



The Effects Of Using Floë On Stale Trapped Water

APT Innovations Limited

PROJECT BRIEF

In 2011 and 2012 APT Innovations helped thousands of customers, remove water from their caravans and motorhomes with their product Floë. In that time hundreds of emails have come pouring in from owners testifying how crucial the product had become as part of their winter preparation, to protect their vehicles.

During this time, Floë had been bought primarily as a tool to remove water from the vehicle's water system to avoid damage from winter frosts, but while carrying out the process, many had collected the water and observed that it was cloudy, often discoloured with a yellow hue and usually contained white suspended particles.

At APT Innovations, we knew that Floë was very effective at removing all of the water from a system and as part of the process, this meant removing stale and stagnant water trapped inside the system.

Until now, it would appear that in all the years of caravanning, no one was able to see this trapped water and its condition, which raised some important questions, such as;

- 1. Why does the water from the taps inside the vehicle taste so unpleasant, even though fresh water has been introduced and flushed through the water system.?**
- 2. When water is removed from the water system using Floë, it looks very discoloured and full of particles suspended in the water. Therefore, what is contained within this water.?**
- 3. How effective is Floë at removing the water and any impurities from the water system.?**

TIMETABLE FOR NON FLOWING WATER

According to water authorities throughout the UK, Europe and Scandinavia, typically fresh water that has not been flowing has a finite lifespan as follows

> 1 day	Water will lose its Oxygen O ² and start absorbing Carbon Dioxide CO ²
> 7 days	Water will become stale and taste acidic
> 14 days	Water is unfit for human consumption
> 28 days	Water will start to develop bacteria and could eventually present a health hazard

Water stored for a longer period than one month, may present a health hazard and there are many papers on the development of stale water diseases such as Legionnaires and E-Coli. Although possible through an additional biological contamination in trapped portable water systems, it must be emphasised that these cases are extremely rare.

However, although the presence of stale water and other biological impurities may not necessarily be harmful, the taste and scent will certainly be impaired. Its periodic removal would give the owner not only a greater peace of mind, but would also enhance their camping experience, knowing that their system is clean and fresh for drinking water and other beverages, washing fruit and vegetables, brushing teeth and showering etc.

COMMISSIONING

To answer the above questions scientifically, In December 2012, APT commissioned the School of Biomedical Sciences from the University of Ulster at Coleraine, Northern Ireland, to carry out a series of experimental studies. The results of these can be found in the accompanying - **Project Executive Summary**.

To compare investigation results, a control water sample was collected from a local fresh water tap.

- Under the microscope, the control was absent of any impurities and fit for experimental purposes.

Water samples were then collected from four random caravans and motorhomes.

- The vehicles ranged in age from 2005 to 2012.
- The vehicles were last used between a few days to two months.

First two vehicles – Traditional water flush test

Sample 1 – Many owners use large quantities of water in order to flush out the water system in order to clean it before use. However, many are disappointed that the water still tastes unpleasant. To test the effectiveness of flushing, two of the four vehicles were first flushed with control water and then a sample was taken of what should have been, fresh water from the vehicle's kitchen water tap.

All four vehicles

Sample 2 – Whether flushed with fresh water or not, the entire water systems were purged using Floë.

Sample 3 – Refill water system with fresh control water and retest a glass of water from a tap

Sample 4 – Purge the system again using floe and retest a glass of water a second time

INTERPRETATION OF RESULTS

The results of the study can be found in the accompanying - **Project Executive Summary**. However, from the results gathered after the initial flushing with fresh water in Sample 1, it can be concluded that although this method had a slight positive effect, Sample 1 still contained a considerable amount of stale water and other biological impurities. Also, this method was found to have no effect on removing Biofilm (a biological coating on the inside of the pipes).

This resulting diluted stale water and Biofilm would no doubt contribute to a bad taste and scent. Also, the water would help to explain while on holidays and trips, many owners feel that the water tastes of the plastic pipework system, when in fact, the water naturally turns stale and acidic when trapped for a period of time

It is quite significant however that, when the Floë system purging was applied, the Biofilm was removed and stale water, impurities and biological counts were significantly reduced by greater than 99.9%.

The explanation is that, Floë creates air turbulence inside the water system, which is effective in cleansing the interior walls of the pipes as well as removing the stale water and impurities.

RECOMMENDED DRAINDOWN PROCESS

At APT, we would recommend that, at the start of the summer season, any water trapped inside the water system, should be purged without treatment as it is stale and impure. Any sterilising treatment will kill any biological growth or impurities, but the water remaining will still be stagnant and without oxygen O². We would recommend Floë for this removal process.

After removing the stale water and just as an extra precaution, a sterilising agent should be flushed through the system, following the manufacturer's instructions. Afterwards, this water should be removed using Floë also, to remove any residual taste. The remaining water system will be left empty and sterilised, ready for fresh water.

Throughout the summer season, the water within the system should be removed every couple of weeks, or before or after most trips. This will ensure the system is empty and safe without the further use of a sterilising agent. Leaving taps open on an empty system will allow fresh air to circulate.

Filtering systems are a good method of removing the natural debris found in fresh water, but will not reintroduce Oxygen O² to stale water, therefore, this method should not be used as a substitute for the routine removal of the water in the system.

At the end of the summer season, the water system should be sterilised and drained using Floë to protect vital components, in preparation for winter. The water tank and water heater should be emptied and the drain valves left open. Also, all taps in the vehicle should be left in the open position.

FURTHER INFORMATION

Further information, videos and Reports can be attained from www.keepfloeing.com/fresh-water-floe