

Flexible Liner Corrosion

The majority of liner manufacturers state their 316L and 904L grade stainless steel products are suitable for multi-fuel appliances.

This means they are designed to be used with appliances burning solid smokeless fuels, bituminous coal, peat and lignite briquettes as well as logs and wood briquettes.

However, there are instances where flue liners have failed as a consequence of corrosion within only a few years of installation.

Why is this?

Solid mineral fuels contain many chemical elements which, when burned, discharge a cocktail of substances up the chimney.

Burning any hydro-carbon will always create **water vapour** as part of the process.

Typically, you would expect flue gasses to contain various compounds of sulphur, hydrogen, nitrogen and water vapour passing up the chimney to atmosphere.

With sufficient heat in the flue to provide buoyancy the gasses will successfully dissipate to atmosphere from the terminal without any risk.

However, with a **cold chimney and cool flue gasses** a nightmare scenario presents itself.

The water vapour entrained in the flue gasses are likely to condense back into water droplets wherever the inner flue surface is cold enough to create dew-point.

Unfortunately, the condensate is acidic due to contact with the other chemical elements present, as a consequence the surface of the stainless steel suffers acid attack, usually near the top.

In time, the stainless steel develops pin holes and eventually collapses under the weight of the liner.

Anthracite based fuels, such as manufactured ovoids, will remain alight for many hours in slumber mode without attention.

At least 8 hours burn is the norm, whilst 12-14 hours is not uncommon for a single filling of fuel.

Alas, the downside is that slow burning of this magnitude results in very low flue gas temperatures which exacerbates the problem described above.

Wood burning has its own set of problems.

It is essential that logs have a moisture content of no more than **20 per cent**, and preferably lower if possible.

Burning high moisture content wood leads to serious condensation problems within the flue which forms a substance resembling creosote.

This material is almost impossible to sweep, runs down the inner surface of the flue and leaks out of any fissure by capillary action.

It is also volatile, hence the increase in numbers of chimney fires.

The solution?

Periodically **burn the fire brightly** in order to raise the flue gas temperatures and warm the flue surface which will help dry out the moisture present.