
SUBJECT: Cleaning Weil-McLain “Water” Boilers

This Technical Bulletin is a reprint of SB-0103 “Cleaning Water Boilers” that applies only to cast iron boilers. Additionally we have added a section regarding cleaning of cast aluminum boilers. There are major differences in the chemicals used for cleaning cast iron versus cleaning cast aluminum heat exchangers. Refer to the appropriate section below applicable to the heat exchanger being cleaned.

To Clean a Cast Aluminum Water Boiler:

In order for the efficiency of boilers to increase beyond the condensing limit, new materials have been introduced for the heat exchanger including Aluminum. Aluminum has excellent heat transfer characteristics and is light in weight.

These new materials also require cleaning solutions that differ from those used in conventional cast iron and steel boilers. One common cleaning method that cannot be used with systems containing aluminum is a solution of Tri Sodium Phosphate (Na_3PO_4) commonly referred to as “TSP”. The reason that Tri Sodium Phosphate cannot be used is that the cleaning solution has a very high pH level, that while removing the scale in the system also removes the natural protective oxide layer from the aluminum. The oxide layer will reform, but if small amounts of the Sodium Phosphate remain in the system, it will continue to remove this protective layer and lead to a reduced heat exchanger life.

There are cleaning solutions that have been developed to clean and treat mixed metal systems, which have been successfully for many years. It is important that the cleaning, treatment, and freeze protection products used on Ultra aluminum boilers are identified as being aluminum safe and for use in hydronic heating systems. Listed below are companies that offer such products:

Hydronic Agencies, Ltd.
15363 117 Ave.
Edmonton, AB T5M 3X4, Canada
Phone: 780-452-8661
Fax: 780-488-2304
Web: www.hydronicagencies.com

Rhomar Water Management, Inc.
2103 E. Rockhurst St, Suite 100
Springfield, MO 65802
Phone: 417-862-2600
Fax: 417-862-2610
Web: www.rhomarwater.com

To Clean a Cast Iron Water Boiler:

- Use one (1) pound of trisodium phosphate for every fifty (50) gallons of water content in the boiler.
 - ◆ Alternative #1: Use one (1) pound of sodium carbonate for every thirty (30) gallons of water content in the boiler.
 - ◆ Alternative #2: Use one (1) pound of sodium hydroxide (lye) for every fifty (50) gallons of water content in the boiler.
- Fill, vent, and circulate the system with the above mixture, allowing it to reach the design or operating temperature, if possible.
- Circulate the mixture in the boiler for two (2) to three (3) hours.
- Drain the system completely and refill with fresh makeup water.
- Check the pH level of the boiler water after cleaning. It should be between 7.0 and 8.5. A small amount of cleaner may be added to adjust the pH up to the proper range of 7.0 to 8.5

DO NOT USE PETROLEUM-BASED PRODUCTS IN THE BOILER WATER

For cleaning "steam" boilers, see Technical Services Bulletin No. SB-0102 dated March 29, 2001