

# Historical Glass Museum

November 2020 Volume 4 Issue 5



## Museum Location:

1157 N. Orange Street  
Redlands, California  
909-798-0868

## Mailing Address:

P. O. Box 9195  
Redlands, CA 92375  
HistoricalGlassMuseum.com



The Museum has a page on Facebook, for those who like to indulge in social media. Search for REDLANDS HISTORICAL GLASS MUSEUM. (There is an older page without the word Redlands, but we are unable to update it.)

About once a week, we try to present a photograph of one or more pieces from the Museum collection. Check us out and then plan a visit to the Museum (but call ahead first). Bill Summers (951-850-0915) will set you up with an appointment.

## KEEPING IN TOUCH



Sorry to have to repeat this, but ...

The governor has ordered museums to remain closed to the general public, but we can accommodate visitors on an appointment-only basis. We restrict the number of visitors to no more than 4 or 5 at a time, and masks must be worn (we can supply them). During this time of restrictions, we will be offering **30% off in our Gift Shop**. So do consider a visit, just call Bill Summers in advance to schedule it: **951-850-0915**

It might not seem like there would be expenses when we've been closed for the last few months, but we still have to pay for trash pickup, electricity, water, insurance, landscape maintenance, taxes, and more. We appreciate any donations, never more than at the present.

## New Tax Law

We'd like to repeat this announcement: Congress may have helped out the Museum recently. Here's how:

In response to the coronavirus crisis, the CARES Act added a new above-the-line deduction to encourage more charitable giving. *Even if you take the standard deduction on your 2020 tax return, you can still deduct up to an additional \$300 for cash donations to charity you made during the year.* (The CARES Act also lets itemizers deduct more of their charitable gifts.)

Since the Museum has only been open by appointment for several months, income from gift shop sales and donations from admissions has been minimal. Perhaps you are in a position to take advantage of the CARES Act and help the Museum with a donation.

You can even donate online via PayPal. Just visit our web site for a link:

[www.historicalglassmuseum.com](http://www.historicalglassmuseum.com)



Our museum is run by an all volunteer board of directors and volunteer docents.

New ideas are always welcome. We encourage any member who would be willing to serve on the Board of Directors. The Board meets for about two hours (or less) on the first Tuesday of each month from 10:00am until about 11:00 or so.

You don't have to travel to Redlands to serve. Some Board members attend via conference call.

## PRESIDENT'S MESSAGE

Yikes!!

It has been a very challenging year for the Historical Glass Museum, our members and patrons. Due to the Covid-19 pandemic, we had to close the Museum around the middle of March. We remain closed to the general public until the pandemic subsides and we receive approval from the governor to reopen for our normal visiting hours. However, we have been able to accommodate visitors a few at a time by appointment only. Face masks and social distancing are, of course, required.

We have been forced to cancel our seminars, sales, and our annual open house, which are great fundraisers for our Museum and the Restoration fund.

The Board and I are extremely grateful for our members and other glass-loving friends who have continued their membership and generously donated funds to help us pay for the Museum's maintenance expenditures during this difficult time.

We are currently looking at creating new ways to provide informative glass seminars through video and/or Zoom conferencing. In addition, we are exploring ideas to generate funds for our operations such as eBay sales, parking lot sales, raffles, etc. We appreciate any feedback or other suggestions you may have, and we will keep you posted on any updates.

The bottom line, even during this pandemic, is that we have much to be thankful for. Next year will be a brighter light in many ways.

Thanks again for your generous support and stay safe!

*Steve*

### 2020-2021 BOARD OF DIRECTORS

<b>President:</b>	Stephen Barnett
<b>Vice President:</b>	William Summers (tours)
<b>Secretary:</b>	Michael Krumme
<b>Treasurer:</b>	Shirley Barnett
<b>Board Member:</b>	William Kleese
<b>Board Member:</b>	Jan Korfmacher
<b>Board Member:</b>	David Adams
<b>Board Member:</b>	Joann Tortarolo
<b>Board Member:</b>	Barbara Jenks

## WHAT GOES INTO THE MAKING OF GLASS?

By David Adams

I am fascinated by the subject of glass and mesmerized by watching glass artists create freehand objects in glass. If you haven't ever seen the process in person, check around where you live – there are over 40 Universities in the United States that offer glassmaking as an elective. You'll be able to watch demonstrations. The Corning Museum of Glass (in Corning, NY) has daily exhibitions of the art of glassmaking. You can see videos of glassmaking at their web site: CMOG.org

Most glass is made primarily of sand, soda ash, and either lime or lead. OK, but what the heck is "soda ash" and while I put a lime in my margarita, what kind of lime do they use? And lead is a heavy silvery-gray metal, so how does that figure in making beautiful crystal glass? Keep reading.

One more thing: The term *lead crystal* is, by technicality, not an accurate term to describe *lead glass*, since glass, an amorphous solid, lacks a crystalline structure and is therefore *not* crystal. The use of the term *lead crystal* remains popular for historical and commercial reasons.

Here are some of the answers.

**First ingredient:** *sand*. The main raw material used to make glass is sand. To make clear glass, a special sand called silica sand is used. This fine white sand is needed because it is very pure and does not contain other unwanted chemicals. It is "washed" to remove as many impurities as possible, as impurities can adversely affect the clarity and color of the glass.

**Second ingredient:** *soda ash*. This is a compound very much related to baking soda. Soda ash is chemically called Sodium Carbonate ( $\text{Na}_2\text{CO}_3$ ). Soda ash plays a vital role by reducing the furnace temperature necessary to melt the silica used, thus reducing the energy required to produce glass. For some glass formulae (notably lead glass), potash (Potassium Carbonate,  $\text{K}_2\text{CO}_3$ ) is used in place of soda ash.

**Third ingredient:** *usually either lead or lime*. Lime is a shorthand term for limestone, which provides both calcium and magnesium to increase durability and control viscosity during the formation of glass. Consistent quality and very low percentage of trace elements (e.g. iron, chromium) are essential. Approximately 90% of the world's glass production is soda-lime glass.

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## DONATIONS

### Cash Donations:

#### September:

\$200.00 Lynette Smith  
\$100.00 Linda & Tim Keenan  
\$65.00 Janet & Steve Higbee

#### October:

\$29.90 David Adams  
\$25.00 Lori Johnson  
\$10.00 Bob Crha  
\$50.00 Margo & Phil Stein  
\$150.00 Michael Krumme  
\$25.13 Steve Barnett

### Non-Monetary Donations

#### September:

Jacque Rocha  
Janet & Steve Higbee  
Jim Stewart

#### October:

Joann Tortarolo  
Brick & Marti Noyes  
Jacque Rocha

#### November:

Lisa Ackerman Baldwin

The board wishes to thank all of the individuals who contributed to the Museum. This is **your** Museum, and your contributions enable it to continue operating.

### FRONT DOOR REPAIRED



Museum members Marti and Brick Noyes have created a replacement window for the one that was destroyed by a break-in attempt last spring. The new window fits in with the historic nature of our hundred-year-old building. Thanks to the Noyes for their work on our behalf.

### WHERE TO LEARN GLASSMAKING

In the Redlands area, two institutions offer glassmaking as an elective in their fine arts departments:

San Bernardino Valley College  
California State University, San Bernardino

Many colleges have similar offerings. Check in your area.

### Spotlight: CORNING MUSEUM OF GLASS

The Corning Museum of Glass provides live demonstrations of glassmakers in action. You'll see master glassmakers take glowing gobs of molten glass on the end of a pipe and skillfully shape them into vases, bowls, or sculptures. A narrator talks through the process, and cameras show inside the 2300°F furnace to ensure you don't miss a single step along the way. Watch from home via CMOG.org.



Making an item requires a team of two, three or more. The man sitting is called a "gaffer" and he is responsible for creating the piece. The shows are held every day when the Corning Museum is open, and are included in the price of admission.



A piece must be inserted back into the furnace (called the "glory hole") many times during the process. The glass must be kept at a temperature near 2000 degrees while it is being worked. This photo and the next were taken at San Bernardino Valley College.



More of the "hot shop" at San Bernardino Valley College. Glass blowing requires quite a bit of space for the whole process.

## Group Tours of the Museum



Although the Museum is open for visitors on a “by appointment only” basis, we cannot accommodate large groups. We must limit the size of groups until the governor gives us the green light to resume our normal tour protocol.

Until further notice, tours can consist of **no more than six persons**; masks must be worn (we can supply them) and social distancing must be observed. This is for the protection of both our visitors and our volunteer docents.

*During this restricted period*, the Gift Shop is offering a **30% off sale** for those who schedule a visit to the Museum. Call 951-850-0915 for an appointment.

### GENERAL TOUR INFORMATION

Once we can resume normal operations, weekday group tours for groups of 8 or more visitors will be available by appointment. The charge is \$5.00 per person, with a minimum charge of \$40.00. For information and bookings, call Bill Summers at **951-850-0915**.

Tour bus parking and a handicap ramp are available. The museum entrance and wheelchair ramp are located at the rear parking lot. There is also parking along the street curb on Western at Orange.

### MEMBERSHIP CORNER

We welcome the following new members:

**Christopher Facundo**  
**Bert Kennedy**  
**Tony Nettell**  
**Laura Miller**  
**Barbara Mahle**

## RESTORATION FUND

The Board of Directors established a Restoration Fund designated to set aside funds for restoration and maintenance of our century-old building. It has already been instrumental in restoring the exterior of the Museum. Thanks to all who donated towards the restoration.

The next phase of restoration will be a new roof, but it seems like the current roof is still reasonably sound, so we have time to raise additional funds towards its eventual replacement. The fund's current balance was \$5131 at the end of October.

The Board welcomes cash donations designated for the Restoration Fund. You may designate “in Memory of “ or “in Honor of “ with your donation.

Checks should be made out to the Museum, with a note designating the Restoration Fund. Send to:

Historical Glass Museum  
P. O. Box 9195  
Redlands, CA 92375-2395



Don't forget to use Amazon Smile when you buy from Amazon, and designate the Historical Glass Museum as your charity. The Museum receives a donation from Amazon, and it doesn't cost you anything. Just go to:

**SMILE.AMAZON.COM**

make sure you choose Historical Glass Museum as your charity, and then just shop like you normally would. Amazon donates ½ of 1% for everything you purchase. It's a small amount, but it adds up. The Museum has netted \$141.10 to date. Thanks to all members who have signed up.

Lead glass (commonly known as lead crystal) is used to make a wide variety of decorative glass objects. It is made by using lead oxide instead of limestone, and potassium carbonate (potash) instead of the sodium carbonate (soda ash).

There are many other types of specialty glass formulae, using ingredients other than lead or lime. One well-known example is borosilicate glass – which we know as “ovenglass” or “Corning Ware.” In this case, boron trioxide ( $B_2O_3$ ) is substituted for lead or lime as the third main ingredient. Borosilicate glass is known for being resistant to thermal shock, more so than any other common glass, so it can tolerate rapid changes in temperature without damage.

**Other ingredients:** Regardless of which type of glass was being made, *arsenic* was often added to the glass formula. That's right - arsenic. It was specifically used to reduce the bubbles that formed as the ingredients were being melted.

**Colored glass:** If the manufacturer is making colored glass, then additional chemicals are added to the glass mixture. Some of these include compounds of the following elements: Chromium, Iron, Cobalt, Nickel, Uranium, Selenium, Neodymium, Manganese and Sulfur. Some glass formulae even required the addition of pure Gold.

Some examples of the ingredients used to make colored glass are

- Cobalt Oxide: blue, violet
- Cadmium Sulfide: yellow
- Gold Chloride: red (ruby, cranberry)
- Selenium: red
- Antimony Oxide: white
- Sulfur: yellow-amber
- Uranium Oxide: fluorescent yellow, pale green (vaseline)
- Chromium Oxide: emerald green

**Toxic material:** You might recognize Arsenic and Selenium as toxic materials. How about Uranium? That's pretty toxic and it sounds somewhat scary, because it is radioactive. Yet it was (and still is) a common ingredient used to produce colored glass (and pottery).

Is there anything to worry about with these toxic materials? The answer is a resounding **NO**.

Where a formula for glass might call for 1,400 pounds of silica sand and 540 pounds of soda ash (these numbers were taken from an actual glass batch formula), the coloring agent for the mix might be something like *four*

*pounds* of uranium oxide. Four pounds of anything mixed in a ton of other stuff is a pretty insignificant amount. The amount of arsenic added to the same formula might amount to about 5 pounds, and all of it is essentially used up in the process of removing the dissolved gas bubbles before the pot of glass is ready to be used.

Similarly, small amounts of the coloring agents are used for the various colors. To make lead glass, using the same 1,400 pounds of sand, the company might use up to 600 pounds of lead compound. That doesn't mean that you have anything to worry about - the lead is part of the glass itself, and the lead compound is what gives the glass its clarity.

Glass colored by Uranium will set off a Geiger counter if the counter is placed directly next to the glass. Move the counter a foot away and you will get virtually no reading at all. The glass is not dangerous to humans unless you hold it next to your body 24 hours a day, 7 days a week for about 15 years or so, after which you *might* show signs of radiation damage.

Lead in glass can leach out a little. For example, if you leave alcohol in a lead glass decanter for 15 or 20 years, there is a chance that some of the lead might infuse the alcohol. Leave it in for 5 years and the likelihood is almost zero. And why didn't you drink it before then?

The bottom line is that the various compounds used to manufacture glass and to color it are not harmful to humans once they are part of the glass, and serve only to make the glass more enjoyable for us all.



Above is a sample of colored bars and “frit” (powdered glass) that are used by glassblowers to produce hand-made glass items. Note the very thin “straws” that make the colored stripes you find on art glass pieces.