

# Rainwater; soft, non-corrosive and plentiful

## A white Paper from RainWaterHarvesting.co.uk

Under pressure from the British government, rainwater harvesting is now a standard fit for new houses and becoming a very popular way of making the home more sustainable. Any remaining concerns about rainwater quality are now receding. For example, an academic study from the Technical Research Institute of Korea (references below) has confirmed that rainwater is both soft and non-corrosive.



The corrosion rate of rainwater at different collection steps of a harvesting system was measured with other factors that may affect corrosion rate, i.e., pH and chloride ion concentration. Rainwater samples at each collection step in a typical harvesting system were taken separately: 1) directly from precipitation, 2) from roof runoff, and 3) from the rainwater storage tank. The pH and corrosion rate of rainwater at each step were measured. The pH of the rainwater taken directly from precipitation was the lowest (4.6~8.3), while the roof runoff exhibited the highest pH values (6.4~9.7). On the other hand, the rainwater taken from the storage tank showed a neutral pH range (6.7~8.4).

This soft water is ideal for washing clothes because it lets the soap or detergent act more effectively... no need to install a water softener for the washing machine if you have rainwater harvesting.

So, if there were ever fears, in a world of acid rain, that the water from rainwater harvesting systems would be corrosive, i.e. that it would attack metal pipes and anything it comes in contact with, then this study lays those fears to rest. At any stage of the process, rainwater is less corrosive than tap water.

What if the rainwater harvesting is on a building near the sea? Would salt in the atmosphere have any negative effect? No problem. Although the chloride ion would have an adverse effect on corrosion, the study showed that the level of chloride ions in rainwater at the coast was not high enough to affect the corrosion rate significantly, implying that there is no need for anticorrosion treatment in rainwater harvested near the coast.

What if there are lead flashings or gutterings on the roof? Would that put dangerous levels of lead in the rainwater? No, after the initial surface oxidization of the lead, no further deposits are put into the rainwater at all (see reference below).

In the meantime, this pure and beneficial water is plentiful. Only 1% of the UK's rain is collected by water suppliers to purify and feed through the mains water system. That means 99% of rain just flows to the salty sea and is wasted. It's your roof and it's your rainwater. Use it.

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## References

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