Emerald
60	Diamond	Diamond	
65	Blue Sapphire	Star Sapphire	
70	Platinum		



Healing Power of Gemstones

- Agate** Cure for insomnia, brings victory in battle.
- Amethyst** Brings peace of mind, intuition and sensitivity, purifies and transmits spiritual energy.
- Aquamarine** Brings calm and protection against negative forces. Worn by sailors and travelers for safety and protection.
- Aventurine Quartz** Increases luck and opportunity, brings harmony and so promotes eternal joy peace. Increases visionary powers.
- Black Onyx** Protects against loneliness and unhappiness, cools passion and stimulates self-control.
- Coral** Balances the body and relaxes the emotional mind. Healing Gem.
- Diamond** Symbol of power, success, good fortune and romance.
- Emerald** Strengthens perception and insight, stimulates truth and love.
- Garnet** Reflects sociability and consideration for others.
- Hematite** Promotes alertness, vivacity and success.
- Jasper** Promotes healing of the endocrine and gastric system.
- Lapis Lazuli** Stimulates wisdom and truthfulness. Symbolizes the might of the Gods.
- Malachite** Enhances visionary powers and stimulates personal powers in general. Thought to cure vomiting. Protected children from witches.
- Obsidian** Protects from draining outside interference.
- Opal** Absorbs and transforms energy.
- Pearl** Promotes anti-bodies and fights infection.
- Peridot** Prevents depression, fear and guilt.
- Rhodonite** Promotes self-esteem and provides a boost in energy.
- Rock Crystal.** Balances control for all forms of energy.
- Ruby** Energizes your spirit.
- Sapphire** Promotes prophecy and wisdom.



ANCIENT GODS OF LORE

Greek Name	Roman Name	Power and Domain
APHRODITE	VENUS	LOVE, BEAUTY
APOLLO	PHOEBUS	LIGHT, MUSIC, LAW
ARES	MARS	(OFFENSIVE) WAR
ARTEMIS	DIANA	HUNTING, WILD BEASTS
ATHENA	MINERVA	(DEFENSIVE) WAR, WISDOM
DEMETER	CERES	CROPS, HARVEST
DIONYSUS	LIBER	FREEDOM, WINE
HADES	PLUTO	UNDERWORLD + DEAD
HEPHAESTUS	VULCAN	FIRE, METALWORKING
HERA	JUNO	MARRIAGE, MATERNITY
HERMES	MERCURY	THEIVES, LUCK, ATHLETES
HESTIA	VESTA	HEARTH FIRE, DOMESTIC LIFE
POSEIDON	NEPTUNE	SEA, EARTHQUAKE, FERTILITY
ZEUS	JUPITER	SUPREME RULER OF ALL



Size to Weight Conversion for Round Cubic Zirconia

Size (mm)	Ct Weight
1.25	0.015
1.50	0.03
1.75	0.045
2.00	0.06
2.25	0.08
2.50	0.11
2.75	0.15
3.00	0.20
3.25	0.25
3.50	0.50
3.75	0.40
4.00	0.45
4.25	0.50
4.50	0.60
4.75	0.75
5.00	0.80
5.25	1.00

Size (mm)	Ct Weight
5.50	1.15
5.75	1.25
6.00	1.40
6.25	1.60
6.50	1.75
6.75	2.00
7.00	2.45
7.25	2.50
7.50	2.80
7.75	3.00
8.00	3.40
8.25	3.65
8.50	4.00
8.75	4.35
9.00	4.60
9.50	5.60
10.00	6.50



Agate	瑪瑙
Alexandrite	亞力山大石， 金綠玉變石
Almandine Garnet	紫紅榴石， 深紅柘榴石
Amazonite	亞馬遜石，天河石
Amber	琥珀
Amethyst	紫水晶，紫晶
Andradite Garnet	鈣鐵柘，榴子石
Andalusite	紅柱石，安德路西石
Apatite	磷灰石
Aquamarine	湖水石，天青石， 水藍寶石
Aventurine	東陵玉，印度玉
Benitoite	藍錐礦
Beryl	綠寶石，綠柱石
Black Jade	黑玉
Black Onyx	黑安力士
Bloodstone	血石
Blue Lace Agate	藍瑪瑙
Blue Sapphire	藍寶石，藍寶
Bowenite	鮑文石
Jadeite	緬甸玉
Chalcedony	石髓
Chrysoberyl	金綠寶石
Chrysoberyl Cat's Eye	貓眼石
Chrysocolla	矽銅石，矽孔雀石
Chrysoprase	綠石髓，翠石髓
Citrine	黃晶石
Colorless Beryl	白柱石
Conch Pearl	貝珠
Coral	珊瑚
Carnelian	紅石髓
Corundum	鋼玉，剛石
Crystal	水晶
Cubic Zirconia	蘇聯鑽石
Cultured Pearl	養珠
Danburite	養黃晶
Demantoid Garnet	翠榴石
Diamond	鑽石

Chinese Translation (Pg. 2)

Diopside	透輝石
Emerald	祖母綠，呂宋玉
Enstatite	頑火輝石
Feldspar	長石
Flourite	螢石
Garnet	加力，柘榴石
Golden Sandstone	金沙石
Gold Stone	金石
Green Beryl	綠柱石
Green Sapphire	綠剛玉
Green Stone	綠石
Grossularite Garnet	非洲石，鈣鋁榴石
Hematite	烏剛石，赤鐵礦
Hessonite	褐黃榴石
Hiddenite	鋇翠玉
Idocrase \ Vesuvianite	符山石/加洲石
Iolite	黃青石
Jade	玉，翡翠，緬甸玉
Jasper	碧石
Kunzite	鋇紫玉，鋇藍石
Labradorite	灰長石，灰斜長石
Lapis Lazuli	青金石
Malachite	孔雀石
Marcasite	瑪卡賽石，黃鐵石
Melanite	黑鈣鐵榴石
Moonstone	月石，月光石
Neolithic Turquoise	松石
Nephrite	加拿大玉，台灣玉
Onyx	安力士
Opal	閃山雲
Orthoclase Feldspar	正長石
Pearl	珍珠
Peridot	橄欖石，電光石
Pink Beryl	粉紅柱石
Pyrite	黃鐵礦
Pyrope Garnet	火紅榴子石，紅榴石
Quartz	水晶，石英
Rhodochrosite	菱錳礦石
Rhodolite Garnet	玫瑰榴石



Chinese Translation (Pg. 3)

Rhodonite Rock Crystal	蔷薇輝石
Rock Crystal	水晶，無色水晶
Rose Quartz	芙蓉石，玫瑰水晶
Ruby	紅寶石
Rutile	金紅石
Sapphire	藍寶石
Sard	深紅石髓
Scapolite	柱石
Sea \ Salt Water Pearl	淡水珠
Serpentine	新山玉，蛇紋玉
Sinhalite	錫蘭石
Smoky Quartz	茶晶
Sodalite	方鈉石，藍鈉石
South Sea Pearl	南洋珠
Spessartite Garnet	錳鋁柘榴子石
Sphene	榭石
Spinel	尖晶石
Spodumene	鋰輝石
Star Ruby	紅星石，紅寶星石
Star Sapphire	藍星石，藍寶星石
Strontium Titanate	人造二氧化鈦石
Synthetic Diamond	人造模仿鑽石， 鈹鋁石
Synthetic Rutile	神石，瑞士鑽石
Sunstone	日長石
Taiwan Nephrite	台灣玉
Tanzanite	坦桑石，丹泉石
Tiger Eye	虎眼石
Topaz	黃晶，黃石英
Tourmaline	電氣石，碧璽， 綠晶石
Tsavorite	非洲玉，綠榴石
Turquoise	土耳其石，松石
White Sapphire	白剛玉
Williamsite	威廉石
Yellow Beryl	黃柱石
Yellow Feldspar	黃長石
Yellow Sapphire	黃剛玉
Zircon	風信子石，鈷石



Attributes that Impart Value to Gem Materials

Beauty:

Beauty is in the eye of the beholder. Those who see more beauty in particular materials will value them more highly.

Rarity:

Forged under intense heat and pressure, deep beneath the earth, gem materials require unique conditions to be created. Nature must work in exceptional ways to produce some materials. Rarity is highly prized.

Durability:

Gem materials must stand the test time without showing that time has passed.

Toughness:

If they are to be handled and touched by many, gem materials must tenaciously endure.

Stability:

Entering the atmosphere where there is harsh sunlight, corrosive agents and extreme changes in temperature and humidity, gem materials must remain unchanged.

Faceting, carving, polishing and setting are methods used to enhance and show the various attributes of the materials. This is done in conjunction both with the properties of the materials as well as the five attributes above to impart value. If everything is exceptional a unique and stunning piece will be created that will endure forever.

Simple Cleaning solution:

1/4 liter Water

1/2 Teaspoon Dishwashing Soap (No oils)

1 1/2 Tablespoons Vinegar

Clean with brush and rinse fully before drying.

Note: Do not use with Emerald and Pearl.

