



Pea Soup



The Peasouper

The World's Most Popular Dry Ice Fog Machine

Operating Instruction Manual

Please read these instructions carefully before operating your Peasouper.

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Introduction

The Peasouper fog machine has been professionally built in strong high density cross-linked polythene using only the best materials and should give trouble-free use and an excellent low fog effect if the following instructions are read and followed carefully.

The Dry Ice Principle

Dry ice is, in fact, solid carbon dioxide (CO₂) which is a temperature of minus 78.5° Celsius. When the dry ice is immersed in boiling water it evaporates quickly, turning directly into CO₂ gas without going through a liquid stage. The refraction between the air and steam loaded CO₂ gas gives the well-known fog effect.

The Generator Principle

Dry ice is loaded into the basket where, when the handle is lowered, it is immersed in boiling water. Immediately the fog will be produced and expelled through the nozzle at the front of the machine.

Operating Procedure

1. Connect a standard 13 amp plug to the mains lead supplied (or a 15 amp plug which is connected into a circuit with suitable fuse protection). The current consumption is 12 amps. The connector is a standard IEC (kettle) type.

Caution - this machine must be earthed.

2. Stand the machine on a firm, level surface in the place where it will be used. Take off the lid and fill up with hot or cold tap water until the white tube inside the water level indicator reaches the top rim of the outer tube. When the two are even, then the machine is full. This will take approximately 3 bucketfuls (around 25 litres) - do not overfill.
3. Plug in the mains lead to a power socket. There is no on/off switch on the unit. Only connect power when the unit has water inside.
4. Whilst the machine is heating up (it will take 20 to 25 minutes to reach boiling point), raise the basket to its highest level by raising the black handle on the right-hand side of the machine and lock it in place at the highest stop.
5. When the water reaches boiling point (this will be determined after approximately 20 to 25 minutes by a large amount of steam coming from the front nozzle hole) the machine is now ready for use.
6. Load the basket with dry ice. It is best to use a mug or small saucepan. The basket size has been carefully designed to give one large 5 minute show from each bag or block of dry ice if filled to approximately 2.5cm from the basket rim. The loading of the dry ice should be done at the last possible moment. Due to the hot, steamy atmosphere in the machine, it will start evaporating very slowly if put in too long beforehand.
7. Place the lid on, and secure a tight seal by screwing tight the 4 fasteners on the lid.
8. When the fog is required, hold the basket - lower handle which is held by the ratchet stop system.

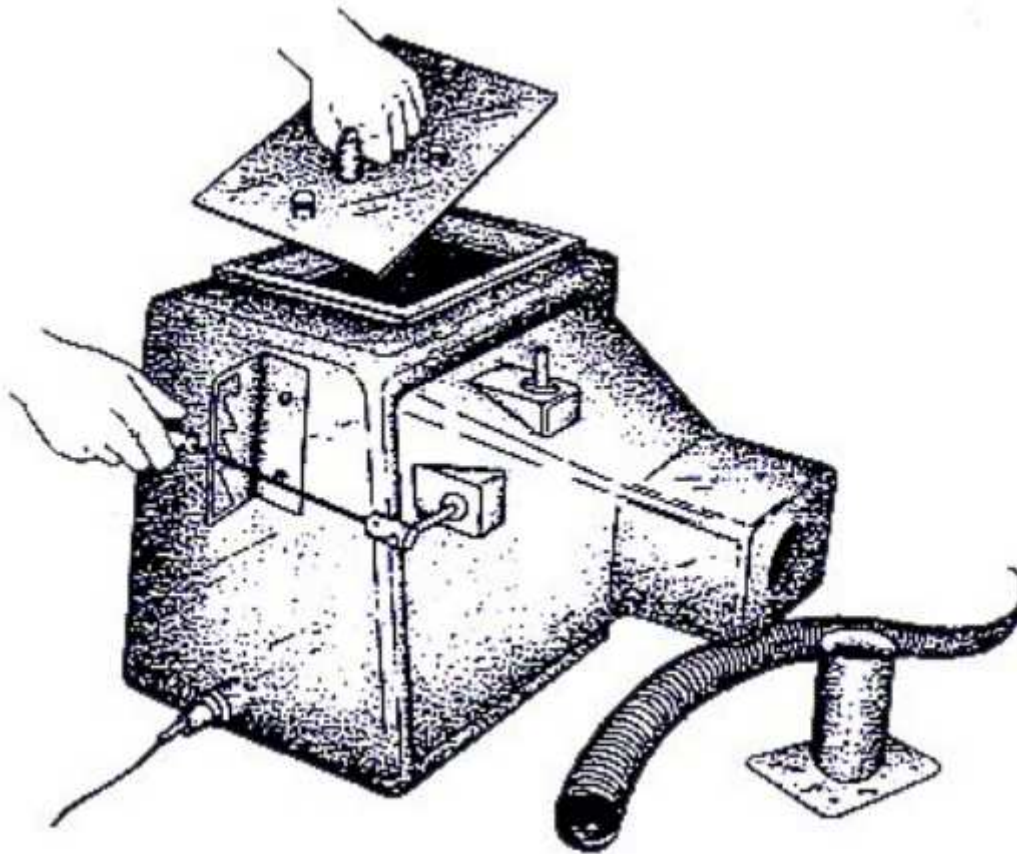
The basket should never be taken out or removed. If the basket is immersed completely there would be dangerous pressure build-up.

Slowly lower the handle (not all the way at first) and the fog will be produced in thick clouds from the front nozzle. To increase the rate, lower the handle to the lowest stop. Raising the handle sharply will immediately stop the effect.

9. When no more fog is being expelled through the nozzle, if the water is still warm another basket full may be used, if required. Otherwise it is suggested that the machine be re-boiled if another full basket load is required, or turned off if not required for some time. Check the water level indicator periodically, and top up the water as necessary. Do not try to repeat the effect when the water is cold. This will lead to the solid CO₂ freezing with the cold water and producing a solidified mass of frozen water ice in the basket, requiring very hot water poured on to it to disperse.
10. There is an automatic thermal cut-out inside the head of the heating element, which will function if the machine is ever left to boil dry or switched on without being filled with water. When the machine is unpacked, check to make sure that the element is screwed up tightly. Replacement elements may be obtained, if required, from Pea Soup.
11. When the machine is to be emptied, it is advised that it is emptied into a bucket where it stands, rather than carrying it to a sink, drain, etc.

On no account should the machine be moved with hot or boiling water inside.

12. This machine has been specially designed to take a large water capacity in conjunction with the large dry ice basket to give a much longer and more powerful fog effect. Although heating up time is 20 to 25 minutes, this is necessary for the volume of water in the machine.



General Usage

Carbon dioxide is produced by immersing solid CO₂ into boiling water. In its natural state this gas is colourless, but suspends water vapour when emitted from the machine giving this fog effect.

Although carbon dioxide is an inert gas, it does not sustain life. Because the gas is heavier than air and sinks, there is no problem, although care must be taken to ensure nothing is below the fog level ie small pets, people lying down, etc.

CO₂ dissipates very quickly and there are no records of accidents, but it pays to be sure. Remember also, use of the machine creates a humidifier effect, so do not use it in the vicinity of electrical equipment, power sockets or any item and may be damaged by moisture.

In any event, do not use the machines in rooms smaller than 3 x 3 metres (10 by 10 feet).

Overfilling

99% of the problems arise from putting too much water in the machine.

The water level indicator is set in the factory but by the time the end user receives the machine, it may be displaced.

To check the indicator is correct:

1. Fill the machine and boil.
2. Put a full load of CO₂ in the basket.
3. Lower the handle to its full extent.

There should be no water from the nozzle except for some condensation.

If too full, adjust your indicator accordingly. An overfilled machine can ruin parquet flooring, carpets, etc or spray boiling water over people.

Things NOT to do in Usage

DO NOT:

1. Overfill or boil the machine dry.
2. Tip the machine in operation - especially if you are above an audience.
3. Put solid CO₂ into drinks for a laboratory effect. If consumed, solid CO₂ can cause severe internal injuries.
4. Use in a room less than 3 x 3 metres (10 by 10 feet).
5. Handle solid CO₂ without thick gloves - this can cause severe frostbite. Always protect your eyes when breaking up blocks of CO₂. Cover the ice with a cloth to prevent chips flying.
6. Leave the machine in subzero temperatures when not in operation (to prevent damage to the moulded shell).
7. Put dry ice into the machine when the water is cold.

Ducting Adapters and Hose

Remember, the fog output will decrease in proportion to the length of hose used. We recommend a maximum of 3 metres (10 feet), although the operator should use as little as possible. It can be cut to shorter lengths to suit.

1. Make sure that the machine cannot be tipped. If water gets into the hose it will be sprayed under pressure. A U-bend is advisable to help prevent this.
2. Try to have the end of the hose above the level of the machine.
3. Overfilling is very undesirable in any case, but particularly so when ducting is being used. The machine is capable of spraying boiling water quite far.

In general, if you are not familiar with ducting, test it thoroughly before you use it at your event, or don't use it.

Warning

An overfilled machine will eject water. This can get close to the power socket on the side of the unit. Continued abuse may cause power leakage to the earth circuit and in venues with an earth leakage circuit breaker will shut off the mains supply.

Maintenance and Hints on Use

1. Lids seal screws are heavily protected against corrosion. Keeping them lightly oiled will keep them loose and easy to use.
2. Make sure no dry ice bits are on the rubber seal. This will let fog escape through the lid gasket rather than out of the front nozzle.
3. When you boil the machine up, leave the lid off. This prevents the lid's seal screws getting too hot!
4. Make sure the element housing is protected in transit. Rough handling or continual abuse will crack the seal and cause a leak.
5. Replacing the element or repairing broken seal:
 - i) Remove element then replace or clean.
 - ii) Renew plastic adaptor collar.
 - iii) Coat shoulder of elements liberally with a high-quality high temperature resistant black mastic and replace.
 - iv) Leave on the element side to set for 24 hours.

Optional Extras:

- Ducting adapter (2.5cm diameter)
- Flexible ducting hose (3 metre length, 2.5cm diameter)
- Replacement heating element
- Replacement dry ice basket
- Replacement heating element adapter collar
- Replacement heating element nut

Contact Pea Soup directly to purchase any of these items.
www.smokemachines.net

Technical Information on Solid Carbon Dioxide

The CO₂ should be collected from the supplier as near as possible to the time it is required for use. If kept for any long periods and not insulated, it will disappear. Expect to lose between 2 and 5 kg of dry ice for each 24 hour period depending upon the quality of the insulated container.

If the CO₂ is required to be kept for any length of time (ie over the weekend) it should be stored in a specially made container. Your dry ice supplier may have insulated container that is sufficient to take 1 to 2 blocks or bags, or if more is required to be stored, a container may be made from wood and insulated on the top bottom and sides with expanded polyurethane or polystyrene.

Pea Soup can suggest dry ice suppliers such as BOC, Air Liquide, Green Gases, Dry Ice UK, etc. Many will deliver directly to you as they do to refrigerated transport and blast cleaning companies, hospitals, food manufacturers, universities and schools, etc. Alternatively, you will be able to collect from the local depot of the larger companies like BOC.

It may be more convenient for a few operators of dry ice machines to club together for supplies and storage containers - as the more that is bought at once, the cheaper it becomes.

It is easier to obtain and store dry ice than most people imagine.

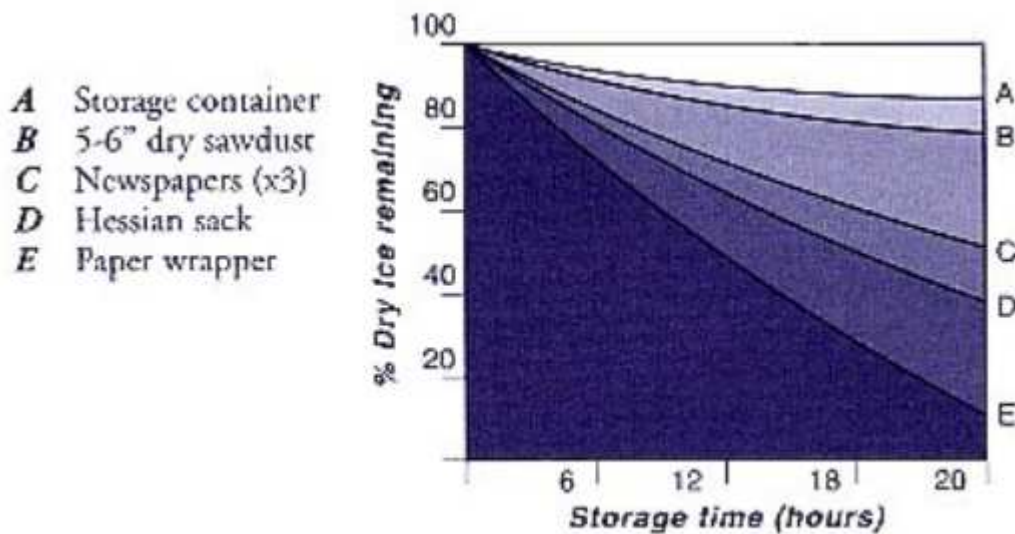
Solid CO₂

Either a solid block may be purchased or (where available) it is recommended that CO₂ in pellet form is used. This is easy to use as it requires no braking, and gives a greater surface area in the machine, generating more fog.

If a solid block is used it must be broken up into small pieces, preferably about 2 - 3cm across.

Below is a graph showing losses of dry ice in relation to various methods of storage. If blocks are used, try and obtain a 'sliced block', as these can be laid on a flat surface and broken up like a slab of toffee.

Dry Ice Storage Times



Caution

The following points must be observed.

- 1) Dry ice must not be stored in sealed containers. Evaporating gas will lead to a dangerous pressure build-up.
- 2) At no time should the dry ice be handled or brought into contact with bare skin. Solid CO₂ may lead to skin burns and frostbite unless handled with thick gloves.
- 3) Do not swallow CO₂ or allowed to sublimate in the mouth or bare skin (e.g. practical jokes with a piece of dry ice in a cup of tea to give a laboratory effect) as this can lead to severe internal injuries.
- 4) When breaking solid blocks of dry ice use a hide hammer and protect the eyes. If using a metal hammer, cover with a piece of cloth to prevent fragments from flying.
- 5) Do not use or store solid CO₂ in confined or poorly ventilated spaces. Where solid CO₂ is used there should be adequate low-level ventilation to ensure that the excess CO₂ does not collect and cause dangerous concentrations.

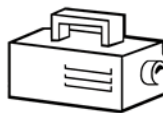
We hope you enjoy using your Peasouper fog machine!

NOTES

The Peasouper has been the most popular dry ice fog unit for weddings, events, special theatrical effects and other applications for over 35 years.



Made in Britain



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