

# Wagner & Griswold Society

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(Moderators: [Scott Sanders](#), [Jeff Friend](#))

 [Lye tank problem](#) (Read 2541 times)

**Gene Dietzenbach**  
WAGS member  
☆☆☆☆☆

 **Lye tank problem**  
Dec 9<sup>th</sup>, 2010, 1:53pm


This piece just isn't getting clean. The real problem is that inside this block of lye ice are 7 waffle irons and bases.

 [lye\\_bath.jpg](#)

Posts: 1138



**Lamar Cope**  
Ex Forum Member

 **Re: Lye tank problem**  
**Reply #1** - Dec 9<sup>th</sup>, 2010, 2:09pm

I'm having the same problem. I wonder if there is something that we can add to the mix to lower the freezing point.

**Gene Dietzenbach**  
WAGS member  
☆☆☆☆☆

 **Re: Lye tank problem**  
**Reply #2** - Dec 9<sup>th</sup>, 2010, 2:18pm

Posts: 1138

Lamar, I was thinking the same thing. I was thinking about getting a tank heater. Something small like for a fish

tank. Maybe alcohol or antifreeze?

**Lamar Cope**  
Ex Forum Member

 **Re: Lye tank problem**  
**Reply #3** - Dec 9<sup>th</sup>, 2010, 2:41pm

I would be a little concerned about mixing something with sodium hydroxide. I would feel better about it if a real chemist chimed in on this.

**Bryce King**  
WAGS member  
★★★★★

 **Re: Lye tank problem**  
**Reply #4** - Dec 9<sup>th</sup>, 2010, 2:41pm

Simple solution. Bring it in out of the cold. I brought mine in from the back porch a couple months ago and it is doing just fine in the basement.

Then, maybe yours is sooooo big that it can't be moved easily. If such is the case, well, just wait til spring and then use it.

To bad we don't think of things like this when we set them up.


**C. Perry Rapier**  
WAGS member  
★★★★★

 **Re: Lye tank problem**  
**Reply #5** - Dec 9<sup>th</sup>, 2010, 4:01pm

I don't know this antifreeze business. I do know that smarter people than me know more about this than me, but, I do know antifreeze is poison. And lye is poison too. And I know they use lye in food processing. But I don't think they use antifreeze in any kind of food processing, that I know of anyway, but they might in one way or another. I'm just thinking out loud here. 😞

Posts: 23581

**Gene Dietzenbach**  
WAGS member  
★★★★★

 **Re: Lye tank problem**  
**Reply #6** - Dec 9<sup>th</sup>, 2010, 4:08pm  
Maybe the tank heater is the best idea.

Posts: 1138

**Lamar Cope**  
Ex Forum Member

 **Re: Lye tank problem**  
**Reply #7** - Dec 9<sup>th</sup>, 2010, 4:35pm

**Quote from Gene Dietzenbach on Dec 9<sup>th</sup>, 2010, 4:08pm:**  
Maybe the tank heater is the best idea.

At this point, I would say it sounds like the safest way.

**Sam Roberts**  
WAGS member  
★★★★★

 **Re: Lye tank problem**  
**Reply #8** - Dec 9<sup>th</sup>, 2010, 6:03pm

Before I put anything in with the Lye I might invest in some heating tape and attach it to the outside of the barrel. I don't think I would put anything metal inside the tank.

Lodge what? !!!

Posts: 3672

**Tom Meinke**  
WAGS member  
★★★★★

 **Re: Lye tank problem**  
**Reply #9** - Dec 9<sup>th</sup>, 2010, 6:09pm

The pink antifreeze that is made for RV's is non toxic. I still would not mix them though

Posts: 420

**Sandy Glenn**  
Forum Administrator  
WAGS member  
★★★★★

 **Re: Lye tank problem**  
**Reply #10** - Dec 9<sup>th</sup>, 2010, 6:41pm

Gene, I have a friend who tapes a couple waterbed heaters to the outside of his lye tank. I've never tried it (mine's in my basement), but he said it works like a fat heat tape.

Posts: 6499

**Gene Dietzenbach**  
WAGS member  
★★★★★

 **Re: Lye tank problem**  
**Reply #11** - Dec 9<sup>th</sup>, 2010, 6:44pm

Thanks Sandy,,That is an awesome idea. I will have to try it.

Posts: 1138

**Chuck Rogers**  
WAGS member  
★★★★★

 **Re: Lye tank problem**  
**Reply #12** - Dec 9<sup>th</sup>, 2010, 8:58pm

Gene, once you wrap it with the heat tape, wrap some insulation around that to help hold the heat in. If you do decide to move it into the basement instead, at least it won't spill. 😊

WAGS: She Finds The Iron For Me

Posts: 8632

**Jeff Seago**  
WAGS member  
★★★★★

 **Re: Lye tank problem**  
**Reply #13** - Dec 9<sup>th</sup>, 2010, 11:08pm


I know the be all and end all solution to your problem Gene!! Why don't you just move south for the winter??? 😄😄

Gotta Love WAGS!!!

You probably only need to wrap the bottom of the barrel with any kind of heat tape?? Or I would think so anyway since heat rises.

Posts: 4823

**Robert Hilman**  
WAGS member  
★★★★★

 **Re: Lye tank problem**  
**Reply #14** - Dec 9<sup>th</sup>, 2010, 11:24pm

I know they make electric blankets for 55 gallon drums but don't know were you could get one.

Posts: 926

There are two kinds of antifreeze and the color doesn't mater because they are really clear and the color is added. They are ethylene glycol, the poison one. The other is propylene glycol, the non-poison one. Ethylene glycol works better but I would use neither. I was going to warn you about getting it too warm because if it goes above 35°C it will eat iron. But I just did the math and it works out to 95°F. So warming it should be fine.

**Gene Dietzenbach**  
WAGS member  
★★★★★

**Re: Lye tank problem**  
**Reply #15** - Dec 9<sup>th</sup>, 2010, 11:24pm

The heat pad idea is great, but don't you think a fish tank heater would work.. They are made of glass, so I don't think the lye would hurt it and it heats my 30 gallon tank up to 80 degrees. I know it is alot colder outside, but I would think it would keep it from freezing.

Posts: 1138

I had two tanks of lye, got one cleaned out before the cold hit and of coarse I was putting off cleaning the 7 WI. Now that I'm thinking about all the work of cleaning 7 WI and bases, maybe it can wait until spring 😊😊 I will just start a small lye bath in the basement with a lid and have it up on a shelf. Maybe I should just sell the block of lye. The iron should be protected during shipping and when the winner gets his package it will be like a frozen treasure chest. Who knows what else I slipped into the black water. I have a habit of looking at a piece of iron and start thinking that I should start soaking this piece too. Before you know it you are out of room and the pieces that have been soaking the longest are at the bottom.

**Robert Hilman**  
WAGS member  
★★★★★

**Re: Lye tank problem**  
**Reply #16** - Dec 10<sup>th</sup>, 2010, 12:14am

As long as nothing but the glass touches the lye it should be fine.

Posts: 926

**Dave Roberts**

**Re: Lye tank problem**  
**Reply #17** - Dec 10<sup>th</sup>, 2010, 1:20am

Do a search for bird bath heaters. I'm not sure if it would keep some of the big lye take unfrozen, but it might...  
<http://www.thebirdshed.com/nel-nelson1.html>

Or better yet, here is a horse trough heater:

[http://www.valleyvet.com/ct\\_detail.html?pgguid=30e07428-7b6a-11d5-a192-00b0d0204ae5&item=22368&ccd=BZR002&utm\\_source=bizrate\\_shopzilla&utm\\_medium=cpc&utm\\_content=22368](http://www.valleyvet.com/ct_detail.html?pgguid=30e07428-7b6a-11d5-a192-00b0d0204ae5&item=22368&ccd=BZR002&utm_source=bizrate_shopzilla&utm_medium=cpc&utm_content=22368)

Not sure how the metals in the heater would react to the Ph of the lye...Might ahve to research a little more, but it's an idea at least.

**Jeff Johnson**  
WAGS member  
★★★★★

**Re: Lye tank problem**  
**Reply #18** - Dec 10<sup>th</sup>, 2010, 12:41pm

**Quote from C. Perry Rapier on Dec 9<sup>th</sup>, 2010, 4:01pm:**

I don't know this antifreeze business. I do know that smarter people than me know more about this than me, but, I do know antifreeze is poison. And lye is poison too. And I know they use lye in food processing. But I don't think they use antifreeze in any kind of food processing, that I know of anyway, but they might in one way or another. I'm just thinking out loud here. 😞

If you add ethylene glycol (EG) or propylene glycol (PG) to water, then add sodium hydroxide (NaOH - lye), nothing unpleasant should happen. I'm not a chemist, just a lowly former chemical engineer (22 years) turned ICU nurse.

Yes, both EG and NaOH are poisons. Lots of things are poisons, it all depends on the quantity you ingest/absorb into your body. EG/PG/NaOH are all water soluble. When you pull your lovely de-gunked cast iron item out of your lye tank, you'll rinse/scrub off the eeeeeevil nasty chemicals before you dry & re-season it.

I probably need to add something to my 5 gal Home Depot pail lye tank. I brought it inside this morning to thaw (southwest OH, night temps ~20 F, now 40F outside). It contains several skilletts, and I need to process a Griswold #10 muffin/popover pan that was apparently painted shiny black so it looked "pretty".

To depress the freezing point of a water solution, there are several typical approaches:

- add a ionic substance such as salt (BAD idea with cast iron - rust city)
- add a substance with low freezing point, such as EG/PG or an alcohol like isopropanol (IPA) or methanol (MeOH)

The "downside" to using an alcohol like IPA or MeOH is that they are volatile. If you leave your tank open, they will evaporate.

EG is better than PG in terms of reducing the freezing point of a solution. If you look at:  
[http://en.wikipedia.org/wiki/Ethylene\\_glycol](http://en.wikipedia.org/wiki/Ethylene_glycol)

You'll see that it takes a 30% solution of EG in water to drop the freezing point from 32F to 5 F. The "standard" lye tank solution of 1# lye in 5 gal (~41#) water is about a 2.5% solution. This freezes just below the normal freezing point of water (see [http://www.dow.com/PublishedLiterature/dh\\_0048/0901b80380048f1a.pdf?filepath=causticsoda/pdfs/noreg/102-00417.pdf&fromPage=GetDoc](http://www.dow.com/PublishedLiterature/dh_0048/0901b80380048f1a.pdf?filepath=causticsoda/pdfs/noreg/102-00417.pdf&fromPage=GetDoc) ).

The lowest freezing point for lye/water solutions appears to be about a 18% solution (~7# lye + 34# water). That mix freezes at -28 C, which is about -18 F. If you don't want to add toxic nasty eeevil EG to your lye tank, you might consider adding more lye to your solution.

**NOTE** that the freezing points shown above are for pure lye/water solutions, and I'd expect the baths to freeze at higher temps as more grease/crud/reaction byproducts are put into the solution as you clean more & more cruddy cast iron.

I'll probably just add some antifreeze and be done with it. Most antifreezes contain the glycol, silicates and other additives to help prevent corrosion, and maybe some pretty dyes so it glows nice & green. It's a water solution. Pull your CI out of the tank, scrub/rinse it off, and you should be good to go.

If you want to be perfectly safe, you might not want to use anything in your lye tank other than pure spring water stored in a sustainable, cruelty free, redwood vessel. Your cast iron will be cruddy & rusty, but, hey, you'll be "safe"!



**Jerry Cermack**  
Global Moderator  
WAGS member  
★★★★★

**Re: Lye tank problem**  
**Reply #19** - Dec 11<sup>th</sup>, 2010, 12:31pm

Many years ago, in my other life, we had "**Drum Heaters**" we used in the winter to keep some liquids from freezing in 55 gal drums. They were wrap around and were very low wattage and did the trick. We had the same objective.

Collector

We didnt care how cold the liquid was, just had to keep it from freezing in very cold weather. I have no idea what they cost now, but I assume the low temp range heaters could be bought for \$50 or less.

Posts: 5810

**C. Perry Rapier**  
WAGS member  
★★★★★

**Re: Lye tank problem**  
**Reply #20** - Dec 11<sup>th</sup>, 2010, 1:14pm

If I really wanted to run a lye tank in the winter, and I could not keep it inside from freezing, here is what I would do. I'd get me one of them small water heaters, the kind you can buy at Farm Fleet, Tractor Sales, whatever, they got them by the skid, they are used for animal watering troughs, like for cattle and horses. It floats, the lye won't hurt it, cause its plastic and metal, and it has a bumper around it so that you can use it in plastic tanks, without burning a hole in your plastic container. I have used these many many times, to water cattle with, cheap, safe, plentiful. 😊

 [heater.jpg](#)



Posts: 23581

**Raymond Dube**

**Re: Lye tank problem**  
**Reply #21** - Dec 31<sup>st</sup>, 2010, 1:37am

Momma said there'd be days like this!!

I've kept mine in my unheated (but attached) garage without it freezing...maybe you can slide it into your garage where it's out of the elements? It may not work...but it won't cost ya anything either ;=)

Posts: 960

**Jeff Johnson**  
WAGS member  
★★★★★

**Re: Lye tank problem**  
**Reply #22** - Dec 31<sup>st</sup>, 2010, 2:16pm

I ended up thawing my 5 gal pail lye tank with my wife's heating pad (Thanks Dear!) & an old sleeping bag wrapped around the pail & pad. After a day or so, it thawed out. I removed a half gallon or so of the solution & added some antifreeze. It's currently in the back of our garage, and the wife and kids have all been duly warned that it contains lye.

Posts: 234

**Raymond Dube**

**Re: Lye tank problem**  
**Reply #23** - Dec 31<sup>st</sup>, 2010, 10:02pm

Momma said there'd be days like this!!

LOL...your wife is certainly more understanding than mine would be!!

Posts: 960

Most definitely keep kids and pets away....I enclosed mine in a plywood box (actually only had to build 2 sides since it was in a corner) with a lid that I could lock as my kids were young and often had friends over....there is a rule against playing in MY section of the garage and they usually follow it....but can never be too safe when kids are around! Glad ya got it going again!!

**Jeff Johnson**  
WAGS member  
★★★★★

**Re: Lye tank problem**  
**Reply #24** - Jan 1<sup>st</sup>, 2011, 9:29pm  
[Quote from Raymond Dube on Dec 31<sup>st</sup>, 2010, 10:02pm:](#)

LOL...your wife is certainly more understanding than mine would be!!

Posts: 234

There's nothing to it...just openness, honesty, and mutual respect in our relationship, and not telling her that I used her heating pad to thaw out a bucket of eeeevil caustic lye solution in the garage. 😊 I put the heating pad back in the closet when I was done.

Simple! 😊

**Raymond Dube**

**Re: Lye tank problem**  
**Reply #25** - Jan 2<sup>nd</sup>, 2011, 12:09am

Momma said there'd be days like this!!

Haha...that's why I say it's better to do something and ask for forgiveness rather than ask first and be denied LOL

Posts: 960

And it works as I've been happily married for 16 years...or so my wife tells me 😊