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Kelly Kettle

Schwert

- Gear reviews and tests - Bivouac -

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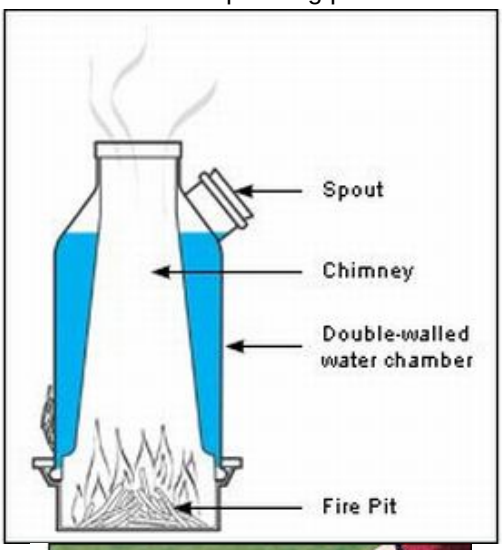
Description :

The purpose is to determine the operating characteristics and performance of the Kelly Kettle in a controlled environment.

Introduction:

The Kelly Kettle is a unique water boiler that is essentially a water jacketed double walled aluminum chimney with a removable aluminum fire pan. To use, a small fire is built in the pan, the water filled chimney is placed on top and the fire heats the jacketed water. The scanned images 1 and 2 show the Kelly Kettle's operating principle and normal use, respectively.

This evaluation was carried out in a standard kitchen laboratory using a natural gas fired stovetop as the source of fire. This preliminary evaluation was undertaken for two purposes; to familiarize the test personnel with the operating characteristics of the Kelly Kettle; and to determine the operating performance in a controlled test environment.



Materials and Methods:

The Kelly Kettle is available in two sizes from the manufacturer, a 2.5 pint and a 1 pint version. This evaluation used the 1 pint Kelly Kettle. Volume determinations were performed using a standard plastic volumetric vessel commonly known as a measuring cup. This volumetric vessel was marked with both standard US fluid ounces and SI liters. Volumetric precision was estimated to be within +/-½ ounce. Starting temperature of the water was determined with a calibrated thermometer with ½ degree Celsius precision. Boil times were determined with an analog split timer

precise to 1/5 sec. Boil was determined by visual observation of the water in the Kettle's spout. Boil was determined to be achieved when the first signs of large, full-rolling bubbles appeared. Heat source was a natural gas stovetop burner running at maximum heat output. See image 3 for experimental materials.

Results:

The absolute maximum volume of the 1 pint Kelly Kettle was determined to be 24 US fluid ounces (700mL) to the base of the spout. In actual use the volume used should not be greater than 20-22 ounces as the boiling water splashes out of the vessel. All boil determinations were done using 20 ounce fills (600mL). This is the UK standard pint size.

Five boil tests were run. The first boil was done using 24 ounces of water and was not timed. A fair amount of grey residue was present in the water. Kelly Kettle instructions recommend the first boil be discarded to remove residual sealant. The next four boils were done using 20 ounces of 15degC water (59degF) with the gas flame at maximum output. The resultant boil times were: 6 min 20 sec, 6 min 35 sec, 6 min 20 sec, and 6 min 24 sec. This is an average of 6 min 25 sec, with a standard deviation of +/- 7 sec.

Discussion:

The Kelly Kettle is a well made device. The spun aluminum container, fire pan, and fittings including handle and cork are well fitted. The aluminum rolled crimp at the top and bottom of the vessel are smooth and clean. The rivets holding the handle bail and cork chain are smooth and did not leak at any time during the 5 boil tests. The instructions warn that these may leak initially but seal themselves over time. The bottom rolled joint did leak a fair amount on all boil tests. During the initial 2 minutes of heating this joint leaked about ½ ounce of water (14 mL). This may be an artifact of the heating method (gas stove vs. fire) but this is an area of concern as this much water leaking into the fire pan could be detrimental to the fire. This is an area of test for field performance experiments. See images 4 and 5.

Manipulation of the Kettle over an open fire is an important aspect to learn for safe and efficient use. The handle bail naturally places the holding hand over the top vent of the chimney. Placing the Kettle over the flame for the first boil resulted in all the little hairs on the fingers being melted off. An appreciable amount of heat is essentially directed up through the chimney and remarkably focused on the fingers. This resulted in a very rapid re-understanding of the laws of thermodynamics. The handle bail needs to be held at a 90 degree angle to the Kettle to prevent such

catastrophic removal of finger hairs. Even though the tester was aware of this handling requirement, he still had to "learn" it.

Overall Impressions:

This is a unique boiling device, with appeal as the light weight package (a bit over a pound) allows brew ups without carrying fuel, stove, pans etc. Further testing will determine the efficiency using small wood fires and specifically look at the leakage issues from the bottom rolled seam. It is possible that the boiling times using a wood fire will be appreciably different as the fire pan and/or the turbulent nature of a wood fire may change the heat transfer properties. It is also possible that the rolled seal which sits on the fire pan will not be heated in the same manner and the leakage will change. These tests were primarily done to determine the operating characteristics and may have little similarity to actual field use.

On a further note, the eclectic nature of the device is also personally appealing. See also this story for both mood and proper "handling" (pun intended).

Kelly Kettle, Flame On!

The Kelly Kettle adventure continues. The small Imperial pint aluminum water boiler was fired this weekend. Please refer to the Laboratory Evaluation for details of this unique water-heating device.

After an extensive walk about the estate (lawn mowed), the kettle was filled with cold water from the on-demand stream (backyard faucet). Seasoned and dry Western Red Cedar was procured from the carving bench to fuel the kettle.

My Granfors Brux Hunter's Ax and Dozier Slim Outdoorsman were gathered and used to prepare small shavings, curls and a couple of fuzz sticks from the cedar.

The tinder was ignited with a strike anywhere match.

After the tinder set started, the kettle chimney was placed on the fire pan. Proper handling was utilized at all times, (watch the fingers). Additional small cedar splits were dropped into the chimney and off it went.

Vigorous boiling was achieved in about 5-6 minutes. Additional cedar splits about 4-5 inches long were dropped down the chimney as needed. The kettle burned fast and hot using this fuel. These formed a sort of fire teepee as the splits were dropped in. The bottom seal again leaked but not as severely as the previous Laboratory Evaluation boils. A small amount of water was in the firepan, but because most of the burning wood was above the pan in the chimney this was not a problem. As the water got hotter, the leaking stopped.

Overall this is a fun and useful boiler. It is lightweight and has the ability to use found fuels; which makes it a very useful daytrip brewup kettle, and useful in boil only longer trips. This most likely will not replace my MSR stoves or other devices for longer trips where more than boiled water would be desired, but it will make its way into those daytrips/fishing trips/picnics that would benefit from a hot beverage or instant soup etc at the lunch break. The larger Kelly Kettle would be necessary for parties larger than 1 or 2.

Kelly Kettle Chimney Interior....hum where does the water go?

I boiled up with the Kettle again this weekend. I used some Alder that fell in a windstorm early last Fall. I split out wood from about a 2" round limb. This limb had been suspended above the ground but exposed to rain all winter. I stripped the bark and exposed the center wood, made splits and some curls with this. I attempted to ignite the kindling with my Swedish firesteel and a very small pile of Maya wood dust and splinters which I had placed in the Kettle firepan near the air holes. My first pull of the firesteel rocked the pan around completely disturbing my setup. So I added a vaseline cotton ball and started it this way. I had to tend the kindling sets much more than my cedar setup of last weekend, but once the fire pan set of curls was going I placed the chimney and dropped several splits in and off it went much like the previous burn.

Curls

Cotton Sparked

Tea----Yeah

I fired it twice using the alder and did not notice much difference in the burn characteristics except flames did not jet out the top of the kettle. I did get quite a bit of wood residue in the kettle chimney this time and the leaking was nearly insignificant.

To start with Firesteel and either cedar nest or Maya wood dust would require a bit of flat wood or bark be set up with the spark catcher outside of the firepan then moved into the tinder set in the firepan. It was just too difficult to control the firepan, keep my spark set and tinder arranged while I tried to spark it. Doing this outside of the pan should work, but I did not try it. Of course, the cotton vaseline worked great.....but a bit of a cheat.

Because the Kelly Kettle functions like a small enclosed furnace, less than ideal fuels can be used in it with good result. Reasonable care should be taken to prepare a good tinder set using small splits, shavings, dry twigs etc, but once these are well alight and the chimney is drawing well, lower quality fuels can be added as needed. Very little preparation or attention is required compared to building a small fire on the ground as the chimney keeps a good draft going to assist the burn. I have burned twigs, dry grasses, small pine cones, bark and splits from downed but not seasoned wood. Most settings will provide handfuls of small dry twigs that can be used by simply shaving a few curls with a pocket knife. A large knife or ax would not be needed to use these small fuel sources.

Enjoyed my tea after aerating the lawn.

2007 Addendum

Well it has been quite a while since I edited this article, my first on the magazine, and some things have changed.....I have added a large Kelly Kettle to my gear box.

I actually purchased the 2.5 pint Kelly last year and simply put it in my car trunk kit. Both my wife and I volunteer with our local emergency response HAM radio communications group and our Go Kit has the essentials for us should we be deployed either in the field or at the Emergency Operations Center (EOC). One of those essentials is coffee...

The small one-pint Kelly is a wonderful device for short hikes, or brewups but more boiling water is needed for emergency workers. Normally the EOC's operate on emergency power and getting that essential cup of coffee is relatively easy...not always the best cup of coffee but generally caffeine rich. Field deployment can range from search to sand bagging, and these exercises call for a good cup of joe as often as possible. So enter the large Kelly, which along with a filter cone and thermos can supply coffee for a long time on locally found fuels.

Recently I decided to do the burn in on the large Kelly to rid it of excess sealant etc. So, in keeping with my tradition of Kelly use, I decided to light it up using a firesteel and a new folding Ingram SodBuster.

The setup, both the large and small Kelly Kettles for scale, some birchbark, cedar bark, small kindling, firesteel, Imperial gunpowder tea, mug, and the new knife.

First a couple of fuzz sticks.

Then some cedar bark dust scrapings to catch the spark.

And a few cedar shaving to catch the flame

Cedar dust and shavings on a small piece of precious birch bark to catch the firesteel sparks. Note, I used the square edged kick of this folding SodBuster to strike the steel, not the edge or the spine of the knife.

Then blown up to flame

And transferred to the Kelly firepan

And the first boil....

Tea....really sort of gritty tea as this first boil and the next 3 needed to be discarded to clear the Kelly of its sealant.

This large Kelly is now ready for operations. I found it worked just as well as the small Kelly and did not have a single leak in evidence.

Overall I rate these devices as not only being very clever but as a very useful tool for an emergency kit. Last fall we had two major wind/rain storms and over 2 million homes in the area were without power for several days. My home was without power for 4.5 days but we had gas for our kitchen stove and did not need to use our campstoves or Kelly, but many people were not so lucky and found themselves living with others or in shelters.

Resources

Kelly Kettle site

Lee Valley, a good source for Kelly Kettles in the US and Canada

Post-scriptum :

Original article published on Oldjimbo's site.

28-07-2007 James, broken link fixed.

06/28/2007 Large Kelly added with comments and images

