

## -Examining fuels: Wallas® products and correct fuel choices.



Wallas® heating and cooking products can effectively be separated into two groups – those that burn kerosene only and those that burn diesel. The diesel group is newer, representing more advanced technology.

1. Kerosene: 800 Mini Cooker, 1300, 1800 and 2400 furnaces.
2. Diesel: 85DU, 85DP, 88DU Stoves, 86D Oven, 87D range, 22Dt, 30Dt, 40Dt heaters, and the new Nordic Dt and XC Duo Stoves.

### **Diesel Fuel**

Over the last fifteen years, diesel fuel in America has undergone a significant transformation, particularly as it impacts heating and cooking systems. The amount of allowable (and actual) sulfur content has dropped from 500 ppm (parts per million) to 15 ppm for on and off highway use, including marine. This change alone has made diesel a much more attractive fuel for personal heating use, since sulfur has been the primary cause of objectionable smell from diesel.

Wallas® diesel products will run well on either diesel #1 or #2 and on what is commonly called “red” diesel. Diesel has higher (abt. 138,700 BTU/US gallon) heat energy value than kerosene (abt. 135,000 BTU/US gallon). While any liquid petroleum fuel can form gum deposits if left sitting for months at a time, diesel is quite stable if measures are taken to prevent condensation in the storage tank.

Diesel stored in tanks can become contaminated by water (usually condensate). If this happens, 3% to 5% isopropyl alcohol can be added to the fuel, but ONLY in the case of this being fuel that will be used solely in the heating system.

If your Wallas® product's diesel supply is the same as the main engine, DO NOT add isopropyl alcohol to the fuel. Adding alcohol to fuel can eliminate natural lubricity from the fuel. While fuel lubricity is not important to Wallas® products, it is critical to diesel engine fuel injection systems. Wallas diesel products will tolerate most diesel fuel additives used by diesel engines.

## **Kerosene**

Kerosene, used here as a generic name, is also known as 1-K (graded kerosene) or paraffin in Europe. Wallas kerosene products can also burn other fuels specifically made for use as a kerosene replacement in burner devices, including Klean-Heat. Good, clean, fresh kerosene is excellent fuel for Wallas® products. Unfortunately, some of the properties of kerosene make its handling and storage very important when using it for heating and cooking fuel.

If you are located near to an airport or seaplane float, you may be able to find turboprop or jet fuel in the form of Jet A, JP4, JP6 or JP8. If the facility is willing to sell it to you, these are excellent fuels for any of the Wallas kerosene products, since they amount to high quality, well documented and handled kerosene.

Note: Mineral Spirits as fuel are not recommended, nor is paint thinner. Manufacturers of these products do not intend them for use as fuels.

From the moment kerosene is distilled, it is chemically changing, with paraffin precipitating out of the solution into suspension and VOCs (Volatile Organic Compounds) evaporating into the atmosphere and formation of paraffin in the container. As this happens, the fuel becomes less and less suitable for use in forced air heating and cooking systems like Wallas® products. The following conditions can accelerate the rate at which kerosene breaks down:

- The presence of water (typically condensate) in the fuel
- Light, particularly sunlight passing through the fuel
- A large surface area (fuel air boundary)
- Large changes in storage temperature, extreme temperature

Some tips on handling kerosene:

- Buy small quantities from volume suppliers in opaque containers that are full to the cap, preferably with a date of manufacture.

- Store in a cool, dry place in an opaque container, filled to the cap.
- Replace kerosene fuel when it is more than 12 months old.
- If fuel is in question, empty and flush the tank, and replace with new fuel.
- **If in doubt about its age, get new fuel. At the cost of repairing a unit clogged with bad fuel, it is worth buying new fuel.**
- Klean-Heat has a potentially longer storage life than 1-K kerosene. Please consult the manufacturer for their specifications on storage and life expectancy.
- If fuel is subjected to conditions that might bring about condensation, or if some condensation has occurred, you may add 3% to 5% isopropyl alcohol by volume to the fuel and mix it fully before using. This will help convert the water into a burnable substance and reduce the water's effect of accelerating paraffin dropout. Adding isopropyl alcohol will not "fix" fuel that already has paraffin dropout problems.
- Be aware that if you choose to burn bad kerosene, it may indeed burn, but it will contaminate your combustion chamber very quickly, potentially within hours.

Using bad kerosene can bring about several problems in forced air heating and cooking products:

- High rate of soot deposition in the combustion chamber
- Low heat output
- Fouling internal components (fuel pump, fuel injector)

Any of these issues will precipitate the need for servicing by our service department.

Since diesel or kerosene can develop gum deposits if left for a long time, the best maintenance you can provide for your Wallas® products is to run them at least once every month or two. This will purge the old fuel from the system.

Please contact us with questions about fuels, fuel systems and other issues.

Doug McElroy



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