

.burn time

Learn how to be lightweight, efficient and powerful. Win friends and influence people with the latest stove technology.

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buying the right lightweight stove

There are few outdoor products more technologically intricate than a lightweight stove, but you don't need a physics degree to find the system to suit your needs.

FIRST: ASK YOURSELF

What kind of trips will your stove cater for?

The length of an adventure will have an effect on the fuel type you choose in a stove, with regards to both the amounts and weights of the fuel you want to carry as well as its efficiency. Destinations will determine whether you require a stove for use in extreme cold or at altitudes that will affect fuel performance. Where you travel will also determine the availability of certain fuels.

How many mouths will you be feeding?

A number of stove systems will suit only the single diner, where others are designed to cater for an entire pack of cubs. Fuel use and therefore weight considerations will change depending on how many guests enjoy your hospitality.

What will you be cooking?

How romantic are you feeling? Are you boiling water in the dark to rehydrate and survive on a ten-day ski-tour, or simmering a sauce whilst subtly sautéing shiitakes under a sauntering sunset? The versatility and adjustability of a stove will dictate the ambience of your evenings.

NEXT: CONSIDER FUEL TYPE

Judge how your needs will be met according to the type of fuels you wish to use. We have explored the benefits and potential disadvantages of stove fuel types in three categories; gas canister, liquid fuel and spirit fuels in the following pages.

THEN: LOOK AT THE FOLLOWING FEATURES

1. Size and weight

Packing size, shape and weight varies greatly between our featured stoves. Remember to factor fuel weight into your choice, and whether the stove system is likely to be carried by yourself or between two. Consider the convenience of a stove that packs into a pot, or even a pocket. We have given product weights as we found them, and the maximum dimensions of stoves at their most compact (length x height x depth).

2. Ease of set-up

The time *will* come when you must light your stove at 2am in the middle of a howling storm and you *will* curse in a language not heard by human ears for hundreds of years. Easy is good.

3. Stability

Instability can be endearing in your

walking friends, but is simply a hazard in a stove.

4. Simmer function

How low can you go? Char-grilled rice isn't always a favourite. Look at how delicate the simmer function allows you to be, and investigate the placement of the simmer control if you value the hairs on your fingers.

5. Boiling times

Many stoves will reference a "boil time" in minutes per one-litre of water at room temperature, at sea level, but when comparing figures across brands keep in mind that many factors can affect field performance, including wind protection, air availability and pot sizes/materials. The fastest boiling stove also may not be the most fuel-efficient, and may not suit your needs if extreme heat is not your priority. We tested our own boil times for 500ml of water (two cuppas) at sea level on 20-24° days in standardised pots and averaged our results. Outcomes are far from lab-specific, and reflect only our in-the-field tea making.

6. Efficiency of fuel consumption

Another common performance statistic offered by manufacturers is given in boiled litres or minutes per a standard

amount of fuel (eg. 4.2L of water boiled per 100ml fuel). These figures are useful to get an approximate sense of how many meals one canister or bottle of fuel will cater for, and for comparing model efficiency within a brand.

7. Noise

The noise output of a stove can be more important than most people expect. Cooking in a group, particularly in the dark, in the cold, beside a cramped snow-wall or other intimate space is a valuable social part of an outdoor experience and there are a number of stoves that will completely drown-out conversation. We have given our impressions of stove noise at full output according to how it affected our camp chatter.

8. Ease of cleaning and maintenance

How much love will the stove require in the field, and how capable are you of tending to its needs?

9. Accessories

How comprehensive is a stove's instruction manual? Does the stove come with a maintenance kit, carry-bag, pump oil, and spare parts, or are these separate purchases you will have to make?

canister gas stoves

WHAT ARE THEY?

In Australia, a "gas" stove generally refers to a canister stove which burns compressed gas, often a combination of butane, isobutane and propane. These fuel types belong to the general group of "liquefied petroleum gases" or LPG. The important distinction between gas canister and liquid fuel stoves is that canister gas is not a liquid when it burns.

HOW DO THEY WORK?

The gas, being already pressurised in its canister, flows from the fuel canister into the burner, where it ignites, in the same manner as a domestic kitchen stove. Lighting is either manual (with a match) or with a piezo ignition mechanism. These stoves feature instantaneous lighting, are usually simple in design and use, and are fuelled by generally non-refillable gas canisters.

POSITIVES

- ▶ Canister stoves feature few moving parts and so require relatively little maintenance and can by their simple nature be lightweight.
- ▶ Gas fuels burn cleanly and are easy to light.
- ▶ No priming is required to use the stove, meaning that there are few "flaring" flames at start-up.
- ▶ Due to the quick dissipation of gas fuels, fire hazard from leakage is minimal.
- ▶ Good output adjustability is generally a feature of gas stoves, dependent on brand.

NEGATIVES

- ▶ Gas pressure and efficiency, particularly of some types of gas, can be affected by the cold.
- ▶ Gas canisters are not always readily available, particularly internationally, and are generally more expensive than liquid fuels.
- ▶ Canisters are rarely recyclable and require special disposal.
- ▶ Gas use can be difficult to gauge as it depletes, meaning that you may have to carry additional fuel to be on the safe side.

GAS TIPS

Canister Types

The most common type of gas canister used with lightweight stoves features a threaded "Lindal" resealable valve, which means that you can disconnect the stove from the canister and reconnect another time. This type of canister is usually non-refillable, but is by far the most convenient, particularly for transportation.

Gas Stoves In The Cold

Cold temperatures inhibit the vaporization of gas fuels in a canister, and can greatly reduce efficiency. If heading into altitude or snow with a gas stove, keep canisters in your sleeping bag or jacket to maximize gas vaporization. Also consider using a fuel blend designed to cope with cooler temperatures. Generally, these are blends of isobutane and propane.

Gas Types

Generally, propane is celebrated for its efficiency at low temperatures, but requires constant high pressure to really perform. Butane works well at high altitudes but burns poorly at low temperatures. Isobutane is a structural isomer of butane with a lower boiling point, and will burn most consistently at varying pressures.

Canister Brands

Theoretically, a screw-threaded stove should be compatible with any Lindal-thread canister, but many brands will recommend that their stove only be fuelled by their own brand of gas. There may be many reasons for this, including liability management, a concern regarding optimal performance, or simple marketing. As a general rule, follow the advice provided by your stove manufacturer. If branded fuel is unavailable, check the compatibility of a gas canister to your stove with your retailer, and use common sense. If you ever hear a hissing or smell fuel at the connection of a stove to a canister, don't light the stove.

Gas Canister Stoves and Wind Shields

Unlike with liquid-fuel stoves, wind-shielding a gas stove is not considered best-practice. It is important that gas canisters not overheat, which is why they often come accompanied with a warning not to leave them in direct sunlight. If you must use a wind-shield, ensure that it does not fully-encase the stove and that you are able to monitor the heat of the canister as you cook. If it is too hot to touch, stop cooking.



GASMATE BACKPACKER CERAMIC STOVE \$44.95

Fuel Types: Recommended to use with Gasmate screw type canisters. Instructions simply refer to "butane".

Weight (stove only): 223g.

Compact Dimensions: 95mm x 70mm x 50mm.

About: The Backpacker is a brass, aluminium and steel stove with a ceramic burner. It comes with the approval of the Australian Gas Association.

Set-up and Lighting: There are no diagrams in the instruction sheet for a first-timer, but set-up is easy nonetheless. The piezo ignition function is combined in the gas dial, making lighting one easy action. We found the piezo to be very effective.

Stability: Ground stability is as per gas canister. Maximum pot-support diameter is 125mm. The four stove arms are only slightly serrated but do offer good surface area for pots.

Average Time To A Cuppa (500ml): 2 minutes, 10 seconds. [Water boiled in an Optimus Terra Gourmet pot with lid, using Gasmate 80% butane/20% propane canister.]

Simmer: The chunky gas valve allowed a delicate adjustment.

Noise: Forced slightly raised voice.

Other: It is worth noting that in our experience, Gasmate fuel seems to be one of the easier canister brands to find in hardware stores and petrol stations.

Cleaning and Maintenance: The only maintenance mentioned on the instruction sheet is to clean the jet in petrol, for which steps are explained. Unscrewing the ceramic burner is easy, and the top half of the stove comes away from the screw component with ease. After this, we were a little stumped. We could see the jet, but were unsure how it came out of the main shaft. Spare parts are available for purchase, including the ceramic burner.

Comes With: Stove (223g), zipped carry bag (24g), instruction sheet.

Advertised Fuel Consumption: NA

Website: www.sitro.com.au



MSR POCKETROCKET \$69

Fuel Types: Recommended to use only with MSR IsoPro Premium Blended canister fuel.

Weight (stove only): 86g.

Compact Dimensions: 100mm x 59mm x 50mm.

About: The PocketRocket is a minimalist, triangular, screw-attachment stove from MSR's "Fast and Light" range. It features a three-walled windshield built into the burner plate and requires manual lighting with a match.

Set-up and Lighting: Setting up the PocketRocket is simple and instructions are clear. The height of the burner from the gas canister makes it easy to light, easy to use the flame adjustment control, easy to see the flame behaviour and easy to get a sense of how central a pot is sitting on its arms.

Stability: Ground stability is as per gas canister. Maximum pot-support diameter is 90mm and arms are both serrated and gently angled.

Average Time To A Cuppa (500ml): 1 minute, 50 seconds. [Water boiled in Primus EtaPower pot using MSR IsoPro canister gas, 80/20 isobutane/propane.]

Simmer: Good simmer function and easy to control.

Noise: On high output, this stove lives up to its name and rockets along, forcing the cooks to raise their voices. But like all weapons of mass destruction, it can be quietly inconspicuous as well.

Cleaning and Maintenance: No cleaning or maintenance is recommended. The stove is promoted on this: "No need for priming, pressurising or maintenance." As with the Snow Peak GigaPower, the PocketRocket's hard protective plastic case is no doubt an important factor in the long term life of the stove.

Comes With: Stove (86g), plastic case (28g), instruction sheet.

Advertised Burn Time: Approximately 60 minutes/per 227g canister.

Website: www.spelean.com.au



OPTIMUS CRUXLITE \$79.95

Fuel Types: Designed for use with a gas canister containing a 70/30 mix of butane and propane.

Weight (stove alone): 74g.

Compact Dimensions: 73mm x 58mm x 58mm.

About: The CruxLite is the even lighter version of the Optimus Crux (90g). It differs in design only (advertised performance is the same), as it does not fold down as sleek as its heavier brother.

Set-up and Lighting: Set-up is easy and aided by simple but tiny instructions (take your glasses with you). Lighting is with a match.

Stability: Ground stability is as per gas canister. Maximum pot-support diameter is 85mm. Arms are cleverly designed and aggressively serrated, but we did have one spill experience with the CruxLite due to the small diameter making it difficult to properly centre the pot.

Average Time To A Cuppa (500ml): 1 minute, 45 seconds. [Water boiled in an Optimus Terra pot with lid using Gasmate 80% butane/20% propane canister.]

Simmer: Control and variation of simmer is deliciously delicate.

Noise: Does not interrupt conversation.

Other: Some design features of the CruxLite stand out. The arced folding arms are a gem, and the fold-down wire valve is shaped to prevent the stove from being rested on its screw attachment, preventing contamination.

Cleaning and Maintenance: Only O-ring checking and replacing is recommended in instructions, for which a diagram is provided.

Comes With: Stove (74g), carry bag (6g), instruction booklet (13g).

Advertised Burn Time: Up to 60 minutes at maximum output/per 220g canister.

Website: www.outdooragencies.com.au



Optimus Crux



KOVEA
TITANIUM STOVE
\$84.95

Fuel Types: Recommended for use only with 70% butane/30% propane mix gas canisters.

Weight (stove only): 93g.

Compact Dimensions: 77mm x 56mm x 32mm.

About: As its name suggests, this is a titanium stove with piezo ignition.

Set-up and Lighting: Set-up is simple with arms flipping out into position with a quick flick. No troubles attaching the stove to the canister and the piezo ignition worked first time, every time.

Stability: Ground stability is as per gas canister. Maximum pot-support diameter is 100mm. Arms are serrated.

Average Time To A Cuppa (500ml): 2 minutes, 10 seconds. [Water boiled in an Optimus Terra pot with lid, using Gasmate 80% butane/20% propane canister.]

Simmer: Simple and effective simmer function. No heat is felt on the hands when using the simmer control.

Noise: Conversation uninterrupted.

Other: The Kovea comes in a clear plastic case which fits easily into a pocket in a rucksack or jacket. Please note that gas canister shown in picture (above) represents general butane/propane canister mixes.

Cleaning and Maintenance: The only DIY maintenance advised in the stove's instructions (other than the usual O-ring advice) is to remove the stove from its canister and blow into the stove shaft to attempt to clear the fuel injector. Any additional tinkering is advised against, instead referring the product to the retailer.

Comes With: Stove (93g), plastic carry box (36g), instruction sheet.

Advertised Burn Time: NA

Website: www.gmaelemental.com.au



PRIMUS
MICRON TI
\$99

Fuel Types: Recommended to use with Primus Propane/Butane fuel.

Weight (stove only): 93g.

Compact Dimensions: 65mm x 64mm x 34mm.

About: The Micron Ti is the latest (and lightest) version of the Primus Micron stove and is available with or without piezo ignition. It is recommended for use by one-to-two people in conditions above 5°C.

Set-up and Lighting: The three arms of the Micron Ti clip into their positions easily, and threading the stove onto its gas canister is a cinch. Lighting with the flick-button piezo ignition worked every time in our test.

Stability: Ground stability is as per gas canister. Maximum pot-support diameter is 100mm. Arms are serrated.

Average Time To A Cuppa (500ml): 2 minutes, 20 seconds. [Water boiled in an Optimus Terra pot with lid, using Primus Power Gas 4 Season Mix: Propane/Isobutane/Butane.]

Simmer: Exceptional adjustability.

Noise: Conversation not affected.

Other: Construction is primarily titanium and aluminium.

Cleaning and Maintenance: Cleaning the jet nipple is the only recommended maintenance other than a regular check of the condition of the O-ring. To clean the nipple, you will need a small Phillips screwdriver or similar and a 6mm spanner (not supplied). We lost one of the two tiny screws while attempting this in camp, so beware in-the-field maintenance. It should be noted that the procedure was attempted for the sake of review only.

Comes With: Stove (93g), carry bag (7g), instruction sheet.

Advertised Burn Time: 1.5 – 3.0 hours/per 225g canister.

Website: www.primusaustalia.com.au



SNOWPEAK
GIGAPOWER STOVE, AUTO
\$110

Fuel Types: Recommended use only with GigaPower butane/propane mix canister.

Weight (stove only): 104g.

Compact Dimensions: 83mm x 41mm x 35mm.

About: From Japanese outdoor brand Snow Peak, the GigaPower is also available in a non-piezo model.

Set-up and Lighting: Easy to assemble, instructions for the use of this stove are notably clear with simple diagrams. Arms fold out like spider's legs. Lighting is equally easy with the piezo ignition. As per instructions, the piezo button needs to be pushed a number of times to get a spark.

Stability: Ground stability is as per gas canister. Maximum pot-support diameter is 107mm and arms are serrated, but subtly. We experienced no spills but did find that it was important to ensure that all arms were properly in position before use.

Average Time To A Cuppa (500ml): 2minutes, 20 seconds. [Water boiled in an Optimus Terra pot with lid, using Snow Peak Giga Power propane/isobutane mixture.]

Simmer: Good simmer range, easy to control.

Noise: Very quiet, at high output the stove doesn't interrupt chat, and at low it is almost silent.

Other: The piezo wire on this stove really glows a furious orange, which we found useful to tell that the stove was burning (that's how quiet it is).

Cleaning and Maintenance: Second to checking for wear, there is no DIY maintenance recommended for this stove, particularly as the jet is not removable. Instead the user is advised to wipe clean any carbon deposits or have the stove repaired professionally.

Comes With: Stove (104g), plastic case (23g), instruction sheet.

Advertised Fuel Consumption: NA

Website: www.snowpeak.com, (02) 9476 0672



JETBOIL
PERSONAL COOKING SYSTEM
\$169

Fuel Types: Recommended for use only with Jetboil Jetpower propane/isobutane canisters.

Weight (stove and pot system): 430g.

Compact Dimensions: 180mm x 115mm x 107mm.

About: The Jetboil PCS is an all-in-one cooking system with a stove base that fits inside its main pot. The insulated pot features Jetboil's "Fluxring" heat exchanger at its base. Jetboil fuel canisters also fit inside the pot system. Suited to single cooks, a "group cooking system"/1.5L pot is available separately.

Set-up and Lighting: Lighting is using a piezo button and gas control on base, which we found to be a "hit-or-miss" experience, often resulting in lighting with a match (which happens easily). Setting up the PCS is a matter of screwing the base to a canister and sitting the main pot into two small grooves in the burner base and locking them in. Removing the plastic cup/protector from the Fluxring before set-up can be a hassle with gloves and can require nails.

Stability: For a towering system, the PCS is surprisingly stable, even without the stabiliser accessory (as pictured).

Average Time To A Cuppa (500ml): 2 minutes, 35 seconds. [Water boiled in PCS pot using Jetboil Jetpower propane/isobutane four-season blend.]

Simmer: Easy to control, simmer can still be very hot in this system and the nature of the tall PCS pot makes stirring at its bottom (to prevent sticking) a little awkward.

Noise: Conversation uninterrupted.

Other: The accessories available for the PCS are extensive and include a stabiliser ring to adapt the system to the 1.5L Jetboil pot and Fluxring frypan.

Cleaning and Maintenance: We found unscrewing the burner head a little difficult.

Comes With: Stove base (166g), cooking pot with Fluxring, protector cup and lid (264g), instruction sheet.

Advertised Burn Time: 12L/per 100g Jetboil canister.

Website: www.seatosummit.com.au



PRIMUS
ETAPOWER EASY FUEL
\$229

Fuel Types: Recommended for use with Primus PowerGas Propane/Isobutane/Butane mix.

Weight (stove and pot system): 667g.

Compact Dimensions: 205mm x 205mm x 113mm.

About: The EtaPower EF is gas canister stove and pot system designed to cater for up to four people.

Set-up and Lighting: This is definitely a unique system, but setting it up is a matter of common sense as we managed without the instructions or DVD. All parts build-up easily and the burner filament is a simple component that locks into the base of the pots and shields. Lighting is with a piezo button which we found to be a little temperamental. With a match was easy.

Stability: Maximum pot-support diameter is 130mm. This is a very stable gas system, and the remote canister and control only serves to make it more stable. We found that the fry pan didn't sit flush on the inner stove supports, making it a little fiddly to use.

Average Time To A Cuppa (500ml): 1 minute, 30 seconds. [Water boiled using Primus Power Gas 4 Season Mix: Propane/Isobutane/Butane.]

Simmer: Output is controlled at the valve on the fuel canister and as the burner is difficult to see when using the system, adjustment must be done by sound.

Noise: Interrupts conversation.

Other: The non-stick titanium coated hard-anodized aluminum pot with built-in heat exchanger can be used on other stoves.

Cleaning and Maintenance: Simple to clean pots, stands and burner.

Comes With: Burner filament (145g), burner stand (105g), wind shield (115g), 2.1L pot with heat exchanger (259g), frying pan (141g), pot grippers (42g), zipped insulated carry bag. Instructions and instructional DVD also provided.

Advertised Burn Time: 28L/230g canister.

Website: www.primusaustalia.com.au



MSR
REACTOR
\$299

Fuel Types: Recommended to use only with MSR IsoPro Premium Blended canister fuel.

Weight (stove and pot system): 563g.

Compact Dimensions: 185mm x 145mm x 135mm.

About: The Reactor is the latest stove technology from MSR and should be available in Australia soon. The key features of the system are its built-in heat exchanger in the pot base, and a fully enclosed (and therefore wind-protected) radiant burner with an internal pressure regulator designed to maximise the stove's performance over the life of the gas canister. The burner and gas canister fit into the pot which locks with the chunky handle.

Set-up and Lighting: This is a very simple system to set-up. The stove base screws onto an MSR gas canister and is lit with a match at the burner screen. The burner quickly heats up to a blazing red, revealing a golden MSR logo in the burner filament. The pot with heat exchanger sits flush on the burner and does not lock.

Stability: Ground stability is as per gas canister. The wide pot (135mm) on the wide burner increases stability. A defined groove in the pot base (around the heat exchanger) keeps the pot in its place. Its width also assists stirring.

Average Time To A Cuppa (500ml): 1 minute, 15 seconds. [Water boiled in Reactor pot using MSR IsoPro canister gas, 80/20 isobutane/propane.]

Simmer: Simmer range is wide and sensitive.

Noise: Aside from lots of "boohing" and "ahhing" as the stove gets started, conversation is uninterrupted by noise.

Cleaning and Maintenance: The instructions clearly discourage dismantling the stove in any way. It may be worth keeping the burner base in a plastic bag when stowing to attempt to keep the internal filaments free of contaminants.

Comes With: Stove base (176g), Reactor pot (339g), protective packtowl (7g), lid (47g), instruction booklet (10g).

Advertised Burn Time: Approximately 80 minutes/per 227g canister.

Website: www.spelean.com.au

liquid fuel stoves



MSR
Simmerlite

WHAT ARE THEY?

Liquid fuels include unleaded petrol, aviation fuel, solvents, kerosene and white gas (also known as Shellite, Coleman fuel, and naphtha). The variety of fuels a liquid stove will burn depends on its brand and design.

HOW DO THEY WORK?

Liquid fuel stoves work on the same principle as gas stoves, except that the vaporisation of the liquids must be manually assisted by first pressurising the fuel in its bottle, and then "priming" the stove, a step which usually (but not always) involves the lighting of a small amount of fuel.

POSITIVES

- > Liquid fuels are less affected by altitude and cold and are recommended for those travelling in alpine environments.
- > Fuels are easy to access, particularly internationally, making liquid stoves versatile and adaptable.
- > Fuel use is easy to monitor, bottles are refillable and are relatively cheap to fill.
- > Having the ability to manually pressurise a liquid fuel bottle maximizes efficient burning at all fuel levels.

NEGATIVES

- > Liquid fuel stoves require priming, which can require some practice to perfect.
- > Liquid stoves are usually more complex than gas stoves, requiring more maintenance.
- > Fuel types and consistencies can mean jet-clogging and require cleaning.
- > Liquid systems are generally bulkier than gas stoves.

LIQUIDY TIPS

FUEL TYPES

White Gas: Commonly known in Australia as "Shellite", pure white gas (or naphtha) is the cleanest choice of liquid fuel for a stove. It is not to be confused with "white spirit", which can refer to a cleaning solvent (Aus) or paint-thinner (UK).

Kerosene: Kerosene is likely to be the most available liquid fuel in less developed countries and is also likely to vary in quality with regards to impurities,

meaning that you should expect smoke, fumes and clogging of your fuel lines.

Unleaded Petrol or Diesel: Easy to access, but dirty as hell, petrol and diesel are cheap options that will guarantee you an authentic "charcoal" finish on your hands and cooking gear. Make sure you cook in a well-ventilated area, and that you select the lowest octane level available.

Alcohol: This is the least volatile fuel option, is relatively clean, but will not burn as efficiently or as hot as other liquid fuels.

DUAL OR MULTI-FUEL STOVES

Dual fuel stoves are usually designed to burn both white gas and kerosene, a function which will sometimes be facilitated by the changing of a jet. Multi-fuel stoves will burn white gas, kerosene, and liquid petroleum as well as other tasty beverages including diesel, aeroplane gas, and solvent.

MAINTENANCE

One of the great rights of passage in bushcraft comes on the day that you are forced to apply first-aid to your liquid-fuel stove in the field. Whether it is a simple cleaning of the jet, or a multi-hour triple bypass, there is

nothing as satisfying as getting dirty with a multi-tool and a dissected stove. On the other hand, there is nothing more embarrassing than disassembling the creature only to find you have not the skill to bring it back to life. Read instruction and maintenance manuals thoroughly and practice your surgery at home. Check seals on all pumps regularly and oil O-rings to keep them from cracking. Occasionally unscrew and remove the jet, soak it in white gas, and rub it clean. Do the same with the fuel line.

TECH SUPPORT

A liquid fuel stove can feel like a top-end mountain bike: intimidating, complicated, best left to maintain itself for fear of getting oil where it shouldn't go. However, just like a bike, your stove is simply a clever piece of machinery, and understanding it is usually the only prerequisite to being its qualified mechanic. Good brand websites are overloaded with How-To pages, advice, tips, diagrams, spare parts and FAQs. Laminated and carry your instruction manual with you until you know it by heart, and don't be afraid of the stove. It may sound all-powerful, but it will be a purring kitten if you master the right touch.



MSR
WHISPERLITE INTERNATIONALE
\$165

Fuel Types: Shellite (white gas), kerosene, diesel, petrol, aviation fuel.

Weight (stove alone): 274g.

Compact Dimensions: 155mm x 104mm x 102mm.

About: The WhisperLite International is a multi-fuel stove from MSR's "Fast and Light" range recommended for use by adventurers travelling internationally and into areas where white gas or kerosene may be unavailable. It has been a classic in the MSR stable for many years.

Set-up and Lighting: Set-up is simple and aided by great instructions. The convenience of having only one adjustment valve (at the bottle) is noticeable in the very easy set-up and pack-up of this stove, but does minimise simmer range. The priming fuel cup is easy to see and access.

Stability: Maximum pot-support diameter is 170mm. Pot support arms are not serrated, but this doesn't seem to affect the security of cooking pots. The legs are a good shape to dig into soil to correct ground imbalance.

Average Time To A Cuppa (500ml): 2 minutes, 30 seconds. [Water boiled in an Optimus Terra pot with lid, using Shellite fuel at maximum level.]

Simmer: Flame adjustment is not subtle. A low-heat setting (near off) still burns very hot, sometimes too hot for sauces.

Noise: Can continue normal conversation while cooking at full heat.

Cleaning and Maintenance: The WhisperLite features MSR's "shaker jet" function, where an internal jet needle unclogs the jet when the stove is shaken. For cleaning and maintenance beyond this, the entire stove can be simply deconstructed and cleaned with the tools provided. Be aware of the increased level of cleaning required when using dirtier fuels.

Comes With: Stove (274g), fuel pump (67g), heat reflector base (16g), wind shield (45g), maintenance kit (16g), carry bag (22g), instruction booklet (11g). Fuel bottles sold separately.

Advertised Burn Time: 110 minutes/per 600ml white gas.

Website: www.spelean.com.au



COLEMAN
EXPONENT APOLLO DUAL FUEL
\$249

Fuel Types: Shellite (Coleman fuel), unleaded petrol.

Weight (stove alone): 378g.

Compact Dimensions: 131mm x 120mm x 103mm.

About: The Apollo is a dual-fuel stove which does not require traditional "priming".

Set-up and Lighting: Instructions for the use of this stove are extensive, a little complicated and full of warnings, which made our "first-time-user" anxious. There are three functions to master for every set-up and use of the Apollo: the "flame adjuster", which needs to be moved back and forth to clean; the pump, which needs to be pumped once the stove is alight (can be difficult on the ground), and opening the main fuel valve. Co-ordinating lighting can take a bit of practice, and navigating through the manual is hard work.

Stability: Maximum pot-support diameter is 130mm. Legs are very stable, but the lack of feet means that legs can "sink" a little into soft ground. Upper arms are aggressively serrated and slightly sloping, which is good for small pots.

Average Time To A Cuppa (500ml): 3 minutes, 15 seconds. [Water boiled in an Optimus Terra pot with lid, using Shellite fuel at maximum level.]

Simmer: Simmer function is easy to regulate, but can be affected by fuel pressure and require that you pump the fuel bottle to increase pressure.

Noise: The noise level of this stove forces raised voices. It sounds like a lawn mower at full strength, and we experienced a "ticking" sound, which made us nervous. The instruction manual does mention a normal "chugging" noise.

Cleaning and Maintenance: The instruction manual offers a troubleshooting chart but only one diagram to illustrate how to oil the pump. Users are not encouraged to disassemble the stove, for which a small spanner is required (but not supplied).

Comes With: Stove (378g), pump (81g), fuel bottle (116g), wind shield, carry bag, instructions (weights unavailable).

Advertised Burn Time: NA.

Website: www.colemanaustralia.com.au



MSR
DRAGONFLY
\$259

Fuel Types: Shellite (white gas), unleaded petrol, kerosene, diesel, jet fuel.

Weight (stove alone): 329g.

Compact Dimensions: 120mm x 120mm x 105mm.

About: The DragonFly is a multi-fuel stove with two fuel valves; one at the bottle and one at the stove, the latter designed to optimise output control.

Set-up and Lighting: The DragonFly is a sprightly animal whose angular legs are eager to spring into position, which makes set-up a snap, but packing small a little bit of a wrestle. Attachment to the fuel bottle is quick and easy and ease of priming is enhanced by the length of the flame adjuster handle, allowing only the tiniest amount of fuel to flow for priming. Changing to the DK jet (kerosene, diesel, jet fuel) is a simple matter of flipping the fuel cup and unscrewing the jet.

Stability: Maximum pot-support diameter is 150mm. The stove sits low and very stable, with six elbows on the legs that want to each find purchase in ground. Arms are not serrated but offer significant surface area, making the pot platform feel very stable.

Average Time To A Cuppa (500ml): 3 minutes, 15 seconds. [Water boiled in an Optimus Terra pot with lid, using Shellite fuel at maximum level.]

Simmer: The DragonFly's promoted signature feature is its simmer ability, which lives up to its promise with good range and control.

Noise: What?! You want what?! Conversation killer.

Cleaning and Maintenance: One very enjoyable aspect of this stove is its design, which is basic and relatively "open", making access to its guts very easy. Stove features the MSR "shaker" self-cleaning jet, comprehensive tools, a replacement fuel line filter and fuel line cleaning tool.

Comes With: Stove (329g), pump (63g), maintenance kit (28g), wind shield (45g), heat reflector base (15g), carry bag (22g), instruction booklet (11g). Fuel bottles separate.

Advertised Burn Time: 126 minutes/per 600ml white gas.

Website: www.spelean.com.au



BRUNTON
VAPOR-AF
From \$269

Fuel Types: Shellite (white gas), kerosene, diesel, unleaded petrol, butane.

Weight (stove alone): 376g.

Compact Dimensions: 145mm x 110mm x 75mm.

About: The Vapor is an "all-fuel" stove designed to burn both gas and liquid fuels. Its fuel attachment seal suits both Lindal valve gas canisters and the Brunton liquid fuel bottle. This stove also features a "flipping" liquid fuel bottle for auto shut-off.

Set-up and Lighting: The easiest thing about using this stove is setting the fuel type at the burner cup – a simple matter of turning the cup to a new position. The co-ordination of the two fuel levers however (at the stove and at the fuel source) can feel a little non-instinctive and forced us to really think about which direction to turn them, sometimes accidentally off. The flipping fuel bottle adds another level of control. Liquid fuels are primed in the burner cup and lit. Gas fuels are lit with a match. Instructions provided are minimalist but sufficient to get to know the stove at home. This is not one to try first time in the field.

Stability: Maximum pot-support diameter is 150mm and arms are serrated. Feet are wide and perched low to the ground, providing excellent general stability.

Average Time To A Cuppa (500ml): Pre-production model tested. Boil times not recorded.

Simmer: Good range on liquid and gas.

Noise: Voices raised over liquid and gas.

Other: The Vapor-AF is remarkably simple to attach to both liquid and gas fuels. The screw cap at the end of the fuel line adapts to bottle or canister with ease.

Comes With: Stove (376g), pump (76g), 0.8L fuel bottle (108g), maintenance kit and spare parts (25g), wind shield (80g), carry bag (20g), instruction sheet.

Advertised Burn Time: Up to 2.5 hours on high.

Website: www.rucsacsupplies.com.au



MSR
XGK EX
\$279

Fuel Types: Shellite (white gas), kerosene, petrol, aviation fuel, diesel, jet fuel.

Weight (stove alone): 305g.

Compact Dimensions: 180mm x 110mm x 85mm.

About: The XGK EX is the older brother of MSR's XGK and is designed for use in extreme conditions (at altitude and in cold). While we didn't test the stove above the snowline, its simplicity, bombproof frame and oversized components say this is a creature of functionality, not frills.

Set-up and Lighting: This is a simple system to set-up and light. Its chunky, smooth-rotating legs are easy to move with gloves. Flame control is at the bottle only. While technically, you will have to change the jet on this stove to burn diesel or jet fuel, this is unlikely to be necessary in the average use of the stove. Deconstructing the stove to change and clean the jet is a breeze despite its militant exterior.

Stability: Maximum pot-support diameter is 150mm. The stove has a very low profile, which makes it extremely stable. Serrated arms and feet give it bite on ground and pots. Legs fold in to make the system a solid triangular nugget.

Average Time To A Cuppa (500ml): 3 minutes, 10 seconds. [Water boiled in an Optimus Terra pot with lid, using Shellite fuel at maximum level.]

Simmer: This is not a stove constructed for subtlety. It has minimal output variability.

Noise: Interrupts conversation.

Cleaning and Maintenance: "Shaker jet" enabled, minimal moving parts. Maintenance kit supplied, instructions clear and easy to follow.

Comes With: Stove (305g), fuel pump (67g), heat reflector base (16g), wind shield (45g), maintenance kit with alternative jet (20g), carry bag (22g), instruction booklet (11g). Fuel bottles sold separately.

Advertised Burn Time: 109 minutes/per 600ml white gas.

Website: www.spelean.com.au



OPTIMUS
NOVA +
\$309.95

Fuel Types: Shellite (white gas), kerosene, diesel, jet fuel.

Weight (stove alone): 298g.

Compact Dimensions: 150mm x 79mm x 70mm.

About: The Nova + is a slightly alternative version of the Optimus Nova (\$289.95). Its distinguishing feature is the Powerline control, which replaces traditional valve controls with a rotating fuel line, moving stove adjustment away from the stove and nearer the bottle. The most unique feature of the Novas is their brass priming fins, designed to reduce carbon-deposits through subtle and consistent heating of fuel, rather than passing the fuel line past the stove's flame.

Set-up and Lighting: Attaching the fuel bottle to the stove is a cinch with a simple push-lock function. The chunky green knob at the end of the Nova + fuel line is a grip for the rotation of the entire fuel line to control fuel adjustment. The only difficulty we had with this was in the stiffness of the fuel line, which forced us to hold the stove down while opening the valve. When the stove is weighted with a pot, this is not a problem.

Stability: Maximum pot-support diameter is 118mm. The serrated arced arms, legs and aggressive feet of the Nova + are attractive features. They bite into soil, offer good pot stability and give the stove a sleek profile when packed.

Average Time To A Cuppa (500ml): 3 minutes, 55 seconds. [Water boiled in an Optimus Terra pot with lid, using Shellite fuel at maximum level.]

Simmer: Good range of output, but low heat flirts with "off".

Noise: Only need to raise voices slightly in conversation.

Cleaning and Maintenance: The Nova + is packed with clever out-of-the-square features. Jet cleaning is managed with a magnet multitool which flicks the jet pin clean.

Comes With: Stove (298g), multitool (35g), instruction booklet (25g), pump (115g), fuel bottle (117g), wind shield (39g), maintenance kit (8g), carry bag (65g).

Advertised Burn Time: Up to 2.5 hours at maximum output with M size fuel bottle (using 450 ml fuel).

Website: www.outdooragencies.com.au

methyl alcohol stoves

WHAT ARE THEY?

These are the stoves you remember from school camp. The least volatile and most accessible cooking option for lightweight adventures, they are classics for good reason.

HOW DO THEY WORK?

Methyl hydrate (also called alcohol, marine stove fuel, gasoline antifreeze, or methanol) is the only stove fuel that burns without pressure, making these stoves a relatively safe and silent option. A central cup of fuel is filled and lit with a match. Flame output is regulated by controlling the amount of oxygen available to the cup, usually with a swinging lid.

POSITIVES

- › Methyl hydrate is technically a renewable fuel, synthetically produced, but also naturally occurring in the metabolism of bacteria and the distillation of wood. It has in recent years been a topic of renewable energy discussions and alternative economy models.
- › Stoves are silent and simple to use.
- › Low volatility fuel lends itself to use by first-time camp cooks, including kids.
- › Very little chance of stove failure in the field.

NEGATIVES

- › Cooking and boiling takes longer and more fuel than required with other fuel types.
- › Meths not always available.



TRANGIA
SERIES 27 ULTRALIGHT 1
\$129

Fuel Types: Methyl alcohol. Gas canister conversion accessory available separately.

Weight (entire system): 696g.

Compact Dimensions: 189mm x 189mm x 100mm.

About: Part of an extensive stove range, this system belongs to the Trangia 27 Series of kits designed for use by one-to-two people. It consists of a brass burner cup with lid and simmer ring, an aluminium wind shield base, aluminium wind shield upper, two aluminium pots (1L, graded and ungraded), one aluminium fry pan/lid and aluminium pot grippers. "Ultralight Aluminium" is used throughout and is the latest Trangia aluminium.

Set-up and Lighting: The wind shields slot together smoothly, enabling the fuel cup to be lit before the upper shield is placed. Meths are poured into the burner cup and lit with a match. The stove burns so colourlessly and soundlessly that it is necessary to check for flame by feeling over the cup. Instructions are clear in the booklet, as well as on the provided plastic fuel cup bag.

Stability: Squat and stable.

Average Time To A Cuppa (500ml): 13 minutes, 22 seconds. Approximately 25ml of fuel was used to boil this amount. 140mm diameter pot used.

Simmer: The swinging gate on the simmer ring for this model was new and stiff, which made adjusting it difficult once it was on the burner (this may change).

Noise: Silent.

Cleaning and Maintenance: Little maintenance required. Pots scrub up well with a hand wash.

Comes With: All the stove systems in the 27 series have two one-litre saucepans (80g), frying pan (83g), lower wind shield (96g), upper wind shield (174g), burner cup with lid (89g), simmer ring (21g), pot gripper (47g), locking strap (20g), anti-corrosion burner cup bag (6g) and instruction booklet with recipes (24g).

Website: www.rucsacsupplies.com.au



TATONKA
MULTISET
\$129.95

Fuel Types: Methyl alcohol.

Weight (entire system): 1185g.

Compact Dimensions: 217mm x 217mm x 105mm.

About: The Multiset includes a stainless steel burner with lid, stainless steel simmer ring, 21.5cm stainless frying pan, aluminium wind shield base, aluminium wind shield upper, stainless steel 1.4L pot, stainless steel 1.6L pot, aluminium pot grippers. The system packs down into a carry bag.

Set-up and Lighting: We found it sometimes difficult to lock the lower and upper wind shields together, which inhibited the convenient lighting and extinguishing of the burner cup without the upper shield. The flame must be felt with a hand to confirm that it is lit.

Stability: Excellent stability.

Average Time To A Cuppa (500ml): 10 minutes, 50 seconds. Approximately 25ml of fuel was burnt. Largest 175mm diameter pot used.

Simmer: The swinging simmer ring shield is nicely loose straight out of the box, which makes adjustment and extinguishing with a stick or spoon mid-cooking very easy.

Noise: Almost silent.

Other: The stainless steel fry pan is designed with a bow in the middle. Unfortunately this means that oil drains out to the sides when cooking, leaving the centre of the pot (where the main heat is) to char and smoke. It then needs vigorous cleaning and may scar over time.

Cleaning and Maintenance: Pots are easy to clean, only slight staining so far.

Comes With: Fuel cup with lid (92g), simmer ring (31g), frying pan (215g), wind shield base (164g), wind shield upper (237g), 1.4L pot (160g), stainless steel 1.6L pot (178g), pot grippers (59g), carry bag (23g).

Website: www.outdoorsurvival.com.au

The *Outdoor* team went bush on various trips with these stoves and ate far more than we should have. Unable to test the products long-term or above the snowline, we have given our first impressions of these hot little numbers to give readers an understanding of the factors to consider in their own purchase.

hot hints

When it comes to camp cooking, there's just too much to say!



SAFE STOVE USE

- › Ensure the area surrounding your stove is free of flammable bracken and leaves.
- › Clear and mark your cooking area if in a group. Many injuries occur by stoves being accidentally kicked over.
- › Cook only in well-ventilated areas.
- › Keep fuels far away from your main cooking area.
- › Observe fire warnings and be aware of wind behaviour.

EFFICIENT COOKING

- › Rehydrate food during the day before cooking by leaving it in a drink bottle.
- › Use the waste-water from boiled pasta or rice with cup-a-soup powder for a broth addition to a meal.
- › Soak pasta, rice, couscous etc. in cold water before cooking.
- › Have cleaning water ready to boil while you eat your meal.

COOKING IN SNOW

- › Wrap duct tape in multiple layers around stove fuel tanks. This will protect your fingers from frostbite when they come into contact with the metal canisters.

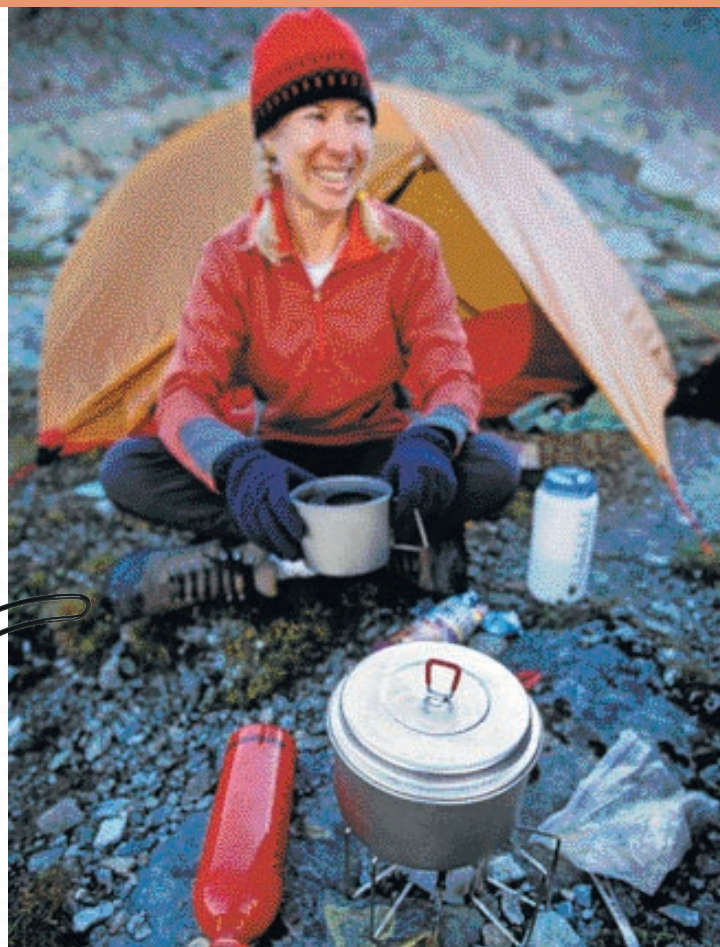
- › Place a pad underneath the stove to prevent the snow beneath it from melting too rapidly. A small square of plywood is usually a winner.
- › It is easy to burn the base of a cooking pot with nothing more than snow. When melting snow, add a small amount of water to a pot.

CANISTER DISPOSAL

Depending on where you live, it may be possible to recycle your used gas canisters. Check with your local council for best practice. Almost all canister brands will advise against puncturing canisters for disposal, but it is still widely practised and some brands even make puncture tools. Read brand and council advice before disposing.

GAUGING GAS USE

If you struggle to monitor your use of gas in a canister, and have a garage full of half-empty bottles you are afraid to take bush, weigh an empty canister and write the weight down. From then on you will be able to calculate the percentage of gas remaining in a canister, as well as chart your use.



FUELS IN FLIGHT

Don't be caught at an airport having to empty your rucksack to chuck your gas canisters. All fuels are illegal cargo in aircraft, and even your empty liquid fuel bottles should be squeaky clean to travel. Check with an airline before travelling and consider mailing empty liquid fuel bottles ahead of yourself if in doubt.

FUEL ALLOWANCES

MSR recommends 114ml of liquid fuel per person, per day for cooking or 237ml of liquid fuel per person, per day for melting snow and cooking. For gas, it estimates that a 227g canister will be sufficient to boil water for two people over four days in summer. *Trangia* estimates 500ml of methylated spirits per person, per week. Practise the art of perfecting your fuel usages with your own stove.

BTU

One BTU (British Thermal Unit) is a measurement of the amount of thermal energy required to raise the temperature of one pound (0.45kg) of water by one degree Fahrenheit (0.56

degrees Celcius). The higher the BTU, the hotter the stove. Figures for camping stoves generally reflect models operating at maximum output and in perfect conditions. Factors such as fuel pressure, cleanliness of a stove, and environmental conditions can all affect BTU.

SPECIAL MENTION

Another type of stove not mentioned in our test is the tablet stove, which burns solid hexamine. The tablets burn smokelessly, have a high energy density, do not liquify while burning and leave no ashes. Invented in Murrhardt, Germany in 1932, the generic brand name for these stoves is Esbit, which stands for "Erich Schumms Brennstoff in Tablettenform."



Where a pot was not part of a stove system, we used Optimus Terra hard-anodized aluminium pots with Dupont Teflon coating. outdooragencies.com.au