WEIL-McLAIN
A United Dominion Company

Technical Services Bulletin

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Subject: *Using Muriatic Acid to Clean Mineral Deposits from Inside Boiler*

DANGER Indicates the presence of hazards that will cause severe personal injury, death or substantial property damage. Inhibited muriatic acid (an impure hydrochloric acid with zinc suspended) is a very strong acid. Proper protective clothing, respiration equipment, and handling must be utilized and observed during the use of muriatic acid. Adequately vent the work area to avoid accumulation of harmful gases.

NOTICE It is strongly suggested that a company or individual experienced in chemical handling be contracted to perform the actual de-liming of the boiler system. They have proper equipment and training to properly handle and dispose of the acid solution.

Internal cleaning of boiler heat transfer surfaces is sometimes necessary to remove mineral deposits (lime) that may accumulate during operation of the equipment. The procedure is required on a regular schedule with process equipment where there is a high percentage of fresh water added to the system.

A 6% solution, diluted with tap water, of inhibited muriatic acid based upon boiler water content is used. Inhibited muriatic acid is less harsh than regular muriatic acid. There are two methods typically used for the cleaning procedure.

Soak [Preferred Method]: The boiler must be isolated during the de-liming process to assure no acid comes in contact with the pump, vent, relief valve, or any other controls. The boiler is filled with a proper strength acid solution and allowed to remain (soak) until chemical activity stops. This method is most commonly used with smaller units. It requires a minimum of equipment and is the simplest; however, it is usually not as thorough as the circulation method.

With the soak method, when the boiling stops, it can be due to:

1. The completion of a thorough cleaning.
2. The dissipation of the strength of the acid. In this case, the old acid solution should be drained and a new solution added.

Circulation: The boiler must be isolated during the process to assure no acid comes in contact with the boiler pump, vent, relief valve, or any other controls. The boiler is filled with a proper strength acid solution and circulated by use of a separate pump designed to handle acids. The movement of the solution also aids in the mineral deposit removal.

Muriatic acid is not to be dumped into any drain. The used acid and mineral deposit mixture must be drained into a suitable container and properly disposed of according to EPA rules.

Care should be taken not to leave the acid in the boiler long enough to eat through any parts of the boiler. When the cleaning process is completed, the unit should be thoroughly flushed with clean water. If the boiler pH level is low (below 7.0), a small amount of acid neutralizer (baking soda) may be added to the boiler to reduce the acidic level of the water. A pH of between 7 to 8.5 is recommended for proper boiler operation.

DO NOT use any petroleum based products in the boiler.

The information contained in this document does not supersede the information contained in the installation and operation manuals.