

BEAMA WATER TREATMENT BS 7593:2019 GUIDANCE



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ABOUT BEAMA

BEAMA represents manufacturers of electrical infrastructure products and systems from transmission through distribution to the environmental systems and services in the built environment, with 200 members ranging from SMEs to large multinationals.

We work with our members to ensure their interests are well represented in the relevant political, regulatory and standardisation issues at UK, EU & international levels.

BEAMA member products provide a sustainable, safe, efficient and secure UK electrical system. We support our members in ensuring that the UK has a strong electrotechnical industry which is recognised as an essential part of modern society and brings invaluable economic, social and environmental benefits.

The Heating and Ventilation sector within BEAMA represents manufacturers and suppliers of equipment for environmental systems within buildings; that deliver comfort, efficiency and safety for occupants. The groups that currently make up this sector are Domestic Heat Pumps, Electric Heating & Hot Water, Heating Controls, Underfloor Heating, Ventilation, Water Safety & Hygiene, Water Softeners, and Water Treatment.

This paper was produced in coordination with the BEAMA Water Treatment Group which has membership from the following organisations:



CALEFFI group



Calming troubled waters



MAKES WATER WORK



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Introduction

BS 7593 is the Code of Practice which establishes best practice procedures for the preparation, commissioning and maintenance and the ongoing water treatment of domestic central heating and cooling water systems. This standard has been recently revised and has been published in May 2019.

BS 7593 (2006) was used to derive the requirements and recommendations with regards to system preparation and water treatment for all wet central heating systems in the Domestic Building Services Compliance Guide.

Our industry is fully supportive of the revised BS 7593 and its recommended practices.

The Importance of Water Treatment

A correct water treatment and system protection regime is designed to maintain the maximum efficiency of the system. A consumer purchasing an A-rated boiler or system would in effect not experience this high rating if heat transfer is restricted by corrosion and installation debris in the system.

Heating systems should be treated with an approved chemical inhibitor to limit system corrosion, debris from which collects as sludge, and limescale, both of which restrict heat transfer (and therefore energy efficiency) and threaten system components. A heating system with a new boiler should also be 'thoroughly cleaned and flushed'.

In a new system this clean and flush is crucial for removing installation debris from the system that would otherwise obstruct heat transfer and threaten system components. In an existing system that is having a new boiler fitted, this clean and flush is crucial for removing corrosion debris that would similarly continue to restrict heat transfer in the system and also jeopardize the new boiler.

Summary of BS 7593 Requirements

BS 7593 establishes best practice procedures for the protection of heating and cooling systems against corrosion, sludge, scale formation and microbiological contamination.

It details the key considerations that need to be followed to carry out an adequate system clean and details the three principal cleaning and flushing methodologies: power flushing, mains pressure clean and flush and gravity clean and flush.

Following the system clean, BS 7593 specifies the necessary steps to ensure ongoing system protection against corrosion, sludge, scale and microbiological formation. This requires the

fitting of an in-line filter and the addition of an NSF CIAS-approved scale inhibitor, as well as chemical antifreeze and biocidal products, if appropriate.

Lastly, BS 7593 specifies the ongoing maintenance of the water treatment regime that is required to ensure system protection throughout the life of the system. Periodic checks should be carried out and inhibitor levels topped up, subsequently.

Summary of BS 7593 Changes

- The scope of the latest BS 7593 has been expanded to cover both heating and cooling systems. In addition to 'traditional' individual heating systems, it also applies to the individual circuits in dwellings that are part of community systems (usually connected through a heat interface unit).
- The addition of a corrosion and scale inhibitor is a requirement. The chosen inhibitor should be suitable for the appliance, system components and water quality and be applied in accordance with the manufacturer's instructions.
- An in-line filter should be permanently installed in the system water circuit to maintain system cleanliness following a system clean procedure, in order to protect system components and conserve system efficiency and effectiveness.
- In addition, in cases where systems are not used over the winter months and which might be exposed to very low temperatures, a suitable inhibited antifreeze product should be considered.
- The addition of suitable biocidal products should be considered for all systems, and particularly for those which are designed to operate at low temperatures (i.e. below 60C), to inhibit the formation of microbiological growth and fouling.
- A new requirement has been added which regards the ongoing maintenance of the water treatment regime. It is established that the concentration of additives in system water should be checked after commissioning and annually thereafter throughout the life of the system to ensure energy efficiency and the benefits of ongoing protection are maintained. This check should also include an assessment of water cleanliness and servicing of the in-line filter.
- Water treatment manufacturers offer laboratory testing services and on-site test kits for this purpose. If necessary, more treatment additives need to be added.
- This requirement is in line with the stated aim of the current DBSCG provisions to 'control corrosion and the formation of scale and sludge'. By ensuring the correct level of inhibitor is present throughout the life of a system, this objective can be achieved.
- In addition, to mitigate against potential chemical degradation, corrosion and scale inhibitor should be

redosed at 5-year intervals since last treatment. Alternatively, a full laboratory analysis of the system water should be undertaken to verify ongoing corrosion and scale inhibition. Unless the manufacturer's instructions state otherwise, products from different manufacturers should not be mixed.

Conclusions

Water treatment fulfills a number of roles within domestic central heating systems, including:

- To minimize the corrosion of metals within the system
- To inhibit the formation of scale and sludge
- To inhibit the growth of microbiological organisms
- To maintain or restore the energy efficiency of the system through a combination of the effects described above.

By following the updated industry-approved practices established in BS 7593:2019, installers and specifiers will

ensure that their heating systems benefit from modern cleaning and flushing methods and subsequent measures to ensure ongoing-system protection, receiving the benefits outlined above and ensuring the durability of the heating appliance and system.

BEAMA and the water treatment industry fully support the implementation of BS 7593:2019. The updated standard can be accessed in the following link: <https://shop.bsigroup.com/ProductDetail?pid=000000000030370406>

BEAMA Water Treatment members can be found on the BEAMA website: <http://www.beama.org.uk/portfolios/h-and-v-portfolio/water-treatment.html>

Please contact us at info@beama.org.uk if you have any questions or queries.

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