

7 The myth behind deionised resin and deionised water

Deionised resin – What it is! What it does & how it performs!

Deionised (DI) mixed bed resin is a polystyrene polymer derived from the petrochemical industry. It is a mixture of cation and anion resin produced as small beads and looks like a mass of brown sugar (see below). As water passes over and through the resin it has the ability of producing 99.9% pure water by adsorbing (rather than absorbing) impurities, such as TDS, onto its surface.

The resulting water is gently aggressive in a slightly acidic way**. This assists considerably in removing stubborn dirt, inorganic and organic (algae), as well as breaking down surface tension. This enables over 90% of general, water fed pole, window cleaning work to be undertaken without detergents and chemical additives. It is interesting to note that, with surface tension reduced, glass remains cleaner for longer.



The slightly acidic state of this cold pure water is due to the deionisation process taking everything out of the water including carbon dioxide (CO₂) and alkalinity. Once this water is released into the atmosphere it will start to reabsorb the CO₂ without the alkalinity to buffer it. The pH will drop until a maximum level is reached around the 5.5 to 6.0pH (7.0 is neutral). Pure water does not reabsorb the alkalinity, which is processed out.

It can be viewed that this level of acidity will corrode and have an adverse effect on metals commonly associated with window frames such as aluminium, copper, brass, gunmetal and bronze. In practice, due to the very short contact times, this does not happen. The water is sufficiently pure enough to clean without doing any damage. One of the advantages of DI water is its ability to remove some metal oxide contamination. For instance, it is known that it will buff up copper beautifully on stained glass windows.

Some older aluminium frames, surrounds and panels may be adversely affected by deionised water more than others**.

It must be remembered that most metals associated with external building construction are designed to withstand extremes of weather. Rain itself can be aggressive. In recent years, sulphur dioxide and nitrogen oxide, together with other suspended matter, has made the subject of acid rain of considerable environmental importance. In some cases, rain can be more acidic than deionised water.

The cost of deionised water

We often get asked about the cost of deionised resin and hear conflicting stories about the length of time a bag of resin will last. Resin costs have come down significantly over the past 12 months, however there are still companies out there selling lower grade resins for the same price as a premium grade resin. This gives the cleaner an incorrect point of view on the value of resins. High Quality DI resin should last longer, equating to as little as 1.5p per litre difference between that of RO water production. This makes DI systems increasingly more viable, even in the hardest of water areas

** IMPORTANT NOTE:

The UK window cleaning industry has been forced down the route of using hot water systems because of very good marketing that suggests hot water "cleans better" and keeps your hands warm in the winter.

We don't dispute that hot water is good for cleaning, and due to demand, we have reluctantly been forced down the route of developing a new type of unique hot water system which will be launched in late July 2010.

However, cleaners in the industry need to be aware of the pitfalls of hot water systems.

Purified water is by its very nature, aggressive, and this is why it's particularly good at cleaning glass. Hot water systems bring a risk to the consumer that is often not mentioned, and Aquafactors, primarily experts in water treatment, have some very significant concerns about cleaning windows and cladding with hot water. Heating purified water gradually evaporates the oxygen content while doubling the potency of CO₂ with every 10°C rise in temperature. Most hot water systems operate between 60°C and 85°C.

Therefore, particularly on surfaces susceptible to corrosion such as metal window frames, the use of heated RO and deionised water is strongly inadvisable.

Care should also be given to wooden window frames which can tend to swell with continued use of warm water over time.

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