



Water Hygiene | Chlorination | Water Treatment | Legionella Control

WATER STORAGE TANK DISINFECTION

Cleaning and Chlorination Procedure

A clean and chlorination has recently been carried out on your water storage tank. This process involves physically cleaning the tank to remove all debris and contaminants and then introducing water containing a known amount of free available chlorine into the pipe and allowing it to stand for a known period of time in order to kill potentially harmful micro-organisms such as bacteria.

The normal chlorination procedure involves the introduction of at least 50 ppm of free chlorine and allowing it to stand for at least 1 hour. This is the method described in the British Standard, BS8558:2011.

The tank is inspected to ensure it meets all current standards and has no significant issues that may affect water quality after cleaning, photographs of the tank are taken for records. The tank is then drained to allow physical cleaning of the tank utilising specialist equipment to remove contamination from the walls and also the base of the tank. The tank is wet vacuumed clean to remove all traces of physical contamination. The lid and walls above the water line are then disinfected with chlorine spray. The tank is then re-photographed as proof of cleaning.

The tank is refilled and dosed with chlorine to achieve at least 50 ppm of free chlorine and allowed to stand for a minimum of 60 minutes. The chlorine within the tank is regularly tested throughout the standing time to ensure that the chlorine levels remain at or above the target strength for the whole period.

Where fast re-introduction of water is vital or where fill times are unacceptably long it is possible to spray disinfect the internal tank surfaces with 1000 ppm of chlorine spray fully wetted over all parts of the tank.

Once the chlorine has stood for the allotted time the chlorine is drained from the tank and the tank briefly flushed to remove trapped chlorine solution. Where it is necessary to neutralise any active chlorine to prevent environmental damage this is done through the addition of sodium thiosulphate crystals to the tank. These react with the chlorine and render it safe.

The tank is then normally refilled, brought back on line and handed back to the client.

What Now?

Your chlorination has now been carried out and you have your certificate of chlorination. This section details what to do next.

The client or main contractor will require the completed chlorination certificate below. If microbiological samples have been taken then once completed these will be provided under a separate cover and should be presented with this certificate of chlorination. If in doubt check with the main contractor as to the original specifications and what steps should be taken. This certificate should be placed into the O&M manual for future reference and inspection.

If there have been any remedial actions highlighted as part of the cleaning procedure it is important to ensure that these are carried out at the first available opportunity. A failure to carry out these actions can result in a significant decrease in water quality and potential pathogenic bacteria such as Legionella colonising the water system.

As part of the Legionella control regulations tanks should be regularly inspected and the tank should have temperatures recorded every 6 months (summer and winter). We would recommend that a brief water tank inspection is carried out at this point to ensure there are no major issues with the water quality.

If the water storage tank feeds outlets that may be used as drinking water then it is important to ensure that the tank is cleaned on an annual basis and WHS will attempt to contact you at this anniversary. This is also true of sites that house potentially high risk individuals, nursing homes, hotels etc. Where water storage tanks are used for the provision of non-drinking water in low risk establishments then an annual inspection is still required and this will highlight any cleaning requirement.

For more advice on the legislative requirements regarding drinking water supplies or Legionella please contact Water Hygiene Solutions.



Water Tank Disinfection Certificate (BS 8558:2011)

Site Location	Sample		
Site Name	Sample		
Site Contact	Sample	Date	28/05/2015

Owner's Tank Designation	Main cold water storage tank located by the car park		
Tank Type	Sectional		
Tank Material	GRP		
Duplex Tank	No	Number of Joined Tanks	1
Duplex Pipe Flushed	N/A		

Tank Measurements							
Width	2.0 m	Height	2.0 m	Length	3.0 m	Volume	~ 12,000 L

Tank Inspection		
Part	Condition	Comments
Tank Body		
Body	Tank body in good condition	
Lids/Hatches		
Lid	Lid tight fitting and in good condition	
Valves		
Inlet/Ball Valve	Ball/Inlet valve in good condition and holding water	Ball/Inlet valve in good condition and holding water.
Outlet	Outlet valve in good condition	The outlet valve is in good condition and holding water.
Insulation		
Outer Insulation	Tank panels insulated as part of structure	
Overflow, Vent & Warning Pipe		
Screened Overflow	Overflow present with appropriate screen	
Screened Vent	Screened vent present	
Screened Warning Pipe	Not applicable	

Physical Cleaning			
Tank Body Cleaned	Yes	Tank Lid Cleaned	Yes
Any Remaining Issues	None		

Post-Clean Disinfection		
Above Water Line Spray Disinfected		
Yes		
Biocide Used	Volume Used	
Sodium Hypochlorite	5 litres	
Initial Biocide Level	Contact Time	End Biocide Level
56.4 ppm	60 mins	53.2 ppm
Neutralisation Performed	Neutraliser Used	All Chlorine Neutralised
Yes	Sodium Thiosulphate	Yes

System Reinstatement			
Tools Removed	Refilled	Brought Online	Handed Back
Yes	Yes	Yes	Yes

Samples
TVC, E. Coli, Coliforms & Legionella

Comments/Recommendations

Chlorination of main CWST. The system was physically cleaned and all sediment and sludge was removed. All walls were scrubbed and brought back to the bare GRP material. The lid of the tank was then sprayed with 1000 ppm chlorine solution. The tank was refilled and chlorine dosed to ~50ppm and left to stand for 1 hour. The tank was then neutralised to remove chlorine, drained and refilled. The tank was then put back into service. Samples were taken from the tank for further analysis.



Internal Before Clean



Internal After Clean



Signatures

WHS Signature

A handwritten signature in cursive script that reads "Leen".

WHS Name

Sample

Cleaning And Disinfection Of Water Storage Tanks During Normal Operation

Cleaning And Disinfection

General

The following cleaning and disinfection procedure is designed only to remove particulate matter which has entered the system during normal operation. If the water storage tank is heavily corroded or requires remedial work to be carried out this must be brought to the attention of the site responsible person prior to beginning work. They can then make a decision as to the continuation or cessation of cleaning.

It is important to ensure that when cleaning water storage tanks that specific equipment is kept and used for this sole purpose in order that it can be kept in a clean state.

Cleaning Procedure

1. Sign into site and obtain necessary permits to work
2. Perform full risk assessment of the water storage tanks and surrounding areas on Tank Cleaning Risk Assessment Form.
3. Before any cleaning or disinfection procedure begins place warning boards in good view. Inform relevant site staff, particularly if the water supply is to be disrupted and ensure all staff fully understand the length of service loss and relevant consequences.
4. Before entering any tank ensure all confined space precautions are undertaken and clean wellingtons are worn.
5. Check for full and correct operation of the inlet and outlet valves, isolation and ball valves and then shut inlet and outlet valves.
6. Drain the tank, ensuring drain points are sufficient to handle volume and drain rate. Submersible pumps can be used at this stage.
7. If the tank is a duplex system then back flush balance pipe from the service tank by gently opening the outlet pipe to ensure no stagnant water remains.
8. Photograph internal surfaces of the tank and the ball valve prior to beginning cleaning.
9. Clean all internal surfaces with nylon brushes, nylon scourers and clean water only. Ensure all dirt and debris is removed from the sides of the tank and the bottom of the tank is vacuumed clean.
10. Re-photograph internal surfaces of the tank and the ball valve.
11. Ensure all cleaning apparatus is removed from the tank, close any drain valves and begin to refill the system with fresh water by opening the inlet valve.

Disinfection Procedure

12. Disinfection is carried out using Sodium Hypochlorite. A dosage rate of 500 mL of Sodium Hypochlorite per 1,000 L of tank volume will give approximately 50 ppm free chlorine reserve, but this must be checked properly by colorimeter measurement.
13. Check the initial pH level of the water to ensure that it is below 8.0.
14. Obtain the tank volume either from service records or on site estimation.
15. Calculate the actual dosage rate of Sodium Hypochlorite to give 50 mg/L (ppm) free chlorine reserve in the tank.
16. Having carried out the above calculation the following procedure must be adhered to:-
17. Dose the required amount of Hypochlorite to give free chlorine reserve of 50 mg/L as the tank is filling to ensure adequate mixing but ensure adequate water is present so as not to damage seals. Enter quantity onto the report in the relevant place.
18. Once the tank is full measure the free chlorine every 15 minutes making further additions of Hypochlorite as necessary to ensure that the free chlorine does not drop below 50 mg/L, if adding additional chlorine ensure adequate mixing is obtained within the tank.
19. After 1 hour measure the free chlorine reserve to ensure that it is at least 50 mg/L and enter the result onto the report.
20. If the tank is greater than 1000 L then de-chlorinate using Neutraliser and enter the amount used onto the report. Under no circumstances should anything re-enter the tank from this stage.
21. Close the incoming supply and fully drain the tank, submersible pumps should not be used at this stage unless essential as they have the potential to re-introduce bacteria and dirt into the tank. If submersible pumps must be used then it is vital that these are clean and have been soaked within the tank during the entire chlorination procedure. Care must then be taken when lifting them from the tank to avoid contaminants dropping into the tank.
22. If the tank is to be brought back on line then close the drain, open inlet and refill the tank. Only once the tank is at least 1/2 full open the outlet and bring the tank back on line. If the tank is a duplex then ensure the alternate tank outlet is fully closed prior to opening the cleaned tank outlet to prevent back contamination from the dirty tank. If the tank is not to be brought back on line then leave the outlet closed and leave the tank empty.
23. Take any water samples required by the client, label and present to the laboratory within 24 hours of sampling, refrigerating where possible.
24. Complete the report form, inform site staff and sign off any work permits. Remove all debris and tools from the site prior to signing out.

Note!! Ensure that the tank returns initial chlorine levels of at least 50 ppm free chlorine and that this remains higher than 35 ppm of chlorine after 1 hour. Failure to do so means failure to comply with BS8558:2011.

HEALTH & SAFETY

CLEANING



CHEMICAL HANDLING



SITE SPECIFIC AS REQUIRED



ABOUT WATER HYGIENE SOLUTIONS LTD

Water Hygiene Solutions Ltd is one of the UK's leading companies in the provision of water hygiene services, cleaning and chlorination work, water treatment chemicals and equipment.

We have an excellent reputation both for the quality of work we undertake and the expertise and experience of our staff. We provide our services to many blue chip companies and public sector sites and our can do attitude ensures that our clients obtain the work they require when they require it, particularly important when deadlines are looming.

With a commitment to staff development and with significant health and safety budget you can be assured of a quality service every time. All our staff have confined space training and EUSR Water Hygiene Cards to ensure both safety and water quality.

OUR SERVICES INCLUDE



Water Tank Cleaning - Regardless of the type of water system it is important that water hygiene is maintained. Water storage tanks especially require regular cleaning to remove debris and bacteria build up and maintain hygiene. Even new water tanks should be chlorinated prior to use to maintain potable water quality. Our specialist teams and equipment can provide cleaning and chlorination of all types and sizes of domestic and industrial water tanks including underground rain water harvesting tanks.



Legionella Management - It is vital to ensure that systems do not pose a risk of Legionnaires Disease and operate within the HSE guidelines. By carrying out bespoke water hygiene risk assessments we are able to determine the risks and provide advice on how to reduce these. It also allows us to design a Legionella control program based on current legislation. Our trained hygiene engineers can provide testing and monitoring of your site to ensure Legionella risk is managed at all times. A site specific log book for records ensures legislative compliance.



Chlorine Dioxide Water Treatment – Chlorine dioxide is an ideal water treatment option to reduce bacteria numbers and maintain water hygiene. It has applications both in potable water supplies for the control of Legionella and general water hygiene and also in process systems such as food manufacturing where bacterial control is important. We can provide equipment to allow the safe generation and dosage of chlorine dioxide in all applications. Chemical supply and routine monitoring/maintenance complete the package..



Boiler Water Treatment - Correct steam boiler management is essential as the lack of, or failure, of a water treatment regime will rapidly lead to increased fuel costs and maintenance bills and will, over time, damage steam plant. Through a full analysis of your water conditions and steam process systems we offer a tailored boiler water treatment program to include pre-treatment plant and chemical water conditioning. Routine analysis by our experienced water treatment engineers ensures continued efficiencies.



Cooling Tower Management - The correct management of cooling towers and evaporative condensers is essential to ensure long life, efficiency and to prevent health hazards from Legionella growth. Our water treatment engineers use in depth water analysis to develop bespoke chemical treatment programs. Service contracts provide routine analysis, monitoring and cleaning to ensure that your cooling tower remains efficient and safe and you remain compliant with HSE guidance.



Head office:

Water Hygiene Solutions Ltd
Unit 1 Low Mill Lane Ind Est
Ravensthorpe
West Yorkshire, WF13 3LN
T: 0845 387 3037
F: 0845 387 3047

E: info@whs-ltd.com

London office:

Water Hygiene Solutions Ltd
International House
24 Holbourn Viaduct
London, EC1A 2BN
T: 0203 390 3037
F: 0845 387 3047

www.whs-ltd.com

Warehouse:

Water Hygiene Solutions Ltd
Unit 1A Low Mill Lane Ind Est
Ravensthorpe
West Yorkshire, WF13 3LN
T: 0845 387 3037
F: 0845 387 3047