

DIY Tea Light Oven for Off-Grid Cooking

- [By Lesslie B](#)
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- [85 Comments](#)



Cooking and using your carefully planned food storage can be tricky to say the least, especially if you're planning on having to forgo electricity when preparing meals. If you're like me though, you like to practice cooking "off-grid" for rotation purposes and to get used to the new techniques and challenges you might face. My husband and I have a few off-grid cooking methods, including a propane camping stove with extra propane and several methods to make a fire. Both of which are great for boiling water, using dutch ovens, or cooking skillet meals, but neither of which are wonderful for baking. That means no casseroles, no bread, no cookies... No cookies? Making oven-type meals off-grid has always been a challenging topic. There's the [Sun Oven](#), which is awesome and I would love to have, but costs an arm and a leg, and requires you to depend on Mother Nature's cooperation for a decent meal. I prefer to have a little bit more control than that SO, last week I made a new little project for my Prep stash. I canNOT tell you how excited I am about this... I made a tea light oven!

What Is A Tea Light Oven?

So maybe you're not excited as I am (yet) because you don't know what it is... A tea light oven is a small oven that is powered by... you guessed it... Tea Lights! You know, those tiny little 1/2 inch tall candles that you can buy by the dozen (or more) for pennies on the dollar? Yep! Those little guys can help you prepare a meal with ZERO electricity! How cool

is that?

There is already an oven on the market that you can purchase powered by tea lights, called the HERC oven. It stands for **H**ome **E**mergency **R**adiant **C**ooking, and it is really a neat little product! Check it out [HERE](#) or you can read these reviews by [Backdoor Survival](#) or [Prepared Housewives](#). It uses anywhere from 10 to 20 tea lights, depending on the size of oven you use, and is very portable, folding up to only 2 inches tall.

The problem (for me) with this neat little oven, is that it costs a stiff \$329.00 for the smaller oven, or \$389.00 for the XXL oven that can fit an 11×15" pan. I don't know about you, but I don't have an extra \$400 or so to drop on a toy. Ok, maybe not just a toy, I could possibly justify this purchase, or at least save up for it, BUT why should I do that when I can make my own for less than \$35? That's right, **Thirty-Five Dollars!**

I'm a part of this GREAT group on Facebook called [Family Preparedness](#) where I have "met" so many great women with one common denominator: Preparedness. These women are passionate about getting their families ready for any emergency, and are an amazing support group! One of my new friends posted her version of this oven, and became the inspiration for this tutorial. This has definitely been one of my favorite Prep projects, and I'm incredibly excited to share it with you!

This project took me less than 2 hours total, and I did it all by myself! No help from the hubs necessary. Ladies, I'm talking to you! You can do this!

What You'll Need:



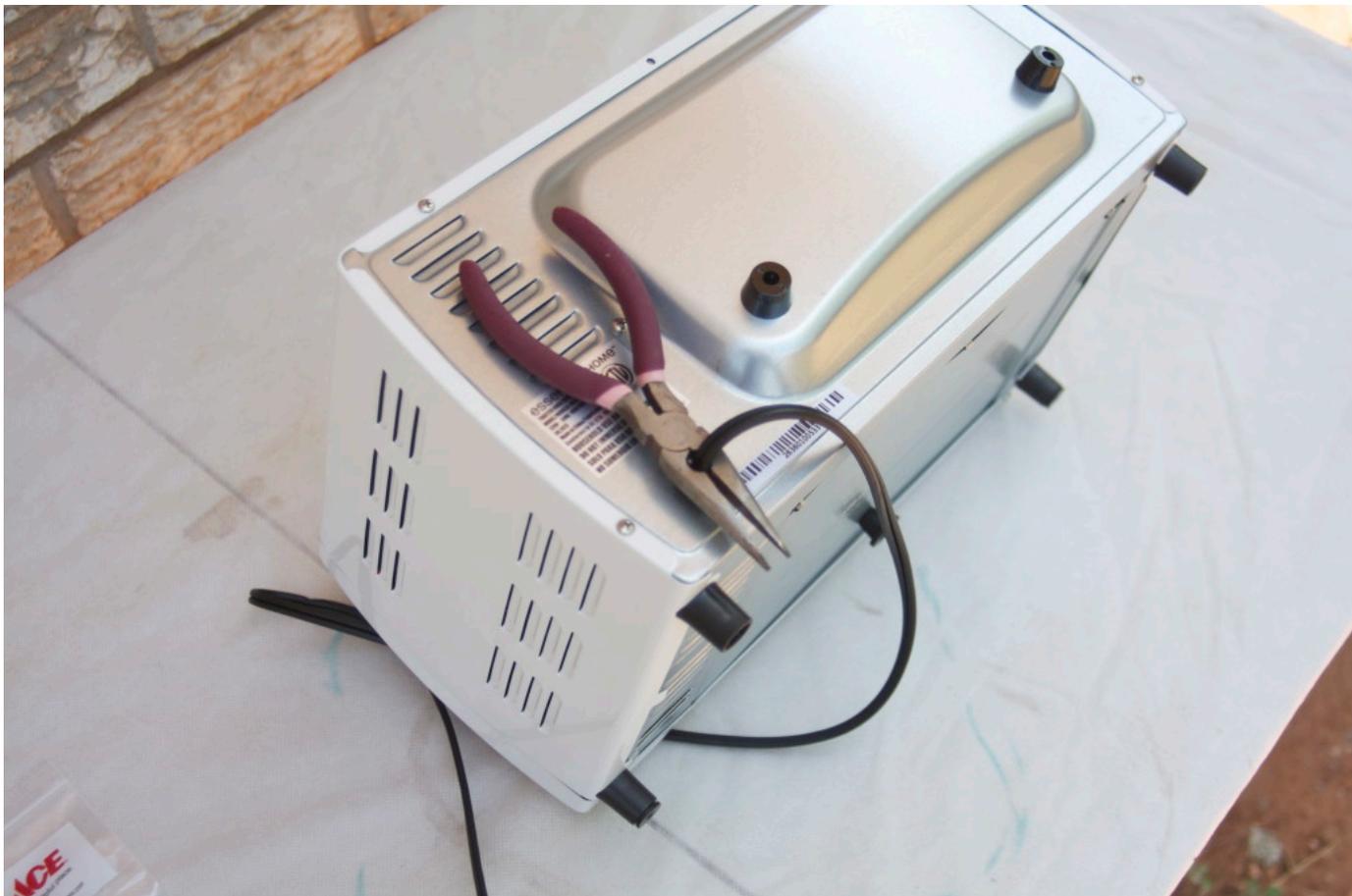
- **A Toaster Oven** (working or not). I shopped around at garage sales and thrift stores for awhile before finding [this brand new one](#) at our local K-Mart for \$20. Seeing as the used ones were priced around \$10-\$15, I just swung an extra five bucks and bought the new one. (Then laughed at the check-out guy when he offered me the extended warranty.) **Note:** This is a smaller oven. If you want to fit a full-sized pan, you'll want a bigger one, and will subsequently need more tea lights
- **A Bread Basket Brick**- There are square/rectangle ones and round ones. Either will work as long as it fits inside your toaster oven. Mine is a 6" round one that I found on eBay for \$12, shipping and all.
- **1/2" electrical conduit** (You'll need 2)- Looks like [THIS](#). This was one of the hardest things for me to find. I recommend printing out a picture and taking it with you to the hardware store. Maybe I'm calling it the wrong name or something, but NO ONE knew what I was talking about. Both cost me .58 cents when I finally found them.
- **3/4" Self-drilling screws (2)**- I got 6 just to be on the safe side and they cost me .23 cents total.
- **Oven Thermometer (optional)**- I'll talk more about this later, but I started out with a fancy battery operated one, hated it, returned it and bought a plain metal one....then realized it wasn't really necessary. This is up to you, but I definitely recommend the metal ones, which will cost about \$6.
- **Tea Lights**- I found 100 Tea Lights at K-Mart for \$5, then I found a package of 50 at Wal-Mart for \$2.25, and surprisingly the cheaper ones worked better. Go figure. These things are so cheap that I see no reason not to stock up on a few hundred...or thousand... to stick in storage. Just in case

- **Pliers/wire cutters**
- **Screwdriver** (I used our drill with a 6" long phillips head screwdriver bit.

All-in-all I spent \$38.81 (and that's with the optional oven thermometer) and about 2 hours total of my time on this project. It probably would have only taken 45 minutes if I hadn't messed with the stupid thermometer.

Put It Together

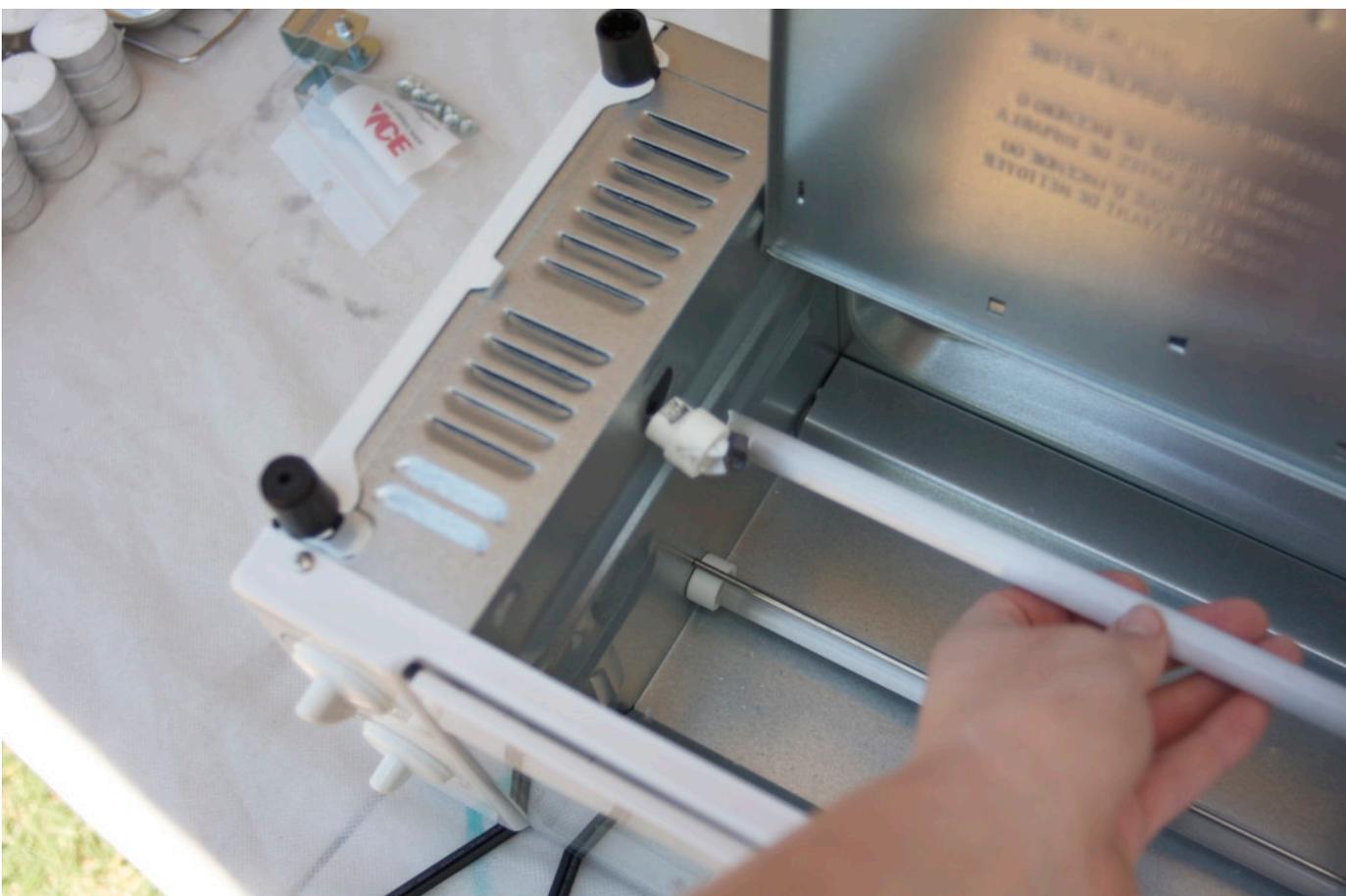
I started by taking my toaster oven out of the box and cutting off the cord. I didn't want it accidentally getting plugged in and electrocuting someone. Side note: The timer on the toaster oven still works! Score!



After that was done, I opened the bottom cover and began removing the heating elements. The guard comes off first..



Then the lower heating element. Be careful! They're made of fiberglass. So wear gloves and/or go slowly. My first one broke and made a mess. Next, remove the upper heating element. I also cut out all of the cords and wires I could reach so there weren't any loose ends.



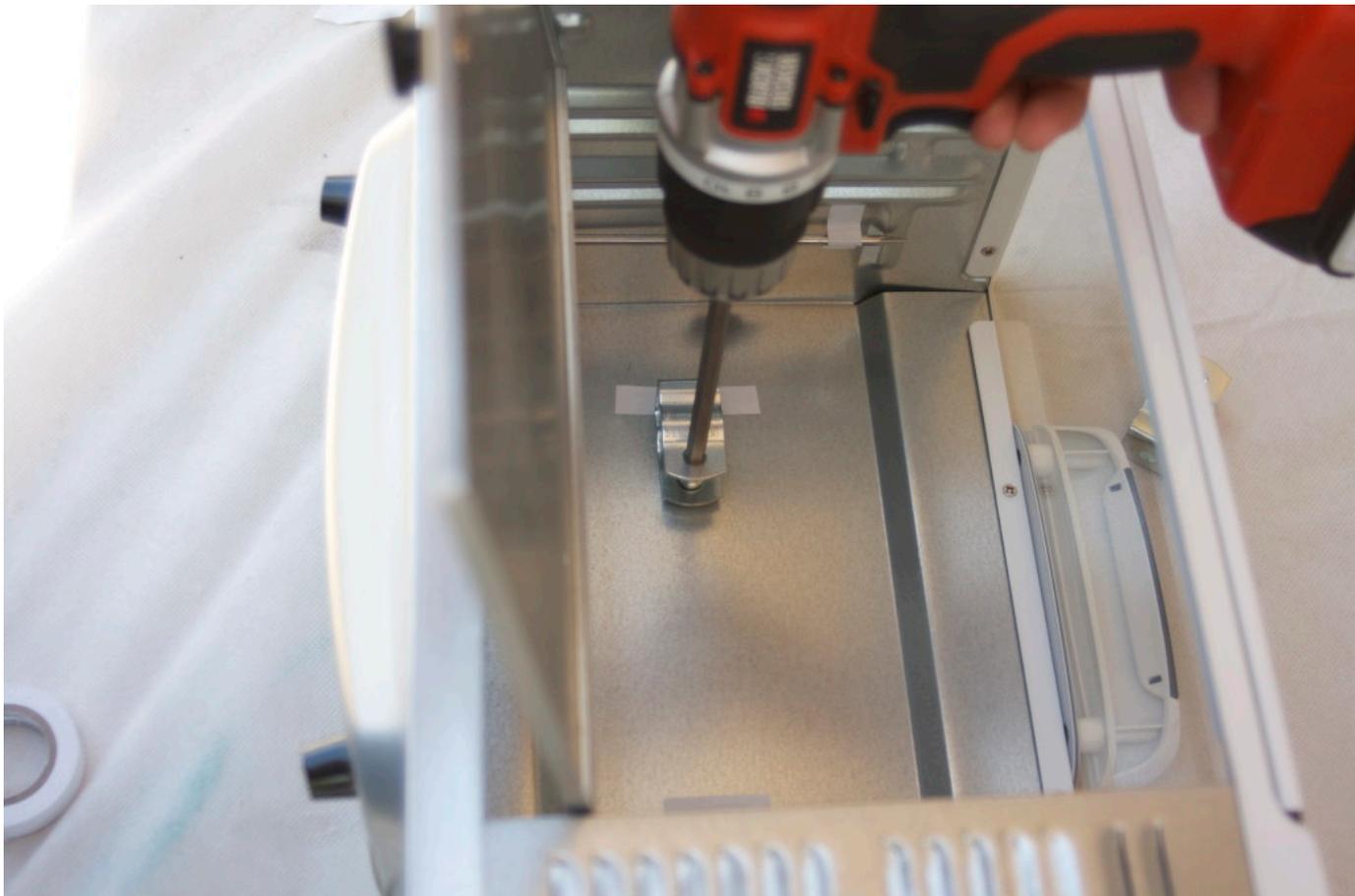
Next, drill some holes in the back to let a little bit of heat escape, and to allow some air flow to keep your candles lit.



After that, you'll use your electrical conduits to install the bread basket brick in the top of your oven. Just like the quarry stone tiles in the HERC oven, the bread basket brick absorbs some of the heat from your tea lights, and helps keep the top of your oven warm. It won't be very good for broiling, but it WILL keep your food from getting too hot on the bottom before the top is done.

Mark where you want the brick to go (I used electrical tape because I had it handy), and use the self-drilling screws to afix your electrical conduits to the top of your oven. (Only

screw in one side so that the opening is accessible.)



Slide the brick into the conduits like a sandwich, and you're almost done!



Add a thermometer if you want to... I attached the battery operated one I found by threading it through one of my vent holes and taping it up with electric tape (and then later removed it all)...or just skip to baking!







Cooking in the Tea Light Oven

I started out with mini chocolate chip cookies. After a little bit of trial and error in the temp settings, this little oven popped out two dozen cookies in 12 minutes per batch! They were a little flat (probably due to user error...I think I let my butter get too soft before mixing), but they were crispy on the bottom and perfectly gooey in the middle. I was pretty darn impressed to say the least!





So impressed, in fact, that I decided to try my hand at making dinner in it! I made my Parmesan Broiled Tilapia, which is a fairly frequent dish at our house. I did two filets in the Tea Light Oven and two filets in my regular oven to compare. Normally, I broil the tilapia for 3 minutes, flip it over, add the topping, and broil for an additional 3 minutes. Since I can't exactly broil in the Tea Light oven, I just placed the topping on at the beginning, and let it "Bake" on the top rack for about 15 minutes. Both sets of filets were perfectly flakey and moist in the middle, but the cheese wasn't *quite* melted on the fish from the Tea Light Oven. I served both to my husband with Parmesan & Herb roasted fingerling potatoes and mixed veggies for a blind taste test. Although I probably could have let the Tea Light Oven fish go a teeny bit longer to melt the cheese, he loved them both! I call that success!





Last, I tried making my favorite from-scratch brownies! Again I made two batches: one small pan for the Tea Light oven, and my regular 9×13" pan in the regular oven for comparison. I mixed the batter up all together and poured from the same bowl so I knew it was exactly the same. Then, I baked the large pan at 350° for 35 minutes, and the small pan in the Tea Light oven for 70 minutes after a 20 minute pre-heat. I checked on it once after the first 30 minutes, then every 5-10 minutes afterwards until my toothpick came out clean. (I filled the small pan too full so it bubbled over the sides but it was still super good!) Obviously it took much longer to cook in the Tea Light oven, but after another blind taste test, hubby actually PREFERRED the brownies from the Tea Light Oven batch! He said they were more moist and fudgey (Is fudgey a word?) than the regular oven batch, and he nearly ate the whole pan in one sitting haha



I can't wait to try some more things! Next up will probably be some mini blueberry muffins or a loaf of bread! Yum!

Lessons Learned

1. First, as I mentioned earlier. The thermometer was a bad idea. The battery operated booger was deceptively charming with it's single AAA battery, ability to be set to alert you when a specific temp had been reached, and a "real oven" characteristic *beep* when it got to said temp; however, it never seemed to be picking up the correct temperature, it was

ridiculously hard to set, came with directions in French? maybe?, and it only read in celsius. Celsius! Really? Ugh. I took it back to the store immediately, and got a plain metal oven thermometer only to discover after a couple of hours of pre-heating, that either the thermometer wasn't reading properly OR the oven didn't really need to be as hot as I thought. It never got above 275°, but in my impatience, I shoved the cookies in anyways and they baked up perfectly! After re-reading a couple of blogs about the HERC oven, I realized this was pretty common. **Lesson Learned:** Don't worry about the thermometer. Pre-heat for about 20-30 minutes, then keep a fairly close eye on your food, and all will be good

2. Not all tea lights are the same. I bought two sets of tea lights; one from K-Mart and one from Wal-Mart, which looked identical, but the Wal-Mart lights consistently out-performed the K-Mart lights. They stayed lit better, burned hotter *and* longer, and surprisingly, were the cheaper of the two options! I'm sure other brands of tea lights will each have their own effects as well. **Lesson Learned:** Try out a few different kinds and see what works for you.

3. After having half of my tea lights continually go out on only one side of the oven, I realized it was because they weren't getting enough oxygen. I cracked the door open just a tiny smidge with a toothpick, which worked like a charm! Next time I bake something, I'll drill a couple of extra holes in the back so more air is allowed in. **Lesson Learned:** Make sure you have good air flow.

Pros

- **Effective-** This oven, as explained above, works just as well, if not better than my normal sized electric oven! Anything I can make in the regular oven can be duplicated in the Tea Light oven as long as I have a small enough pan (See Cons lol)
- **Cost Efficient-** At less than \$35 this is a STEAL of a project! And tea lights being so cheap doesn't hurt either!
- **Heating is a cinch-** You can adjust the heat by adding or removing tea lights as you go, and you don't have to rely on solar power! AND it doesn't heat up your kitchen like a conventional oven does, so it can easily be used in the summer without causing you to sweat like a mad-woman.
- **Extra oven space-** Even if your power isn't out, you can use your Tea Light oven WITH your regular oven to help you prepare meals simultaneously. Like a double oven...only smaller ;) Think: Smaller side dishes, appetizers, or desserts for large family dinner.

Cons

- **Size-** It is obviously smaller than a normal sized oven, and if you have a large family, you might need 4 or 6 of these babies to make a good-sized meal without everything getting cold doing one dish/portion at a time, but even then it would be a GREAT addition to your preps, and at the low price point, it's still affordable! Note: My toaster oven fits pans 10" wide or less, so a 9×9 baking dish or 9" muffin tin is a perfect fit.
- **Practice-** This oven takes a little bit of getting used to. It's not rocket science, but you'll definitely need to play around with it before you HAVE to use it.
- **Uses a limited heat source-** Unlike solar power, tea lights eventually run out. Thankfully, they're cheap enough that you can stockpile plenty of them to have on hand. You can also save the little tins and, if you have a means/supplies to make candles, re-pour more as you need them.
- **Danger-** This oven uses an open flame, so you obviously should not leave your home with it burning. Also, be careful to keep the oven out of the reach of little hands. This may not apply for all toaster ovens, but ours was hot to the touch on ALL sides. The only place that was safe to touch without a hotpad was the door handle. Keep this in mind when you set up your oven and when you're getting ready to use it.

For me, the pros of having this little guy greatly outweigh the cons! I'm so excited to have this addition to my preps! (How many times can I say I'm excited in one post?)

UPDATE:

I spoke with Kris, the creator of the HERC oven, this morning at length about the dangers of using Tea Lights for cooking. There are a few things I want to make sure you know before you go about creating this project. First, let's talk about Flash Point. Flash point is the temperature at which a candle or wax gives off enough vapor to ignite the air. Paraffin wax, which is the wax *most* tea light candles are made of, has a low melting point (about 130°F), which is why you'll notice all of the candles have turned completely to liquid after the 20-30 minute pre-heat. If this liquid reaches the flash point, it will combust and create a flame, which then has the possibility to ignite all of the other tea lights in your oven. This could get extremely dangerous for several reasons: 1. It could be hard to put out. (You cannot blow on the candles as it could cause the liquid to spread, and water wouldn't be your best option either due to splashing. Having a fire extinguisher handy would be your best bet.) 2. If your oven is made of plastic or has plastic parts, it can cause them to melt, so make sure you use an oven made of metal. *Toaster ovens*, for the most part, fit this bill,

but *Microwave ovens* are typically made of plastic. Don't use a microwave oven! and 3. If the oven has been left unattended, it could catch nearby items on fire as well.... Please don't leave your oven unattended!

Using the HERC oven presents the same set of challenges with tea light candles, but has built in measures to prevent such flash point fires from becoming a much bigger problem. The tray of candles is not attached to the oven and is able to be pulled out quickly. It also comes with a device to snuff out the candles quickly. It also does not contain plastic parts that could melt.

According to [THIS ARTICLE](#) by the Fire Research Lab in Ammendale, MD, the Flash Point of a Paraffin Wax candle is between 204-271°C (or about 400-520°F). If your candles are in an enclosed area (such as the tea light oven) they can reach this point much quicker than they could if they were in an open area. Now, as I mentioned above, my thermometer never registered above 275°F BUT, I'll reiterate that not all tea light candles are the same. Kris specifically mentioned to be cautious of the Dollar Tree candles, as they tend to burn hotter, which is great for baking things like bread, but also means that they can reach their Flash Point quicker than other candles. This is why it is of the utmost importance that you **A. Allow good airflow** in your oven to keep the candles a little bit cooler and to allow good ventilation, and **B. NEVER EVER EVER leave your tea light oven unattended.**

Conclusion: Personally, I will continue cooking in my DIY tea light oven, while of course, taking the correct precautions. I am well aware of the risks, as well as you are now Please keep these things in mind before creating your own DIY oven and especially when using one! If you have any questions, please leave a comment, [Contact Me](#), or email Kris at kris@Titan Ready Water.com. All of this being said, if you are NOT comfortable building your own DIY oven, that is completely understandable! Please stay tuned for information about the new Eco HERC oven, coming soon! It will be at a much more manageable price point than it's big brother counterparts

What About You?

What kinds of off-grid cooking options do you have? Is this a project you would consider trying?

Please see my [Disclaimer](#) about affiliate links and DIY projects. Also, please note that this project has not been evaluated by the CPSC, and again, should be completed at your own risk.

I'm the wife of a wonderful, handsome man, a stay at home Mom to the most perfect 1

year old boy in the world, a (former) nurse, a cook, a baker, a DIYer, a clean freak with OCD tendencies, a born and raised Texas girl who has been transplanted in Oklahoma, and a secret-but-not-so-secret prepper... I am a lot of things, but I wouldn't be much of anything without my savior! Life can get pretty hectic around here: busy busy busy all of the time, but I try to slow down, smell the wildflowers, and enjoy life as much as possible!