

The Importance of Care in the

Pasteurization of Pickle Products*

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PASTEURIZATION is rapidly assuming a place of major importance in the manufacture of pickle products. The fresh-dill pickles, which are at present receiving much public favor, are strictly a pasteurized product. The same is true of the sliced, fresh-cucumber pickle (also known as old-fashion pickle or bread-and-butter pickle) which has been on the market for several years.

Another pasteurized product is a sweet pickle made from salt stock but differing from the usual sweet pickle in that it contains less sugar and vinegar. Also many non-cucumber products are in the pasteurized group. Furthermore, it has been shown² that a marked improvement in keeping quality of genuine dill pickles can be assured by pasteurization following the curing period.

Assures Shelf Life

The pasteurization of pickle products is not new, but its application in the industry has not been fully utilized by packers as a group. It offers an opportunity for processing in an exact but relatively simple manner. This treatment will result in a product which possesses an assured shelf life. In spite of the reliability of carefully-conducted pasteurization, many packers have reported unsatisfactory results. In this brief article, attention will be directed to the cause of numerous failures in commercial pickle plants. It seems desirable to first give consideration to the nature of pasteurization.

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It is generally recognized that pasteurization must be so conducted that the organisms responsible for spoilage are killed without imparting a cooked flavor to the pickles or reducing their crispness appreciably.

It was recently pointed out¹ that the organisms responsible for spoilage are principally yeasts and acid-forming bacteria. In the same article a recommended procedure for the pasteurization of all pickle products was given. Briefly, according to this procedure, pickles in cans or jars are heated in water until the temperature at the center of the container attains 165° F.

The product should be heated up to the temperature of pasteurization as rapidly as possible. The product in the container is maintained at this temperature for 15 minutes, after which it is rapidly cooled to a temperature of 100° F. or less. This avoids the development of a cooked flavor and loss of texture which will occur if the pickle remains at an elevated temperature for a long period of time. This rapid cooling is accomplished by the use of cool water.

Records Important

A major portion of the losses due to improper pasteurization by pickle packers can be overcome simply by keeping records of the pasteurization process. All too frequently the packer doesn't know what has gone on in his pasteurizer. As mentioned previously, satisfactory pasteurization is accomplished by bringing the product to 165° F. in center of container and holding it at this temperature for 15 minutes. If for any reason this maximum temperature is not attained or if the time for which the product is held at 165° F. is less than 15 minutes, then the packer should expect spoilage of the stored product. Such spoilage may show up within the first few days or may develop slowly and become apparent several weeks later when the merchandise is on the store shelf.

Pasteurizers may be roughly classified as continuous or batch pasteurizers. If pasteurization is accomplished by the batch method, the packer can and should place test containers at scattered points throughout the pasteurizer (at least at top and bottom) in order that the container temperature can be noted and the course of the heating followed. Such test containers are simply jars or cans taken from the batch to be processed and fitted with thermometers and means for removing the test containers easily. The thermometer is inserted into the container through a hole punched in the metal cap or can top and is held in place (with bulb near center) by a cork of proper size which has been bored to carry the thermometer. A stout cord attached to the test can or jar serves as a means for removing it from the hot water.

Check-up Avoids Loss

The course of the pasteurization process is followed by removing the test containers at frequent intervals and reading the thermometers. As the result of making and recording these readings on each batch run through the pasteurizer, the packer knows definitely what has taken place during the pasteurization process. Once the packer has established the schedule to be followed, he may feel that temperature tests need not be followed further. However, the losses incurred through the spoilage of an occasional batch will greatly exceed the cost of a regular and constant check of the process he is using.

With continuous pasteurizers, frequent observations of jar temperatures during the heating are more difficult than with the batch pasteurizer. However, arrangements can be made for obtaining such records with test runs.

The packer should realize that a change in container size or of the method of packing the product into the container may decidedly alter the

processing schedule. Another source of error in the pasteurization process is failure to allow adequate head-space in containers fitted with vacuum closure, which causes the caps to blow off during the heating period. This difficulty increases if the water is permitted to rise greatly above 165° (say, to 180°). The packer should consult the company supplying the vacuum closure for information regarding the head-space required and the maximum temperature to which the jar can be sub-

jected without causing closure failure.

The importance of promptly cooling the product at the conclusion of the pasteurization period cannot be overstressed if products of highest quality are desired. As mentioned previously, the temperature of the product should be rapidly lowered to at least 100° F. This will prevent undesirable flavor and texture changes that would occur in uncooled lots of pickles.

More complete discussion of the pasteurization of pickle products may

be found in the references cited below. Reprints of these reports are available for distribution.

References Cited

¹*Etchells, J. L., and Jones, I. D. Pasteurization of Pickle Products. Fruit Products Journal, 21:330-332. 1942.*

²*Jones, I. D., Etchells, J. L., Veldhuis, M. K., and Veerhoff, Otto. Pasteurization of Genuine Dill Pickles. Fruit Products Journal, 20:304-305, 316, 325. 1941.*

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