



## Building services must always consider materials being used

The world is waking up to the need to reduce plastic use and, in its place, adopt more sustainable materials. With 91% of all plastics produced in the world not being recycled, people and corporations are now beginning to make changes to limit the plastics crisis. Unfortunately, we can't say the same for construction. Despite shocking figures and evidence of how harmful plastic is to people and the planet, we are still seeing a rise in the use of plastic building materials. While there are no comparable figures for Ireland, plastic waste from the UK's construction industry is said to have increased by 45.72% in two years, writes Andrew Surtees, Copper Sustainability Partnership (CuSO).

While it is true that plastic pipes provide a cheaper alternative, there are a number of serious environmental and health problems to this solution. We need to start looking at more sustainable materials, like copper, and begin to seriously make a change in the industry.

Copper has always been the professional choice, offering a recyclable, versatile, safe and reliable alternative to multilayer composite pipes. So, what are construction professionals waiting for?

### Infinite recyclability

Copper pipe has a unique ability to be safely recycled over and over without any loss in performance or properties. As a result, around half of Europe's copper demand is currently being met by recycled materials and, to date, at least 65% of all copper mined remains in circulation, available for use.

As recycling techniques improve, this figure will only continue to increase and the need to mine will continue to decline. What's more, the recycling of copper uses 85% less energy than mining raw material.

Copper has been recycled and re-used for as long as the material itself has been in use, and there is a fully-developed scrap-collecting infrastructure which has existed for centuries. When copper pipes come to the end of their life, they are taken to a scrap merchant and, unlike plastic pipes, are 100% recycled. They simply go into the furnace and are melted down to form a block of pure copper which is stretched out, cut to size, and made into brand new tubes.

On the other hand, despite industry claims that plastic pipes are fully recyclable and have a circular, end-of-life economy, many plastics are still not being recycled.

One reason for the low recycling levels is that some plastic pipes are

not actually recyclable. Multilayer composite pipe is a prime example as it consists of two different materials – aluminium and plastic. Research by CORDIS shows that "conventional non-recyclable pipes for heating plumbing systems are manufactured from non-recyclable cross linked PEX. They are also made of PEX/AL, which comprises a layer of aluminium sandwiched between two PEX layers."

Furthermore, CORDIS analysis also states that attempting to recycle these types of pipes "results in highly toxic by-products".

### Versatility

Copper pipes offer versatility and use across utilities including water, heating, gas and air conditioning – all the while offering greater choice and longevity. They have an ability to withstand extreme temperatures, pressures and exposure to UV and oxygen, meaning they can be used for a range of purposes and across a multitude of environments.

However, pipes containing plastic cannot be used as widely. For example, they are unsuitable for use in any outdoor applications as the plastic can be damaged by UV radiation and they also can't be used in steam services, solar applications, next to a boiler or in medical gas installations.

### Prioritising safety

Copper pipe is proven to support health and wellbeing with its naturally-occurring antibacterial and antimicrobial properties, preventing the growth of harmful organisms and bacteria. It is a 100% natural material and therefore does not emit any harmful contaminants or synthetic compounds into drinking water. It can also be used to effectively kill waterborne bacteria, such as legionella pneumophila, as it has the ability to withstand thermal shocking at 70°C.

In fact, copper is an essential element for good health and, when

it forms part of a healthy diet, the element supports healthy blood vessel formation, heart and cardiovascular function, brain development, bones, teeth and collagen levels.

On the other hand, a recent research project published in the *Journal Environmental International* by the Vrije Universiteit Amsterdam in the Netherlands tested 22 anonymous blood samples from healthy adults for microplastic particles. The study found that 17 out of the 22 human blood samples contained microplastic particles, with a quarter of these containing polyethylene.

### Reliability

Put simply, plastic does not last as long as copper and the lifespan of plastic pipes is not as long as that of copper pipe. On the other hand, copper can be used for products that need to keep their integrity for hundreds of thousands of years. For example, copper makes up part of Sweden's nuclear waste handling technology where copper canisters encapsulate the radioactive waste for long-term storage. The canisters are required to keep their integrity for at least 100,000 years but are thought to last five times longer than that.

### Retaining value

Copper used once will be identical to that used 1,000 or 1,000,000 times. Its properties and quality do not deteriorate with use, a trait which ensures copper retains its value. This is the reason why you don't tend to see scrap copper on a skip.

So, with the shift to a more sustainable, healthier way of life happening in the world around us, it's time the building and construction industry caught up and started doing the same. Copper is a sustainable, versatile, safe and durable engineering solution for now and future generations. ■