

Lakeland Gem Club

Newsletter

October, 2009



The Lakeland Gem Club, Ltd was founded July 20, 1970.

The purposes shall be to promote general interest and education in Earth Sciences, Geology, Mineralogy and especially in all phases of the Art of Lapidary, to aid in Gem material and mineral identification. Also, for instruction in the art of handcrafting jewelry and for all related subjects in Geological Hobbies.

Officers and Meeting Info

Daniel Erickson, President
Kathy Peterson, Vice President
Laura Peterson, Secretary
Ron Zimmer, Treasurer

Meetings are usually the fourth Wednesday of the month at 6:30 PM at the Church of the Pines Methodist church in Minocqua. The next meeting is **October 26, 2009**. The **Agenda, Program, and Rock or Mineral of the Month** will be in the "From the President" column.

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From The President

This month's program will be "The Gem State" (Idaho) (last meeting's planned video). Jasper, Opal, Star Garnet, and Petrified Wood are some of the materials found in Idaho. This 30 min. video covers field collecting, lapidary treatments, and fluorescence along with some crystal folklore.

This month's rock/mineral is the actual material or colors of the October birthstone Tourmaline (pink or green) or Opal (white or black). Bring the appropriate color Tourmaline or Opal or a pink, green, white, or black specimen from your collection to display.

Agenda:

Elections of next year's officers

Klondike Days discussion

Club picture to be taken at meeting for Klondike Days Web Site

Discuss dates for November and December meetings

Discuss date for Christmas Party

Discuss a winter trip to a mineral museum in the morning and then a rock shop visit in the afternoon

Discuss preparations for next club show

Discuss Merrill show

Info on Sue the Dinosaur

Mining Safety Training

Matted picture sale

Good day everyone! As I pen (ok type ;)..) this months president's column I am forced to look out my window at a rockhounds worst nightmare for this time of the year, SNOW! Auggg! I was hoping for at least another two weeks before winter weather sets in! Well, hopefully it will melt soon. I've collected enough stuff this year to keep me busy inside sorting and cleaning the specimens I have for quite awhile, (I was blessed several wonderful finds this year), but I'd rather be collecting. I hope everyone had time to get out in the

field this year and added specimens to their collection, added knowledge to their mental data base, and met some new friends along the way!

For those interested in the Copper Country mines, the mine waste rock piles are getting smaller! There were many road projects this year that took more material from the ever shrinking mine dumps. The Delaware, Connecticut, Central, St. Clair, and Wolverine mines all took hits. While the disturbance does help uncover some great finds, once it's gone it's gone. This should emphasize the importance of adding copper minerals to your collections now, while you still can. I hope to see more members up there next year!

Unfortunately the planned show in Merrill is canceled. The room was not available for the dates we had hoped for, and time is just too short to coordinate the advertising and such. Maybe we can do it next year. Many thanks to Carla Peters for the generous offer! Carla suggested a possible show there in the spring. Is anyone interest in that? Let me know at the meeting.

I am thinking about some things the club could do this winter. Any input is greatly encouraged. One thought was to go to a mineral museum and then visit a rock shop afterwards. This is a great time of the year to do research for next collecting season too. There are likely some great collecting spots within 100 miles or so of Minocqua that just need finding and the appropriate permission granted.

Dale and Pattie Hartman, our newest members, have done a fantastic job getting info on the mining safety training for club members; plus Dale will be able to teach the course! Great work Dale! The goal is to gain club access to some of the privately owned gravel pits next year.

Carl Gruber has generously loaned some fossils for our show in February. Thanks Carl! Joan is picking up the specimens as Carl is escaping the winter weather and heading to Arizona. Thanks to all the members that quickly responded to the email to retrieve the specimens from Carl! We do indeed have a fantastic club full of wonderful members!!!

Next month club members will get the chance to compete for a trophy! Yes it's true! The first, (and only?), UGLY rock competition will be held at the **November** meeting! To prepare one only needs to select the ugliest rock in their collection (it must be a permanent part of your collection) and explain why the heck you kept it! The coveted trophy will be handed out after a tally of blind box votes. See you all at the next meeting!

From the Editor

In last month's column (toward the end of September) I wrote, "And NOW we are having summer???!!" No sooner did I write that and the weather turned to garbage! But I must hasten to add that it wasn't my fault – I didn't do it. It was just a coincidence. MAYBE, we will have a really late Indian summer. If we don't, I have no idea if I will get the leaves off of the lawn before that white stuff covers them. I am grateful that I got the rest of the outdoor chores done such as the boat and pier out of the water and outdoor furniture put away.

As Dan mentioned above; now is the time to clean, sort, label, cut, and polish all of what we collected this past summer. In my case, I think I found some buckets and boxes in the garage that were filled the summer before this last one. Thinking of how I started this column; does that mean we will have a very short winter?

Jane and I have a problem and I am sure that we are not alone. I suspect most of you have the same problem. We have more rocks and minerals and associated equipment than we have room. Fortunately, there is a very easy (to say) solution – make more room. That is what we are doing, but not by constructing more space, but rather, by taking the available space and allocating more of that space to rocks, minerals, etc. To do that something has to go.

Jane and I are both "packrats", and have both been hanging on to much more than we need to. You know what I am talking about because you've probably been there yourself. "Some day I might need that (whatever) and if I pitch it, I will have to buy another." My current project is to haul out boxes (from what is becoming our rock/lapidary workroom) and very quickly going through them and hopefully putting most of the contents into a large waste basket. When full, it gets hauled out to the garage and put into large heavy duty garbage bags. A second pile while rapidly sorting the contents of the box is for the Goodwill store.

You might have noticed I used the words "quickly" and "rapidly". This is very crucial to the process. There is a real danger if you take your time here because if you have a third pile – you know – that undecided pile or the pile that you want to come back to before you make your decision.

That pile has a high probability of becoming part of the “must keep” pile and that becomes “shifting space” and not “making space”.

Has any of this sounded familiar to you? It is somewhat like your growing emails received “pile”. Instead of reading an email and then either deleting it or permanently copying it to somewhere else, you leave it where it is and you tell yourself you will read it again later and decide then what to do with it. The next thing you know is you now have hundreds or maybe thousands of emails clogging your computer OR your email provider’s servers. If the email provider only allows you a certain amount of emails it will store for you, when you exceed that amount – no more email comes through.

At this dilemma your smartest move is to pick some point and just delete all emails older than that arbitrary point. I guarantee that if you try to reread them, you will never get caught up. The only decision you have to make is your arbitrary point. For one person that might be a year and for another it might be 6 months or even only 2 months.

Similar to email on your computer is old document or excel files. I have close to 300 folders in the “My Documents” folder. The number of files in these folders varies from as little as 1 or 2 files, to as many as probably 350 files. The number of files NOT in folders is about 600. Are all for these files important to save? ABSOLUTELY NOT! Is there an easy way to weed them out (delete)? NO!

How do I handle this? I don’t; that is why I have so much clutter. Memory is cheap now so I plan on saving much of the above on CD’s or DVD’s. Then I can safely delete large numbers of files, knowing if anything happens to my computer I still have the data. Just don’t ask me if I can find it, as I am pretending I can. After a number of years I can probably pitch the CD’s and DVD’s, because by then I will need more room for rocks and minerals and lapidary equipment which is how I started on this whole discourse!

Let’s get back on track! The way I see it there are a couple of ways to attack this problem. Try to set aside one hour a day to pitch or at least try to pitch. Another approach would be to go through say 3 boxes a day. That of course assumes the junk is in boxes – but that’s a whole other problem.

So far I have only made one trip to the dump and no boxes to Goodwill. We have added 2 heavy-duty shelving units into the “rock room” and thus can store more of our “rough” there. (It used to be called my workroom and my store-room.) This in turn gives more room in the garage so that the old truck fits in it once again, just in time for winter.

Don't you just love this hobby! Jane says it has been a big plus – it is finally getting us to sort and pitch.

Show Calendar

NOVEMBER

21-22: MADISON, WI The **46th Annual Madison Gem and Mineral Show** will be held at Alliant Energy Center, Madison, Wisconsin on Nov 21-22, 2009. Ninety tables are available. Contact Show Chairman Nevin Franke for early information at 608-251-2601. Sponsored by the Madison Gem and Mineral Club

<http://www.madison.com/communities/madisonrockclub>.

For directions to the show: <http://www.alliantenergycenter.com/>

DECEMBER

12-13: Sheboygan Falls, WI 5th Annual Rock, Gem, Mineral, & Fossil Show. Sheboygan Falls Municipal Building, 375 Buffalo Street, Sat 10 -5, Sun 10 – 4
Donation Adults \$2 Students \$1 Children under 12 free

November Birthstone

November Birthstone : Citrine

Birthstone Color: Yellow Gold



November's gemstone, Citrine, is as warm as a Van Gogh painting of sunflowers. The name Citrine comes from an old French word, "citrin", meaning lemon. One of the more rare forms of quartz, this gemstone ranges in color from the palest yellow to a dark amber named Madeira because of its resemblance to the red wine.

Perhaps because of its scarcity, there is little mention of Citrine used as a gemstone prior to the first century B.C. The Romans were thought to be the first to wear the yellow quartz, crafting it into cabochon, or highly polished but unfaceted cuts of stone set into jewelry. Citrine became more popular during the Romantic Period, when artisans often favored these warm colored gems to enhance gold jewelry. Citrine, like all forms of quartz, was believed to have magical powers and was worn as a talisman against evil thoughts and snake venom. It was also considered to have medicinal properties and was commonly used as a remedy for urinary and kidney ailments.

Sister stone to the purple quartz known as Amethyst, Citrine crystals are found in igneous metamorphic and sedimentary rocks. It is believed that some Citrine may have actually begun as Amethyst, but heat from nearby molten rock changed it to the yellow form of quartz. Citrine is known to change color when subjected to heat and is routinely heated in the jewelry-making process to intensify its color. For this same reason, though, this gemstone should not be left in direct sunlight for a long time because it will permanently alter the color. Most Citrine is mined in Brazil, but other sources of the quartz are Bolivia and Madagascar.

A gift of Citrine is symbolic for hope and strength. With its sunny brightness, this gemstone is ideal for helping anyone to get through the tough times in life!

Alternate Birthstone

Yellow Topaz is an alternate gemstone for those born in November. Its golden color was believed by the Egyptians to be the glow cast by the sun god Ra. Yellow Topaz ranges in color from a peachy blush to a deep cognac. A gift of this gemstone is said to symbolize friendship and to strengthen one's capacity to give and receive love.

And now for a differing opinion:

November Birthstone: Topaz

[Topaz](#) is a common gemstone that has been used for centuries in jewelry. Its golden brown to yellow color is classic but is confused with the less valuable citrine, which is sometimes wrongly sold under the name topaz. The blue topaz that is often confused with aquamarine is rarely natural and

is produced by irradiating and then heating clear crystals. **Topaz is the November [Birthstone](#) and the Sagittarius [Zodiac stone](#).**

Topaz is the hardest silicate mineral and one of the hardest minerals in nature. Topaz crystals can reach incredible size of several hundred pounds. Topaz can make very attractive mineral specimens due to their high luster, nice colors and well formed and multifaceted crystals.

Topaz may be colorless, yellow, orange, red, blue and green.

THE MINERAL TOPAZ

- **Chemistry:** $\text{Al}_2\text{SiO}_4(\text{F}, \text{OH})_3$, Aluminum silicate fluoride hydroxide.
- **Class:** [Silicates](#)
- **Subclass:** [Nesosilicates](#)

Uses: [gemstones](#) and optical

And a third opinion:

Birthstones for the calendar month of November are topaz, citrine, pearl, and chrysoprase.



BIRTHSTONE LIST

Compliments of
The International Gem Society

MONTH	MODERN	ANCIENT
January	Garnet	Garnet
February	Amethyst	Amethyst
March	Aquamarine	Bloodstone
April	Diamond	Diamond
May	Emerald	Emerald
June	Alexandrite	Pearl
July	Ruby	Ruby
August	Peridot	Sardonyx
September	Sapphire	Sapphire
October	Rose Zircon	Tourmaline or Opal
November	Golden Topaz	Topaz
December	Blue Zircon	Turquoise or Lapis

Early in this century jewelers got together and created a new list of birthstones. In the modern list you will find only transparent gems. This makes it much easier to create a mothers ring. Imagine if you needed a pearl, a cabochon of turquoise, a diamond and an emerald. This would be an awkward thing to make look nice.

Another interesting point is the addition of alexandrite. This is an incredibly rare gem and not readily available.

The ancient list is still used considerably. Many people mix the two as they feel best. This is acceptable, the modern list has not replaced the ancient one, but supplemented it.

Ed. Note: At the Wausau show, Jane was talking to one of the dealers and ask how he got the beautiful finish on his polished stones. He said he polishes them in a Vibratory Rock Tumbler. After a Google search I found the next article on line. It is actually Part 2 of a 3 part article.

Vibratory Rock Tumblers

Vibrating tumblers polish rapidly without rounding the rock



What is a Vibratory Tumbler?

Vibratory tumblers are small machines designed to polish rocks, small metal objects and other items with a rapid vibrating action. They consist a small vibrating machine and a bowl that mounts on top of it. They are commonly used to polish tumbled stones, preform cabochons, beads and sawn slab pieces.

How Do Vibratory Tumblers Work?

[Rough rocks](#), [abrasive grit](#) and water are placed in the bowl on top of the vibrating machine (see photo at right). The bowl is filled close to capacity with rock. Grit and water are added (see the instruction manual of your tumbler to determine the proper amount of grit and water). A lid is then placed on the bowl, the lid is secured and the vibrating machine is turned on.

The bowl vibrates rapidly and that action produces a lot of friction between the vibrating rock particles - this is why a vibrating tumbler works quickly.

The rocks do not "tumble" in the bowl but a circulating action develops that moves rocks from the bottom of the bowl up to the surface along the outside edges of the bowl and then back down to the bottom along the center post (see photo at lower right). The tumbling action of a rotary tumbler that rounds the rocks is not produced.

The rough grind step is run for about a week. The fine grind, pre-polish and polishing steps are run for just one or two days. The total time required to process a batch of rock is about two weeks - about 50% less time than a [rotary tumbler](#).

Some vibratory tumblers are sold with two bowls - one for the grinding steps and one for the polishing steps. If you only receive one bowl it might be a good idea to buy a second bowl. Silicon carbide grit from the grinding steps can become embedded in the walls of the plastic bowl and scratch the rock during the polishing steps.

Advantages of Vibratory Tumblers

The main advantage of a vibratory tumbler is that it has the ability to polish rocks and other objects very quickly. A rotary tumbler will require several days to do the pre-polish and polishing steps for a batch of rocks but a vibratory tumbler can do each of these steps in just one or two days. This speeds production. A final advantage is that the vibratory tumbler subjects the rocks to less impact than a rotary tumbler. This gentle action is important when you are tumbling stones that break or bruise easily.

Disadvantage of Vibratory Tumblers

The disadvantage of a vibratory tumbler is that it does very little to change the shape of the rocks. It simply smooths their surface. If your goal is to start with crushed rock that is angular in shape and produce nicely-rounded

gemstones then a [rotary tumbler](#) is the better machine to buy.

Producing Rounded Tumblers Quickly

Many people who process a lot of tumble-polished rocks run the grinding steps in a rotary tumbler and the polishing steps in a vibratory tumbler. The rotary tumbler shapes the rough into nicely rounded shapes and the vibratory tumbler speeds them through the polishing steps. Production time can be cut by 40 to 50 percent.

Polishing Preforms and Saw-Cut Shapes

Many people also use a vibratory tumbler to put the final polish on hand-cut cabochons or to smooth and polish saw-cut beads and other shapes. These need very little shaping - just a smoothing and final polish.

Ed Note: We do not have any tumbler and have never tumbled. The next two articles seemed to give more information. I hope you learn something from these articles even if you are tumbling experts; and if not tumbling yet, you might think about this part of lapidary work. Those members who have tumbled and would like to disagree or could suggest an alternate method, I am sure the newbies would appreciate it.

Vibratory Rock Tumbler Tips

Vibratory tumbling is a great way to tumble stones, small slabs, cabochons, or preforms. Enclosed are a few basic procedures on how to use a vibratory tumbler. The use of a notebook to keep track of the material you tumbled, the grit steps, days for grit completion, will be of help. Since vibratory tumbling gives such quick results, CHECK YOUR STONES DAILY.

Use stones of the same hardness in the tumbler. The tumbler bowl should be 50-75% full when loaded. Use a filler* (see note below) to keep your stones from chipping or spalling. Vibratory tumbling does not round the stones as much as a barrel tumbler. (Note: The use of a barrel or rotary tumbler for the rough grit stage will extend the life of the polyurethane liner of the vibratory tumbler).

ROUGH GRIND or #80 silicon carbide, abrasive grit stage is for smoothing the stones or edges from slabs. Add grit at 1 tablespoon per pound of stone in the tumbler. Rule of thumb is an equal amount of water and grit. Slurry thickness is IMPORTANT. As the stones wear away, the rock dust, moisture and abrasive mix form a slurry which coats the stones. If the slurry is too thick, grinding action will stop. It may be necessary to add more water, (a small amount, like a tablespoon at a time, or sometimes the slurry must be discarded. In that case, clean stones, and add grit and water and continue tumbling. Estimated time for rough grind will be 1-5 days.

When this stage is completed, thoroughly clean barrel and lid. Clean stones by rinsing them off on an elevated fiberglass window screen and rinse off with the garden hose and rinse several more times. (Grit in the kitchen sink will clog the pipes.) Grit left in vugs or crystal pockets will contaminate the next stage if not removed.

The harder the material, the more steps of grinding or grit should be used to get a smooth surface. Stones having a hardness of 6 or more should use the following grind or grit sequence: 80, 220, (400/optional,) 500, (aluminum oxide 800 pre-polish/optional) then polish.

From 220 grit stage on, the average time for tumbling is 24-48 hours. Continue all the grit stages with the same amount of grit and water as before and tumble, wash/rinse off grit, clean barrel and lid, etc.

If you have cabochons hand prepared through the 220 grit stage, they may be added to the tumbler at the 400 grit stage. FINAL STAGE IS POLISHING: use TXP polish (only 1 Tablespoon/10 pounds of stone), or Rapid Polish #61, tin oxide or cerium oxide are used in the ratio of one tablespoon of polishing powder for each pound of stones. Add water in the ratio of 1/2-1 tablespoon per pound of stone. Add a filler for this stage which aids in thickening the solution surrounding the stones and cushions the load. (FILLERS: hardwood sawdust, maple pegs, small masonite chips, rice hulls, rubber pieces, ceramic media or plastic pellets.)

For most hard stones use about 1/4 cup of filler per pound of stone. Obsidians will need 50 to 75% filler. IMPORTANT: Do not attempt to operate this cycle with mixture too thin. Load must be coated with a thickened "batter" like solution in order to obtain optimum results. Should the mixture require the addition of water, add sparingly and slowly to bring the mixture to a "thick batter" stage.

Approximate time for polish stage is 2-3 days up to a week. When stones have reached the desired polish, they will look as good dry as wet, then wash the load.

A burnish stage for additional buffing or removing any minute traces of polish, may give the stones additional sparkle. Use a powdered detergent, such as Borax, 2-3 tab. and an equal amount of water and tumble 3-4 hours. Dry stones with a terry cloth towel and ENJOY!

Ed Note: Still one final how-to with regards to Vibratory Tumblers.

Rock Tumbler Instructions

Part 2: Vibratory Tumblers

Vibratory rock tumblers, such as those made by Raytech and Tagit, can polish rocks in a fraction of the time required by rotary tumblers. They also result in polished stones that retain the shape of the rough material, as opposed to the rounded shapes obtained by rotary tumbling. On the other hand, vibratory tumblers tend to be a bit more expensive than their rotary counterparts. However, if 'time is money' and you want to retain more of the shape and size of the original material, then a vibratory tumbler may be just what you need.

Materials List

- A vibratory tumbler.
- Rocks. You will get better results with a mixed load that includes both small and large rocks.
- Filler. Plastic pellets are great, but you can use small rocks having the same or lesser hardness as your load.
- Silicon carbide grit, pre-polish and polish (e.g., tin oxide, cerium oxide, diamond).
- Soap flakes (not detergent). Ivory soap flakes are recommended.

Procedure

- Fill the bowl of the tumbler about 3/4 full with your rock.
- If you do not have sufficient rock to fill the bowl to the 3/4 level, then add plastic pellets or other filler.
- Add the required amount of SiC (silicon carbide) grit and water. See the table below to get a sense of how much is needed. If you have the instruction manual that came with the tumbler, start out with those quantities. Keep records, so if you make changes you will know the effect the changes had on the polishing.
- Place the lid on the tumbler and run the vibrator. Let it run for a day or so and make certain that a slurry is forming. Evaporation will occur, especially if the external temperature is hot, so you may need to add water from time to time to maintain the slurry consistency.
- When the rock has achieved the desired smoothness and roundness, remove the load and rinse the bowl and the rocks thoroughly with water.
- Return the rock to the bowl, add a tablespoon of soap flakes, and fill the bowl with water to the top of the rocks. Vibrate the mixture for about half an hour. Rinse the rocks and the bowl. Repeat this step two more times.
- Return the rocks to the bowl and proceed to the next polishing step with the next grit (see the Table).
- After the final polish step, perform the washing/rinsing process and allow the stones to dry.

Here are some conditions, intended for a 2.5 lb tumbler. You can adjust the quantities for your specific needs. The durations for each step are approximate - check your load and keep records to find the conditions that work best for you. Experiment with different polishing compounds to find the type that works best for your stones.

Grit Type		SiC	SiC	SiC	SiC	SnO2	CeO2	Diamond	Diamond
Mesh		220	400	600	1,000	---	---	14,000	50,000
Grit	Amount	8 tbls	4 tbls	4 tbls	3 tbls	4 tbls	4 tbls	1 cc	1 cc
Water	Cups	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2
Soap	Tbls	0	0	0	0	1/3	1/3	1	1
Speed		fast	fast	fast	fast	slow	slow	slow	slow
Stones	Hardness	Days	Days	Days	Days	Days	Days	Days	Days
Sapphire	9	28	7	7	7	5	---	---	---
Emerald	8	3	2-3	2-4	2	2-4	---	---	---
Aquamarine									
Morganite									
Topaz	7.5	3-8	2-3	2	2	2	---	---	---
Zircon									
Agate	7	0-7	3-4	2-3	2-3	0-3	3	---	---
Amethyst							--		
Citrine							--		
Rock Crystal							--		
Chrysoprase							--		
Peridot	6.5	---	2	2	2	---	---	2	2
Opal	6	---	---	1	2	2	---	---	---
Lapis Lazuli	5.5	---	4	3	3	2	---	---	---
Apache Tears	5	---	2-3	1-2	1	1	---	---	---
Apatite						--		1	1

*Use a slow speed for **all** steps when polishing stones with Mohs hardness of 6.5 or lower (peridot, opal, lapis, obsidian, apatite, etc.).

Helpful Tips

- Make a balanced load that includes for large and small rocks. For a 2.5 lb bowl, sizes from 1/8" to 1" work well.
- A proper slurry is needed to get the best polish in the least time. If there is too little water, then the thickness of the mixture will prevent proper movement, thus slowing the polishing action. Too much water results in too thin of a slurry, which will result in a much longer time to achieve a polish. The grit may settle out of the mixture altogether.

- Never wash grit down the drain!
- Plastic pellets may be rinsed and reused, but you cannot reuse grit.

ABRASIVE SIZE EQUIVALENCY CHART

Compliments of
The International Gem Society

American Std.	Micron Size	Equivalent Mesh
1/4	0 - 0.5	100,000
1/2	0 - 1	60,000
1.0	0 - 2	14,000
1.5	1-2	13,000
2.5	2-3	9,000
3	2-4	8,000
4	2-6	5,000
5	4-6	4,500
7	5-10	2,800
9	6-12	1,800
14	8-20	1,400
15	10-20	1,200
18	12-25	1,050
25	20-30	800
30	20-40	600
35	30-40	500
45	40-50	325
55	50-60	285
70	60-80	240
90	80-100	225
110	100-120	160

WEIGHTS & MEASURES CONVERSION CHART

Compliments of
The International Gem Society

1" = 25.4 mm	1 mm = .039"
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	Carats	Grams	Kilograms	Ounces	Pounds
Carats	0	0.2	0.0002	0.0071	0.00044
Grams	5	0	0.001	0.0353	0.0022
Kilograms	5,000	1,000	0	353	2.2
Ounces	141.75	28.3	.0028300	0	0.0625
Pounds	2,267.95	453.59	0.4545455	16	0

Ring Size Comparison Chart

Compliments of
The International Gem Society

US Standard (Also Canada)	Diameter in Inches	British Equivalent	French Equivalent	German Equivalent	Swiss Equivalent	Japanese Equivalent
0	.454	-	-	-	-	-
1/2	-	A	-	-	-	-
1	.487	B	-	-	-	1
1 1/2	.503	C	-	-	-	-
2	.520	D	41 ½	13 ¼	1 ½	2
2 1/2	.536	E	42 ¾	13 ¾	2 ¾	3
3	.553	F	44	14	4	4

US Standard (Also Canada)	Diameter in Inches	British Equivalent	French Equivalent	German Equivalent	Swiss Equivalent	Japanese Equivalent
3 3/8	-	G	45 ½	-	5 ½	5
3 1/2	.569	-	-	14 ½	-	-
3 3/4	-	H	46 ½	-	6 ½	-
4	.585	H ½	-	15	-	7
4 1/4	-	I	47 ¾	-	7 ¾	-
4 7/8	-	J	49	-	9	-
5	.618	J ½	-	15 ¾	-	9
5 1/8	-	K	50	-	10	-
5 1/2	.634	L	51 ¾	16	11 ¾	-
6	.650	M	52 ¾	16 ½	12 ¾	12
6 1/2	.666	N	54	17	14	13
7	.683	O	55 ¼	17 ¼	15 ¼	14
7 1/4	.699	P	56 ½	17 ¾	16 ½	15
8	.716	Q	57 ¾	18	17 ¾	16
8 1/2	.732	-	-	18 ½	-	17
8 5/8	-	R	59	-	19	-
9	.748	-	-	19	-	18
9 1/8	-	S	60 ¼	-	20 ¼	-
9 1/4	.764	-	-	19 ½	-	19
9 5/8	-	T	61 ½	-	21 ½	-
10	.781	T ½	-	20	-	20
10 1/4	-	U	62 ¾	-	22 ¾	21
10 1/2	.797	U ½	-	20 ¼	-	22
10 5/8	-	V	63 ¾	-	23 ¾	-
11	.814	V ½	-	20 ¾	-	23
11 1/8	-	W	65	-	25	-
11 1/2	.830	-	-	21	-	24
11 5/8	-	X	66 ¼	-	26 ¼	-
12	.846	Y	67 ½	21 ¼	27 ½	25
12 1/2	.862	Z	68 ¾	21 ¾	28 ¾	26
13	.879	-	-	22	-	27

Final Note: Dan Erickson, Val Burns, Sue Casey, and Ken and Jane Wierschem have been working on By-Laws for the LGC and are about half done (my estimate) thanks to all the work Sue has done. Obviously they will not be done by this election. When the committee is ready to recommend it to you, we will email it to all of you for your input, well in advance of voting on it.