A Method for Checking the Holding Time in Short Time High Temperature Pasteurizers

D. M. Roger

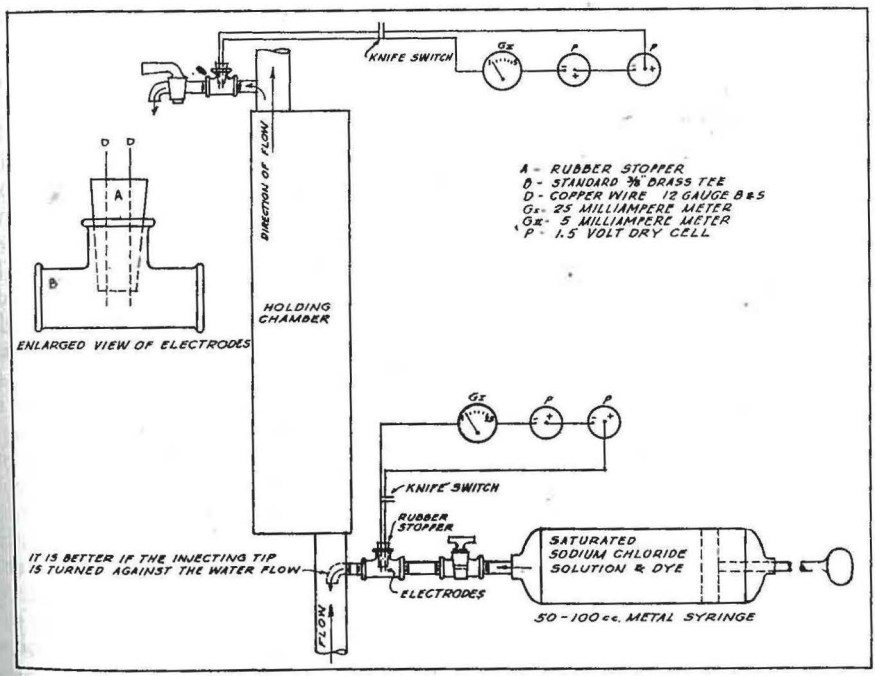
Laboratory Dept., The Borden Farm Products Co., Brooklyn, N. Y.

The usual method of checking the holding time of a short time-high temperature pasteurizer is to pasteurize water, inject dye at the entrance of the holding chamber, and measure the elapse of time before the dye can be detected at the outlet of the holding chamber. Anyone who has worked with this method is fully aware of the attending complications.

The following procedure seems to have some advantages over the dye method.

A saturated sodium chloride solution is injected into the stream of water entering the holding chamber. At this point the salt solution passes a pair of electrodes connected to a circuit joining dry cells and a microammeter. Another pair of electrodes connected to a similar circuit is placed at the outlet of the holding chamber. The salt solution passing these electrodes will increase the conductivity, and allow more current to pass through the circuit, causing a sharp deflection of the ammeter. The arrangement of the apparatus is illustrated in Figure 1.

The operation is simple: One person injects the salt solution. Another operator starts the stop watch when the



Drawing by courtesy of Mr. N. A. Walby

FIGURE 1

Equipment assembly for determining holding time for high-short pasteurizers.

Downloaded from http://meridian.allenpress.com/jfp/article-pdf/2/4/191/2392795/0022-2747-2_4_191.pdf by guest on 03 December 2021

galvanometer at the entrance shows a deflection, and stops it when the galvanometer at the outlet shows a deflection. When dye was added to the salt solution it was found that this method would predict the exact moment when the first dye might be detected at the outlet. It is much easier to watch for and time the deflection of a galvanometer than it is to catch and time the first appearance of dye.

It does not require much ability as an electrician to prepare this equipment. It was found that the polarization of the electrodes did not interfere, but care was taken not to close the switch until just before the test.

A 25 milliampere meter subdivided into milliamperes was used at the inlet of the holding chamber; at the outlet of the holding chamber, a 5 milliampere meter subdivided into 0.1 milliampere.

These milliammeters need not be accurate but they should be sensitive. Meters of this type can usually be purchased cheaply at any store dealing in used radio parts.

An electrode is made by passing two 12 gauge B & S copper wires through a rubber stopper, and fastening the stopper in a ⅜" brass T. By adjusting the area of the electrode to be exposed to the salt solution, a suitable deflection on the milliammeter can be obtained.

Cross-Connections in Plumbing Systems

Information on which to base effective health regulations pertaining to the installation of plumbing is supplied in this publication. It deals principally with the technical aspects of the problem of preventing the backflow of water from plumbing fixtures into water supply systems.

It starts with a general review of the subject, including a brief history of previous work on the subject, a classification of cross-connections, and a brief discussion of vacua and siphon action. This is followed by a mathematical and experimental analysis of the conditions tending to produce backflow into a supply line. This analysis makes it possible to determine the worst conditions, as regards backflow, that can occur in any building supply system, and to determine minimum requirements for the positive prevention of backflow under these conditions. Specifically, the minimum pressure that can occur in any system, the maximum rate at which water can be removed from the supply risers under this minimum pressure, the smallest air gap between a faucet and plumbing fixture that can be safely allowed under the worst conditions, and the essential performance characteristics of a siphon-breaker are determined. The effectiveness of various types of siphon-breakers in preventing backflow is discussed, and the operation of one type of flush valve is explained in order to show the essentials of a table flush valve, that is, one which will not open under any possible reduction in supply pressure. Finally, there is given a brief review of the entire subject of preventing backflow from plumbing fixtures, in which two distinct methods of attack are pointed out, and the merits of each are discussed. The conclusions relate only to the technical aspects of the subject and do not take the form of proposed health or plumbing regulations.

It is well illustrated with sketches of supply systems, cross connections, general layout, siphon-breakers, flush valves, and testing apparatus, and contains a bibliography of 29 references—Roy B. Hunter, Gene E. Golden, and Herbert N. Eaton, Journal of Research of the National Bureau of Standards, Vol. 20, April, pp. 479-542, 1938. This report can be purchased as Research Paper RP 1086, Superintendent of Documents, Washington, D. C., price 15c.

J. H. SHRADER.

Downloaded from http://meridian.allenpress.com/jfp/article-pdf/2/4/191/2392795/0022-2747-2_4_191.pdf by guest on 03 December 2021