

Inspection Aid No. 73
July 2016

Methods for Determination of Pickle Ingredient by Volume

Recommendations for minimum pickle ingredient – ascertained as to volume—for all styles of Cured and Fresh-pack pickles (except relish) are specified in the current United States Standards for Grades of Pickles.

There are three suitable methods that may be used:

Method 1 – Direct displacement (Overflow-Can).

This method is described and illustrated in the standards.

Method 2 – Displacement in graduated cylinder.

Method 3 – Measurement of pickle liquid.

Methods 2 and 3 are alternative procedures expected to give results comparable to Method 1 and may be more adaptable under certain circumstances.

USDA Inspection Aid No. 72 “Table of Fluid Measures” forms a part of these methods.

Preliminaries to Volume Evaluation

Bring pickles and accompanying liquids to room temperature prior to volume evaluations.

In styles other than Chow-Chow, remove and save sufficient liquid for necessary tests.

In Chow-Chow styles, wash off all adhering sauce in accordance with the technique in the standards.

**Method 1
Direct Displacement
(Overflow Can Method)**

This method is described in detail in the standards with a pictorial drawing of the overflow can and basket included.

1. Place overflow can on level table so that overflow will discharge into sink.
2. Fill overflow can with water at approximately 68° F. (20° C.)
3. Place empty basket into filled overflow can.
4. When overflow ceases, place beaker or graduated cylinder under spout.
5. Remove basket and place drained pickle ingredient (at room temperature) in basket.
6. Lower basket and pickle ingredient slowly into overflow can.
7. When overflow ceases, record fluid overflow.
8. The percent volume of pickle ingredient (volume occupied) is calculated (or obtained from the "Table of Fluid Measure") for the declared container size:

$$\frac{\text{Overflow}}{\text{Declared fluid content of container}} \times 100 = \text{percent volume of pickle ingredient}$$

9. For compliance with the recommended "% volume fill" refer to the standards and the "Table of Fluid Measures".
10. Change water periodically in overflow can. A protruded screen over tube opening on inside of overflow can prevents solid material from stopping flow.
11. Most pickles drain readily; if not, pour out and drain on a United States Standard No. 8 sieve inclined to facilitate drainage and allow to drain for 2 minutes.
12. Prepare chow-chow pickles as follows:
 - a. Empty the contents of the container upon a United States Standard No. 8 sieve. Use 8 inch diameter sieve for one quart and smaller size containers. Use 12 inch diameter sieve for containers larger than one quart size.
 - b. Wash off all adhering sauce under a spray of water at approximately 68° F (20° C.).
 - c. Incline the sieve to facilitate drainage and allow to drain for two minutes.
 - d. Then proceed as in 1) through 10) of this method.

Method 2 - Displacement in Graduated Cylinder

1. Use water to partially fill graduated cylinder (or other technical measuring device) so that the pickle ingredient will be completely submerged.
2. Prior to adding the pickle ingredient, record the starting liquid level.
3. Submerge the drained pickle ingredient.
4. Record the level of liquid after submersion of pickle ingredient.
5. Subtract the value in 2) from 4) to obtain the pickle ingredient displacement.
6. For compliance with the recommended “% volume fill,” refer to the standards and the “Table of Fluid Measures.”

Method 3 - Measurement of Pickle Liquid (from containers)

1. Establish a “fill mark” as to the declared fluid content of the containers on an empty container. This container would be of the exact shape and size of the other filled pickle containers to be evaluated.
2. Use the marked container as a guide and mark each filled container of pickles at the “fill mark.”
3. Adjust the level of contents of each container to the “fill mark” by adding or removing liquid. Submerge the pickle ingredient when above the “fill mark”.
4. Pour the liquid (adjusted to the “fill mark”) from each container into a graduated cylinder and measure. Most pickles drain readily; if not, pour out and drain on a United States Standard No. 8 sieve. Incline the sieve to facilitate drainage and allow to drain for two minutes. Measure the liquid.
5. Record the volume of liquid from each container.
6. Subtract the volume from the declared content. The difference is the volume occupied by the pickle ingredient.

Example: Whole Fresh-Pack Pickles (declared as) 1 quart liquid.

Total content --- adjusted to 32 ounces (945.3 ml.)

Volume of liquid drained off – 10.2 ounce (301.6 ml.)

Volume of pickle ingredient 21.8 ounces (644.7 ml.)

% volume pickle ingredient O.K. - over 57% or meets 57:43 ratio.

7. For compliance with the recommended “% volume fill” refer to the standards and the “Table of Fluid Measures.”