# Job Aid #1: Pasteurization

Pasteurization is the process that IPP monitor, following 9 CFR §590.570, to ensure that a safe and wholesome product is produced. IPP have to be familiar with all the equipment associated with the pasteurization process.

The following steps are a guide:

1. All equipment must be cleaned and inspected prior to the start of pasteurization. This includes:

    a. Pumps
    b. Pipes
    c. All pasteurizer plates, cooling, regeneration and heating
    d. Pots
    e. Thermometers

2. IPP can record the readings of the recorder controller thermometer, the indicating thermometer and flow diversion set point temperature in PHIS while performing the appropriate task – Inspection Result page under the Findings tab.

3. Determine the flow rate and holding time. IPP need to know the capacity of the holding tube and product that is to be pasteurized.

    a. To calculate **flow rate**:

        - Collect a given amount of liquid, usually at the balance tank, at the end of the pasteurization cycle.
        - Measure the time in seconds with a stopwatch - convert to 1 minute

          Time conversion from seconds to minutes = Divide 60 seconds per minute by the time it takes to collect a given amount of liquid (in seconds) = time (per min)

        - Determined the net weight of the liquid collected.
        - Convert the net weight to pounds.
        - Divide the capacity of the holding tube by the pounds collected. This will give the minutes that the product is held in the holding tubes.

          **Flow Rate** = weight of liquid (lbs) X time (per minute)

    b. To determine the **holding time** for the type of product to be pasteurized:

        - Calculate the flow rate of the product as described above

- Divide the capacity of the holding tube (pounds) by the flow rate (pounds/minute). This will give you how many minutes the product is being held into the holding tubes.

  **Holding Time (min)** = holding tube capacity (lbs) ÷ flow rate (lbs/ min)

c. Example:

Pasteurizer # 1- Product Plain Whole Egg

- The capacity of the holding tubes has been calculated at 2790 lbs. for this product.
- Using a stopwatch, time liquid collected to obtain the net weight for 1 minute.
- Weight of the liquid for 1 minute is 640 lbs.; therefore, the **flow rate** is 640 lbs/min.
- To calculate the **holding time:** 2790 lbs divided by 640 lbs/min equals to 4.36 minutes
- Determine if this meets the regulatory requirements of CFR 590.570.
- Can record the information in PHIS while performing the appropriate task – Inspection Result page under the Finding tabs, as follows:

| | |
|---|---|
| Recorder-Controller | 146 F |
| Indicating Thermometer | 146 F |
| Flow-Diversion Setting | 142 F |
| Flow Rate per Minute | 640 Lbs |
| Holding Time (minutes) | 4.36(minutes) |

4. Verify that the recorder controller chart contain the correct information and is working properly. It is important to check more than once (multiple times).

   a. Record temperatures of:

      i. Indicating thermometer
      ii. Recorder Controller thermometer
      iii. Flow-Diversion Valve setting thermometer

Developed by: Deb Mackling
Revised by: M Rivera-Betancourt
Date of last revision: October 14, 2015