INFORMATION ON CHEMICALS USED IN AQUAFLAME

The Aquaflame range of equipment uses a standard electrical supply to produce hydrogen and oxygen by the electrolysis of distilled water.

It is a highly, efficient high energy heat source & the only by product other than energy is water.

The correct chemicals must be used with the machine for it run efficiently. These are Potassium Hydroxide Crystals and Methyl Ethyl Ketone. Do not use any Methanol based solutions in the booster – see below.

POTASSIUM HYDROXIDE CRYSTALS

The gas production cell needs electrolyte crystals added in the form of Potassium Hydroxide mixed with deionized water.

The crystals need to be at least 90% purity to ensure the machine produces the correct gas pressure. Anything less than 90% will generate gas but the lower the purity the lower the gas production will be – this will affect the flame size and power of the machine. 90% is the minimum to produce the indicated flame sizes and gas pressures.

The crystals need to be in flake form. Do not use any ready mixed solutions of potassium hydroxide as they will not have the correct chemical ratio. It is possible to use the Potassium Hydroxide in pellet or powder form – please ensure that the powder or pellets are completely dissolved

The chemical details of he Potassium Hydroxide are detailed below.

The electrolyte is **only** added at the set up stage off the machine, the cell then only needs the occasional top up of deionized water. Refer to the Getting Started Guide to ensure you mix the electrolyte and deionized water correctly at the set up stage.

POTASSIUM HYDROXIDE

CAS No:	1310-58-3
Appearance:	Flake
KOH	90% w/w minimum
K_2CO_3	0.5% w/w minimum
KCI:	0.015% w/w minimum
Iron (fe):	3ppm maximum
NaOH:	1% w/w maximum
Nickel (Ni):	5ppm maximum

Please be aware that Potassium Hydroxide is caustic and will burn the skin. It is highly recommended to wear rubber gloves and face masks when filling the cell on start up. Pleases see the MSDS health & Safety documentation on the Aquaflame website.

Figure 1 - Potassium Hydroxide in flake form

METHYL ETHYL KETONE (MEK)

The stainless steel booster located on the outside of the machine requires filling with 220mls of methyl ethyl ketone (MEK).

Butanone, also known as methyl ethyl ketone (MEK), is an organic compound with the formula $CH_3C(O)CH_2CH_3$. This colorless liquid ketone has a sharp, sweet odor reminiscent of butterscotch and acetone. It is produced industrially on a large scale, and also occurs in trace amounts in nature. It is soluble in water and is commonly used as an industrial solvent.

MEK reduces the working temperature of the gas from over 3000°C to give the optimum working temperature of 1850°C (3365°F).

MEK is a consumable and the level should be checked daily as good practice. It will require the occasional top up of MEK. Once the MEK becomes discoloured it should be changed. Empty the booster by disconnecting the torch pipe, turning it upside down and allowing the old MEK to run out.