



# Oculus Laser — Fire Safety

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## Fire Extinguisher

A **CO2** fire extinguisher must be placed next to the laser machine at all times. These fire extinguishers are available online such as, <https://www.fireprotectiononline.co.uk/budget-5kg-co2-extinguisher.html>



## Left Unattended

Under **NO** circumstances should your Oculus laser machine be left unattended when it is in use. Many materials can burn rapidly and cause the materials to catch fire. If the machine is left unattended these small flames can quickly turn into an inferno.



## Aware

Always be aware of how the material is reacting to the laser source as it is in motion. Woods and plastics are susceptible to burn and catch fire, due to the contents of their material. For example, MDF is made up from wood fibres and a synthetic resin adhesive.



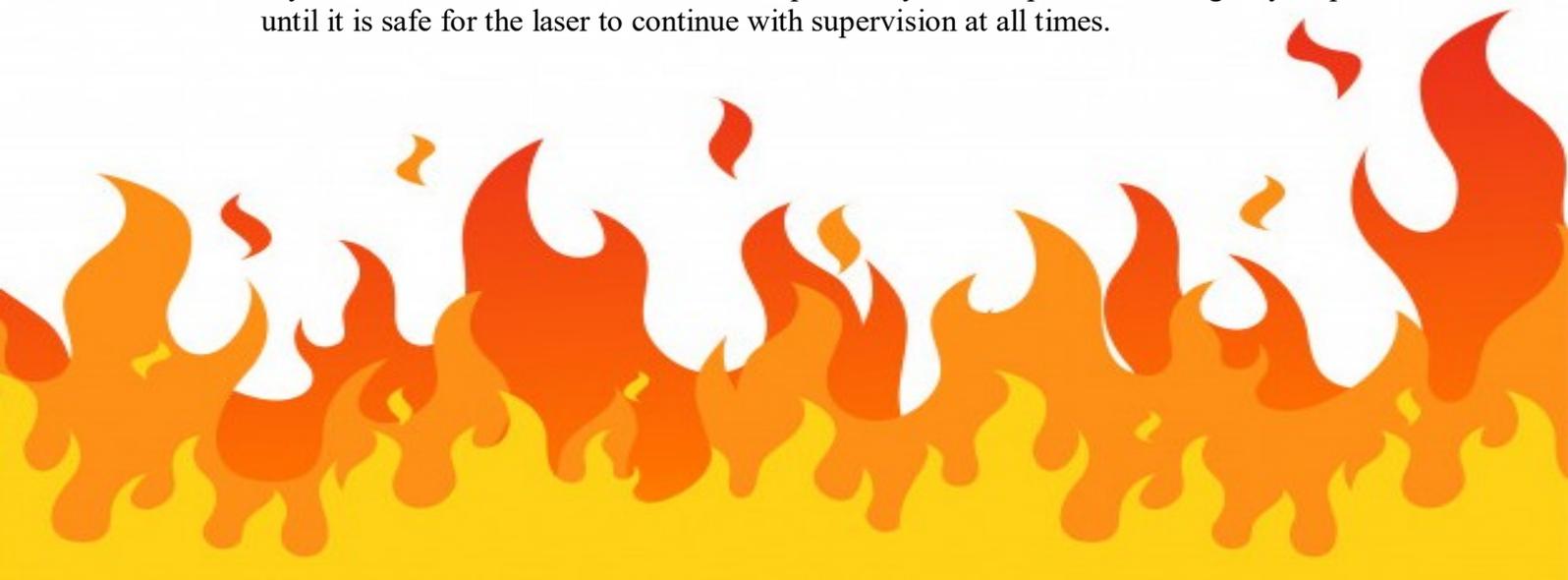
## Maintenance

Maintenance is important in ensuring the risk of fire is minimum. The rails on the Oculus laser must be cleaned regularly to remove all traces of residue. The residue if left, can enable any fire to develop at a greater speed.



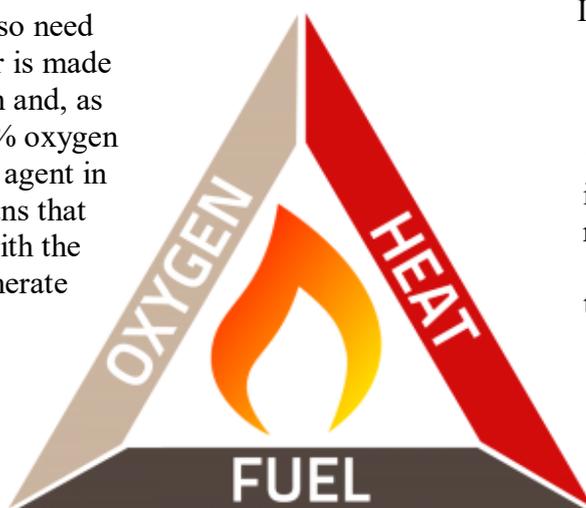
## Emergency Stop

The emergency stop button plays one of the most important roles in ensuring a fire doesn't develop. Once any flames are noticeable, press the emergency stop button immediately. Also, if you are unable to watch the machine in process, you must press the emergency stop button until it is safe for the laser to continue with supervision at all times.



## Oxygen

As well as fuel and heat, fires also need oxygen to stay alight. Ambient air is made up of approximately 21% oxygen and, as most fires only require at least 16% oxygen to burn, it acts as the oxidising agent in the chemical reaction. This means that when the fuel burns, it reacts with the oxygen to release heat and generate combustion.



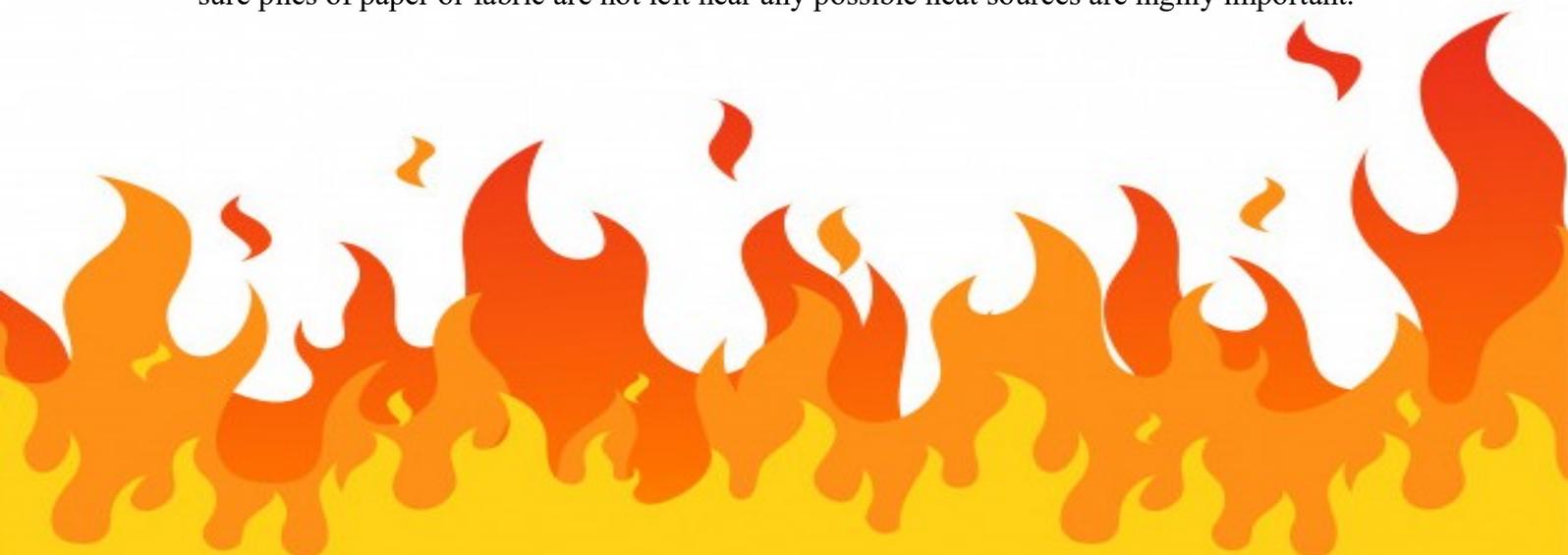
## Fuel

In order for a fire to start there must be a material to burn – and this is referred to as the fuel. Fuel is any kind of combustible material, including paper, oils, wood, gases, fabrics, liquids, plastics and rubber. The fuel for a fire is usually characterised by its moisture content, size, shape and quantity and this will determine how easily the fuel will burn and at what temperature.

## Extinction of the fire

To stop a fire, one of the three elements of the fire triangle must be removed. So, if a fire runs out of fuel, it will smoulder out; if you can cool a fire down it will lose heat and go out; and if the oxygen is removed it will suffocate. Therefore, attempts at putting out a fire and also preventing a fire are based upon these principles. Fire blankets, for example, suppress a fire, removing the oxygen and, as a result, putting it out. Similarly, fire extinguishers are developed to eliminate one of the three elements – such as water fire extinguishers which cool the fire down and remove any heat.

By the same codes of practice, fire prevention methods are also developed in relation to the chemical reaction which occurs when fire takes place. Undertaking safety steps such as storing flammable liquids away and making sure piles of paper or fabric are not left near any possible heat sources are highly important.



## Heat

In addition to a fuel source, heat must be present in order for ignition to take place. All flammable materials give off flammable vapours which, when heat is present, combust. Heat is also responsible for the spread and maintenance of fire as it removes the moisture from nearby fuel, warming the surrounding area and pre-heating fuel in its path, enabling it to travel and develop with greater ease.

## CO<sub>2</sub> FIRE EXTINGUISHERS

Choosing the wrong type of extinguisher can have life-threatening consequences. Using a water extinguisher where electricity is present could result in electrocution.

- When purchasing an Oculus laser machine, a **CO<sub>2</sub>** fire extinguisher must be purchased and placed next to the Oculus laser machine at all times.
- Fire extinguishers are recommended to be serviced annually and replaced every 12 years.
- Specifically used for all Class B and electrical fires, **CO<sub>2</sub>** extinguishers replace all oxygen within a blaze with carbon dioxide, thereby suffocating the fire.

**“ Only tackle a fire in its very early stages and always ensure you put your own and other peoples safety first.”**

### Using a fire extinguisher

Using the correct type of extinguisher for the fire, use the four-step PASS technique.

1. **Pull:** Pull the pin, this will break the tamper seal.
2. **Aim:** Aim low, pointing the nozzle or hose at the base of the fire. Do not touch the horn on a CO<sub>2</sub> extinguisher, it gets very cold and can damage the skin.
3. **Squeeze:** Squeeze the handle to release the extinguishing agent.
4. **Sweep:** Sweep from side to side at the base of the fire, the fuel source, until the fire is out.



# Summary



The risk of fire is never zero, even on jobs and materials that have previously run without problems. These failures cannot really be predicted and occur with little or no warning.

**Never** leave the laser machine unattended whilst it is in operation. Leaving the laser machine in operation prevents the emergency stop button being pressed should material catch fire, leaving the fire to develop at lightening speeds.

Ensure the correct speeds and powers are used appropriately. This will eliminate material from burning unnecessarily.

Maintenance should be carried out regularly to remove residue from the laser cutter's rails, as well as all dust cleaned to ensure the laser can operate safely.

Always ensure you have the correct fire extinguisher, as mentioned on page 4. This will allow any developing fire to be extinguished immediately. We would recommend reading all instructions in relation to how to use your fire extinguisher in the event of a fire.

**If you cannot put out the fire or if the extinguisher becomes empty, evacuate yourself and everyone in the building immediately, closing all doors behind you as you go and ensure the fire brigade has been called. If there is the slightest doubt or uncertainty about tackling the fire evacuate the building immediately and call the fire brigade.**



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