6

Treatment Manual

Certifying Facilities

Certification of Cold Treatment

Contents

Introduction

Since the early 1900s, sustained cold temperature has been employed as an effective post-harvest method for the control of the Mediterranean and certain other tropical fruit flies. Exposing infested fruit to temperatures of 2.2 °C (36 °F) or below for specific periods of time results in the mortality of the various life stages of this group of notoriously injurious insects. Procedures were developed to effectively apply cold treatment (CT) to fruit while in transport in refrigerated holds of ships, in refrigerated containers, and in warehouses located in the country of origin or in the United States.

Self-refrigerated (Integral) containers, conventional vessels, and warehouses utilized for regulatory cold treatment are subject to approval by the USDA. Approval is needed only when treating fruit under USDA regulations and does not constitute an endorsement for the carrying or storage of refrigerated cargo.

Only officials authorized by APHIS have permission to conduct warehouse, vessel or container certification under the general guidance of TQAU. Refer to the following web site for a complete list of USDA-certified vessels and containers for intransit cold treatment:

https://treatments.cphst.org/vessels/

Standards for Temperature Recording Systems

Temperature recording systems may consist of various electronic components such as temperature sensors, computers, printers, and cables and are required for temperature recording installations in cold treatment vessels, refrigerated containers, or warehouses. Submit plans and specifications of the temperature recording system to TQAU for review and approval before installation.

Temperature Recording System

- **Accuracy**—The accuracy of the system must be within plus or minus 0.3 °C (0.5 °F) of the true temperature in the range of minus 3 °C (27 °F) to plus 3 °C (37 °F.)
  - Ensure the instrument is capable of repeatability in the range of minus 3 °C to plus 3 °C (27 °F to 37 °F.)
- **Automatic Operation**—The system must be capable of automatic operation whenever the treatment system is activated.
- **Long-Term Recording**—The system must be capable of continuous recording of date, time, sensor number, and temperature during all calibrations and for the duration of a voyage and/or treatment period.
- **Password Protection**—All approved temperature recording devices must be password protected and tamperproof.
- **Recording Frequency**—The time interval between prints will be no less than **once every hour**. For each sensor, the temperature value, location/identification, time and date must print **once per hour.**
- **Repeatability**—When used under treatment conditions over an extended period of time, the system must be capable of repeatability in the range of minus 3 °C to plus 3 °C (27 °F to 37 °F.) The design, construction and materials must be such that the typical environmental conditions (including vibration) will not affect performance.
- **Range**—The recorder must be programmed to cover the entire range between minus 3 °C to plus 3 °C (27 °F to 37 °F), with a resolution of 0.1 (°C or °F.)

- **Visual Display**—The system must have a visual display so the temperature can be reviewed manually during the treatment and calibrations.

Temperature Sensors

- **Construction Standards**—Sensors should have an outer sheath diameter of 0.25 inches (6.4 millimeters) or less. The sensing unit must be in the first inch of the sensor.
- **Identification**—Identify all sensors to distinguish the sensors in one compartment from those in other compartments.
  - Place an identifying number on the box where the sensor originates and on a permanent tag where the cable joins the sensor.
  - Identify the sensors for each compartment so the air sensors are numbered first (e.g., A1, A2—air; A3, A4,..., etc.,—fruit pulp.)
- **Location**—Post a diagram next to the recording instrument that shows the location and identification of each sensor by compartment.
  - Air sensors—Place sensors on the center line of the vessel, fore and aft, approximately 30 centimeters from the ceiling and connected to cables at least 3 meters in length
  - Fruit sensors—Distribute fruit sensors throughout the compartment so all areas of the compartment can be reached (5- to 15-meter cable lengths are usually sufficient.) The number and location is dependent upon cubic capacity of the compartment. Refer to **Figure 6-1-1 on page-6-4-6** for guidance for vessels and **Figure 6-1-6 on page-6-4-15** for guidance for warehouses. Three temperature sensors are required for refrigerated containers. These are labeled USDA1, USDA2, and USDA3.

Contact **TQAU** for a complete list of approved temperature recording systems.

Certification of Vessels Used for Intransit Cold Treatment

Vessels used in cold treatment must be certified by a qualified APHIS-PPQ employee or a designated representative before treating fruit under USDA regulations. Refrigeration (reefer) vessels presented for approval must be classified under the rules of the American Bureau of Shipping or a comparable internationally recognized ship classification society.

Submit plans, drawings and specifications to TQAU prior to the first vessel certification. Conduct certification tests prior to the vessel receiving final approval to conduct a cold treatment. Certification will be performed every **three** years or sooner if APHIS determines that a malfunction or alteration of the system warrants a recertification.

Plan and Specification Approval

Prior to the start of vessel construction, an application for vessel approval, detailed drawings of the vessel's physical characteristics and a written description of the all the equipment related to treatment must be reviewed and approved by TQAU (all plans and supporting materials must be submitted in Standard English.)

Plans and specifications must include the following information:

- Completed Application for Vessel Approval (an example of a completed Application is provided on page-6-4-9)
- Drawings showing the dimensions of the refrigerated compartments
- Example of an hourly printout from the recording system (must include date, time, temperature unit, vessel name)
- Number and location of air and pulp sensors in each compartment (see Figure 6-1-1 on page-6-4-6)
- Specifications of the recording system
- Specifications of refrigeration equipment (including air circulation)

The review of plans and process descriptions may take up to sixty days and subsequent requests for additional information may further extend this time.

Vessel owners will receive a letter granting plan approval or describing plan deficiencies and necessary remedial measures.

Following plan approval, the vessel should be built according to the plans. If deviations from the plans are necessary, TQAU must approve the changes (changes should be submitted in a manner similar to that described in "Plan and Specification Approval".)

Certification Testing

Make the vessel available for an on-site certification visit by a PPQ official when all documents and a completed Application have been submitted and approved by the TQAU.

Contact the State Plant Health Director or Officer-In-Charge at the port of call to arrange vessel certification at a US port.

Establish a cooperative agreement and other arrangements as needed with USDA for vessel certification inspections made at a foreign location. This will require a 60-day notification before the inspection can be scheduled. For specific information on the required procedure, contact:

Quarantine Policy, Analysis and Support (QPAS)
Preclearance Programs
USDA-APHIS-PPQ
4700 River Road, Unit 67
Riverdale, MD 20737
Phone: 301-734-4910

A representative from the temperature recorder company who is familiar with the installation, should be on hand to correct any deficiencies in the system.

Before requesting final inspection, the vessel's owner must complete all arrangements. Calibration and identification tests will be made during the inspection. Clean containers filled with crushed ice and fresh water must be made available for the immersion of the temperature sensors.

Determining the Number of Temperature Sensors

The number and location of temperature sensors is based on the cubic capacity of the compartment. Refer to **Figure 6-1-1** to determine the number and location of sensors. Always place the **air** sensors on the fore and aft bulkheads. Always distribute the **pulp** sensors throughout the compartment so that all areas can be reached.

Cubic Feet	Cubic Meters	Number of Air Sensors[1]	Number of Pulp Sensors	Total Number of Sensors
0 to 10,000	0 to 283	2 or 3	2	4 or 5
10,001 to 15,000	284 to 425	2 or 3	3	5 or 6
15,001 to 25,000	426 to 708	2 or 3	4	6 or 7
25,001 to 45,000	709 to 1,274	2 or 3	5	7 or 8
45,001 to 70,000	1,275 to 1,980	2 or 3	6	8 or 9
70,001 to 100,000	1,981 to 2,830	2 or 3	8	10 or 11
> 100,000	> 2,830	Contact TQAU		

FIGURE 6-1-1 Number of Temperature Sensors per compartment

1 In the case of twin deck compartments, two air sensors are required in the upper deck plus one air sensor in the lower compartment. This sensor should be located on the bulkhead farthest from the cooling unit.

Important

It is highly recommended that more temperature sensors be installed than the minimum number required for each refrigerated compartment. If a sensor malfunctions during a treatment, the Port Director has the option of disregarding it, providing that an additional working sensor is present, and the functional sensors were uniformly distributed. Otherwise, the entire treatment must be repeated for the fruit in that compartment.

Designate two of the sensors as air sensors, and the others as pulp sensors. Any sensors above the required minimum may be either pulp or air sensors.

For compartments exceeding 100,000 cubic feet, contact the **TQAU** for the minimum number of required sensors.

Calibration of Temperature Sensors

Calibrate all temperature sensors using a clean ice water slurry at 0 °C (32 °F).

It is APHIS policy to use the standard "rounding rule". In determining calibration factors, if the reading is .05 or higher, round to the next higher number in tenths. If it is .04 or lower, round to the lower number. For example: If the calibration factor was .15, round to .2. If it was .32, round to .3. Similar rounding can be used in actual treatment readings. If an actual reading was 34.04, round to 34.0, add or subtract the calibration factor, if necessary. If it was 34.07, round to 34.1, add or subtract the calibration factor, if necessary.

Use the following steps to make the ice water slurry:

1. Prepare a mixture of clean ice and fresh water in a clean insulated container.

2. Crush or chip the ice and completely fill the container.
3. Add enough water to stir the mixture.
4. Stir the ice and water for a minimum of 2 minutes to ensure the water is completely cooled and good mixing has occurred.
   - ❖ The percentage of ice is estimated at 80 to 85 percent while the water fills the air voids (15 to 20 percent).
5. Add more ice as the ice melts.
6. Prepare and stir the ice water slurry to maintain a temperature of 0 °C (32 °F).
7. Submerge the sensors in the ice water slurry without touching the sides or bottom of the container.
8. Stir the slurry.
9. Continue testing of each sensor in the ice water slurry until the temperature reading stabilizes.
10. Record two consecutive readings of the stabilized temperature on the temperature chart or logsheet.
    - ❖ The temperature recording device should be in manual mode to provide an instantaneous readout.
11. Allow at least a 1 minute interval between two consecutive readings for any one sensor; however, the interval should not exceed 5 minutes.
    - ❖ The variance between the two readings should not exceed 0.1°.
12. Contact an instrument company representative immediately if the time interval exceeds the normal amount of time required to verify the reading and accuracy of the sensor and recorder system
    - ❖ The recorder used with the sensors must be capable of printing or displaying on demand and not just at hourly intervals.
13. Correct any deficiencies in the equipment before certification.
14. Replace any sensor that reads more than plus or minus 0.3 °C (0.5 °F) from the standard 0 °C (32 °F).
15. Replace and recalibrate any sensors that malfunction.
16. Document the recalibration and replacement of the sensor(s) on the PPQ Form 449-R, Temperature Recording Calibration Report.
17. Determine the calibrations to the nearest tenth of one degree.

Frequency of Certification Testing

A certification test is required every three years. No extensions to this three year requirement will be granted. Make requests for renewal at least 60 days before expiration to the TQAU or USDA PPQ Preclearance programs. Certification testing is also required anytime a malfunction, breakdown or other failure occurs (excluding temperature sensors) that requires modifications to the recording and monitoring system(s).

Documentation

The APHIS official will document all tests during certification. Send a copy of the signed PPQ Form 449-R, Temperature Recording Calibration Report, copies of all charts and/or printouts, and any other pertinent addenda or appendices to the TQAU for final approval.

Certificate of Approval

Upon meeting all requirements, the vessel will be designated as approved to conduct intransit cold treatments under the provisions of the PPQ's Fruit and Vegetable Quarantine 56. A PPQ Form 482, Certificate of Approval, listing the approved refrigerated compartments will be issued to the vessel. This approval is for equipment only, and each shipment of fruit must satisfy all requirements as described in Section 319.56 and 305.15 of the Code of Federal Regulations as a condition of entry into the United States.

Application for USDA Vessel Approval

Contact TQAU for a fillable, electronic Vessel Approval Application.

APPLICATION FOR USDA VESSEL APPROVAL
FOR USE IN CONDUCTING QUARANTINE COLD TREATMENTS UNDER USDA REGULATIONS

Instructions:
(1) Use one application for each vessel.
(2) Review the regulatory requirements in Chapter 6 of the Plant Protection and Quarantine (PPQ) Treatment Manual. An electronic PDF document of the manual is available at the following website:
http://www.aphis.usda.gov/import_export/plants/manuals/ports/downloads/treatment.pdf
(3) A list of approved and certified vessels can be found at: https://treatments.cphst.org/vessels/
(4) Each application must include technical documents that support the information supplied.
(5) Fill in each field of the application completely. Review of the application will not begin until all information is received. If a field is not applicable, please put "N/A" in the space provided. In the column labeled "Reference", indicate the page number(s) or specific location where the information can be found in the supporting technical documents.
(6) Send the completed application and required additional information (manuals, technical sheets) to the following office:

Treatment Quality Assurance Unit
USDA-APHIS-PPQ-CPHST
1730 Varsity Drive, Suite 400
Raleigh, North Carolina 27606 USA
E-mail: cphst.tqau@aphis.usda.gov / Fax: (919) 855-7493 / Telephone: (919) 855-7450

1. **Contact Information (Please type or print)**	
Requestor Information: This information will be used by USDA as the official contact information for this vessel.	
Name of Company: Golden Management	
Name and Title of Requestor: Ben Charles	
Address of Requestor: 111 Executive Dr Washington, DC 30943	
Telephone: 444-111-1111	FAX: 444-111-1112
E-Mail Address: bcharles@goldenmanage.com	
Agent Responsible for the Vessel (if different from Requestor)	
Name of Agent: N/A	
Address of Agent:	
Telephone:	Fax:
E-Mail Address:	
2. Vessel Information	
Shipyard: Shikoku	Hull number: 3456
IMO number: 99991111	Vessel name: Golden Bar

Approved: Signature on File with Original Document

Form T-CT-V-A-124

Approved by: Scott Wood
Date: 10/4/07

Revision: Original
Page 1 of 3

Printed copies of this document are considered for reference only. It is the responsibility of employees to ensure that they are using the correct revision of this document by checking the document revision level with that held in the TQAU Document Repository as listed in WI T-MS-X-X-001.

FIGURE 6-1-2 Example of a Completed Application for USDA Vessel Approval, page 1 of 2

Attach vessel schematic(s) to include the following: *All information must be clearly referenced in supporting technical documents.*	
Requirement	**Reference Page or Section**
(a) Sensor location	page 6
(b) Sensor number	page 6
(c) Sensor type (air or pulp)	page 6
(d) Compartment identifiers	page 3
(e) Airflow direction	page 2
(f) Refrigeration Unit locations	page 2
(g) Recorder location	page 5

Ensure that a list of compartment identifiers with corresponding cubic capacity is attached to this application.

3. Refrigeration Unit

Make of Refrigeration Unit: Saab	Model of Refrigeration Unit: 687Vn123
Location of Refrigeration Unit: Power plant	Model Year: 2001
Airflow maximum rate (cfm): 3000	Airflow direction: aft

4. Temperature Recorder

Manufacturer: Mycom	Model: Marcs	Model Year: 2003
Serial number(s): 554987,982142	Quantity of recorders: 2	**Is this a USDA approved recorder:** **Yes:** (●) **No:** ( )

Accuracy:
Recorder (Must be accurate to within +/- 0.15 C in the range of +/- 3.0 C): Yes
Recorder plus Sensor (Must be accurate to within +/- 0.30 C in the range of +/- 3.0 C): Yes

5. Temperature Sensors

Accuracy (Must be accurate to within +/- 0.15 C in the range of +/- 3.0 C): Yes

Are these USDA approved temperature sensors: **Yes:** (●) **No:** ( )

Do sensors numbers match the numbers on the recorder: **Yes:** (●) **No:** ( )

Description	**Air Sensors**	**Pulp Sensors**
Manufacturer	Mycom	Mycom
Model	RM105	RM115
Length of sensor cable	3 meters (Must extend from ceiling to floor)	15 meters (Must extend beyond centerline of the vessel compartment)

x _____ 12-15-2007
Requestor's Signature **Date *(mm-dd-yyyy)***

Approved: Signature on File with Original Document

Form T-CT-V-A-124

Approved by: Scott Wood
Date: 10/4/07

Revision: Original
Page 2 of 3

Printed copies of this document are considered for reference only. It is the responsibility of employees to ensure that they are using the correct revision of this document by checking the document revision level with that held in the TQAU Document Repository as listed in WI T-MS-X-X-001.

FIGURE 6-1-3 Example of a Completed Application for USDA Vessel Approval, page 2 of 2

Certification of Self Refrigerated Containers Used for Intransit Cold Treatment

Certify refrigerated containers used as cold treatment facilities before carrying treated fruit under USDA regulations. Classify refrigerated containers under the rules of the American Bureau of Shipping or a comparable internationally recognized classification society.

Certification Requirements

Complete an Application for Container Certification and submit to TQAU. All plans and supporting materials must be submitted in Standard English. Refer to Figure 6-1-4 on page-6-4-12 for an example of a completed Application for Container Certification.

Include the following specifications in the application:

- Air flow rate
- Container size
- Make and model of refrigeration unit
- Make and model of temperature recorder/control unit
- Type of sensor
  - At least 3 sensors are necessary for each container and must be labeled USDA1, USDA2 and USDA3

Letter of Certification

Upon meeting all requirements, the container(s) will be certified to conduct intransit cold treatments under the provisions of the PPQ Fruit and Vegetable Quarantine 56. A Letter of Certification listing the refrigerated container(s) will be issued to the owner. This certification is for container(s) only, and each shipment of fruit must satisfy all requirements as described in Section 319.56 and 305.15 of the Code of Federal Regulations as a condition of entry for importation into the United States.

Application for USDA Container Certification

Contact TQAU for a fillable, electronic Application for Container Certification.

APPLICATION FOR USDA CONTAINER CERTIFICATION
TO CONDUCT COLD TREATMENT UNDER USDA REGULATIONS

Instructions:
(1) Review the regulatory requirements in Chapters 3 and 6 of the Plant Protection and Quarantine (PPQ) Treatment Manual. An electronic PDF document of the manual is available at the following website:
http://www.aphis.usda.gov/import_export/plants/manuals/ports/downloads/treatment.pdf
(2) Fill in each field on the application completely. Review for certification will not begin until all information is received. If a field is not applicable, please put "N/A" in the space provided.
(3) Send the completed application via electronic mail, fax, or postal mail to the following office:

Treatment Quality Assurance Unit
USDA-APHIS-PPQ-CPHST
1730 Varsity Drive, Suite 400
Raleigh, North Carolina 27606 USA
E-mail: **cphst.tqau@aphis.usda.gov** / Fax: (919) 855-7493 / Telephone: (919) 855-7450

USDA Certified Containers Website: https://treatments.cphst.org/vessels/containers.cfm

1. Name and Address of Requestor (Please type or print)	
(First) (Last) John Johnson	
Job Title: Manager	
Company Address: 1356 Westshore Dr, Miami, Florida	
	Country: USA
Telephone: 901-564-5555	FAX: 901-564-5556
E-Mail Address: jjohnson@coldworld.com	Company Website: none
2. Name and Address of Container Series Owner (Different from Leasing Company)	
Container Series Owner: Maersk LTD	
Owner Address: Kiel, New Jersey	
	Country: USA
Telephone: 605-545-8974	FAX: 605-545-8976
E-Mail Address: manage@maersk.com	Company Website: www.maerskUS.com
3. Name and Address of Container Manufacturer	
Container Manufacturer: Belding ReeferCo	
Manufacturer Address: 2565 East River Dr, New York, NY	
	Country: USA
Telephone: 906-878-9874	FAX: 906-878-9875
E-Mail Address:	Company Website: www.beldingco.com

Approved: Signature on File with Original Document

Form T-CT-C-C-107 — Approved by: Woodward D. Bailey, Date: 07/20/07 — Revision: 01, Page 1 of 2

Printed copies of this document are considered for reference only. It is the responsibility of employees to ensure that they are using the correct revision of this document by checking the document revision level with that held in the TQAU Document Repository as listed in WI T-MS-X-X-001.

FIGURE 6-1-4 Example of a Completed Application for USDA Container Certification, page 1 of 2

4. Container Information			
Container Code and Numbers: APRU 904954 through 905154 through	Total Number of Containers in this Series: 200		
Date of Construction (mm/yyyy): 8/2008	External Dimensions (feet):		
	Length: 40	Width: 8/2008	Height: 9'6"
5. Refrigeration Unit			
Make: Carrier	Model: 69NT40-551-508		
Year of Manufacture: 2007	Location of the Unit:		
Airflow Maximum Rate (cubic feet per minute): 1400	Bottom Air Delivery?		
6. Temperature Controller			
Make: Carrier	Model: MicroLink 2		
Year of Manufacture: 2006	Is a modem connected to the controller / recorder? If Yes, specify model:		
7. Temperature Sensors			
Indicate which approved sensors will be used with the temperature monitoring and control system:			
Thermistor ☐	ST9702 ☐	PT100 ☒	NTC ☐

x _____ Jul 24, 2008
Requestor's Signature **Date**

****************DO NOT WRITE BELOW – FOR USDA PURPOSES ONLY – DO NOT WRITE BELOW****************

Reviewer_____

Date Application Received_____

Approved_☐__ **Not Approved**_☐__ **Date**_____

Reviewer's Signature_____

Comments

_____

_____

_____

_____

_____

Approved: Signature on File with Original Document

Form T-CT-C-C-107

Approved by: Woodward D. Bailey
Date: 07/20/07

Revision: 01
Page 2 of 2

Printed copies of this document are considered for reference only. It is the responsibility of employees to ensure that they are using the correct revision of this document by checking the document revision level with that held in the TQAU Document Repository as listed in WI T-MS-X-X-001.

FIGURE 6-1-5 Example of a Completed Application for USDA Container Certification, page 2 of 2

Certification of Warehouses Used for Cold Treatment

The local APHIS-PPQ inspector will certify refrigerated warehouses for use as cold treatment facilities before treating fruit under USDA regulations. In addition to the general requirements, warehouse approval is subject to specific geographical pest-risk considerations as outlined in Title 7, Section 305.15 of the Code of Federal Regulations.

TQAU will approve plans and specifications prior to the initial warehouse certification. Conduct a performance survey prior to the warehouse receiving approval to conduct cold treatments under USDA regulations.

Plan and Specification Approval

Prior to the start of warehouse construction, submit a completed Application for Warehouse Approval, detailed drawings of the physical characteristics, and a written description of the all the treatment related equipment to TQAU. All plans and supporting materials must be submitted in Standard English. An example of a completed Application is provided in Figure 6-1-7 on page-6-4-18.

Include the following information in the Application:

- Address of the warehouse location
- Drawings showing the dimensions, cubic capacity and door locations

Important

Drawings may be hand-drawn, but must clearly show location of refrigeration units, circulation fans, temperature recorder, and sensors.

- Make and model of the refrigeration equipment
- Name and address of the firm owning the warehouse chamber
- Number and location of sensors (Figure 6-1-6 on page-6-4-15)
- Method for segregating fruit under treatment and securing it from other foreign or domestic articles
- Specification of the air circulation system; must indicate the number of air changes and direction of air flow
- Specifications of the recording system

Certification Testing

When all documents and a completed Application have been submitted and approved by the TQAU, the warehouse owner should make the warehouse available for an on-site certification visit by a local PPQ official. To arrange warehouse certification, contact the State Plant Health Director or Officer-In-Charge for the port. Before

requesting final inspection, the warehouse owner must complete all arrangements as directed by the PPQ officer. The PPQ official will conduct calibration and identification tests during the inspection.

Determining the Number of Temperature Sensors

The number and location of temperature sensors is based on the cubic capacity. Refer to Figure 6-1-6 to determine the number and location of sensors. The minimum requirement is three sensors—one air sensor and two pulp sensors. Sensor cables must be long enough to reach all areas of the load.

Cubic Feet	Cubic Meters	Number of Air Sensors	Number of Pulp Sensors	Total Number of Sensors
0 to 10,000	0 to 283	1	2	3
10,001 to 20,000	284 to 566	1	3	4
20,001 to 30,000	567 to 849	1	4	5
30,001 to 40,000	850 to 1132	1	5	6
40,001 to 50,000	1133 to 1415	1	6	7
50,001 to 60,000	1416 to 1698	1	7	8
60,000 to 70,000	1699 to 1981	1	8	9
70,001 to 80,000	1982 to 2264	1	9	10
80,001 to 90,000	2265 to 2547	1	10	11
90,001 to 100,000	2548 to 2830	1	11	12
Over 100,000	>2830	Must be Approved by TQAU		

FIGURE 6-1-6 Number of Temperature Sensors

Important

If a refrigerated room is equipped according to the cubic capacity of the storage area (rather than of the load itself), the same criteria apply.

It is highly recommended that additional sensors beyond the required minimum be installed.

Calibration of Temperature Sensors

Calibrate all temperature sensors using a freshwater ice water slurry at 0 °C (32 °F).

It is APHIS policy to use the standard "rounding rule". In determining calibration factors, if the reading is .05 or higher, round to the next higher number in tenths. If it is .04 or lower, round to the lower number. For example: If the calibration factor was .15, round to .2. If it was .32, round to .3. Similar rounding can be used in actual treatment readings. If an actual reading was 34.04, round to 34.0, add or subtract the calibration factor, if necessary. If it was 34.07, round to 34.1, add or subtract the calibration factor, if necessary.

Use the following steps to make the ice water slurry:

1. Prepare a mixture of clean ice and fresh water in a clean insulated container.
2. Crush or chip the ice and completely fill the container.
3. Add enough water to stir the mixture.
4. Stir the ice and water for a minimum of 2 minutes to ensure the water is completely cooled and good mixing has occurred.
   - ❖ The percentage of ice is estimated at 80 to 85 percent while the water fills the air voids (15 to 20 percent).
5. Add more ice as the ice melts.
6. Prepare and stir the ice water slurry to maintain a temperature of 32 °F. (0 °C)
7. Submerge the sensors in the ice water slurry without touching the sides or bottom of the container.
8. Stir the mixture.
9. Continue testing of each sensor in the ice water slurry until the temperature reading stabilizes.
10. Record two consecutive readings of the stabilized temperature on the temperature chart or logsheet.
    - ❖ The temperature recording device should be in manual mode to provide an instantaneous readout.
11. Allow at least a 1 minute interval between two consecutive readings for any one sensor; however, the interval should not exceed 5 minutes.
    - ❖ The variance between the two readings should not exceed 0.1°.
12. Contact an instrument company representative immediately if the time interval exceeds the normal amount of time required to verify the reading and accuracy of the sensor and recorder system
    - ❖ The recorder used with the sensors must be capable of printing or displaying on demand and not just at hourly intervals.
13. Correct any deficiencies in the equipment before certification.
14. Replace any sensor that reads more than plus or minus 0.3 °C (0.5 °F) from the standard 0 °C (32 °F).
15. Replace and recalibrate any sensors that malfunction.
16. Document the recalibration and replacement of the sensor(s) on the PPQ Form 449-R, Temperature Recording Calibration Report.
17. Determine the calibrations to the nearest tenth of one degree.

Frequency of Certification Testing

A certification test is required every year. Sumit requests for recertification to the local PPQ office at least 60 days before expiration. Certification testing is also required anytime a malfunction, breakdown or other failure occurs (excluding temperature sensors) that requires modifications to the recording and monitoring system(s).

Application for USDA Warehouse Approval

Contact TQAU for a fillable, electronic Application for Warehouse Approval.

APPLICATION FOR USDA WAREHOUSE APPROVAL
FOR USE IN CONDUCTING QUARANTINE COLD TREATMENTS UNDER USDA REGULATIONS

Instructions:
(1) Use one application for each warehouse.
(2) Review the regulatory requirements in Chapter 6 of the Plant Protection and Quarantine (PPQ) Treatment Manual. An electronic PDF document of the manual is available at the following website:
http://www.aphis.usda.gov/import_export/plants/manuals/ports/downloads/treatment.pdf
(3) Each application must include technical documents that support the information supplied.
(4) Fill in each field of the application completely. Review of the application will not begin until all information is received. If a field is not applicable, please put "N/A" in the space provided. In the column labeled "Reference", indicate the page number(s) or specific location where the information can be found in the supporting technical documents.
(5) Send the completed application and required additional information (manuals, technical sheets) to the following office:

Treatment Quality Assurance Unit
USDA-APHIS-PPQ-CPHST
1730 Varsity Drive, Suite 400
Raleigh, North Carolina 27606 USA
E-mail: cphst.tqau@aphis.usda.gov / Fax: (919) 855-7493 / Telephone: (919) 855-7450

1. **Contact Information**	
Requestor Information: This information will be used by USDA as the official contact information for this warehouse.	
Name of Company: Bilco Cold Products	Name and Title of Requestor: John Smith
Address of Requestor: 1700 Dock St Philadelphia, PA	
Telephone: 800-555-5555	FAX: 800-555-5556
E-Mail Address: jsmith@bcp.com	
Agent Responsible for the Warehouse (if different from Requestor)	
Name of Agent	
Address of Agent:	
Telephone:	Fax:
E-Mail Address:	
2. Warehouse Information	
Name of Warehouse: Bilco Building 14	
Address: 123 Harbor St Gloucester City, NJ	
Telephone: 800-565-1234	FAX: 800-565-1235
E-Mail Address: jsmith@bcp.com	Company Website: www.bcp.com

Approved: Signature on File with Original Document

Form T-CT-W-A-123

Approved by: Scott Wood
Date: 10/4/07

Revision: Original
Page 1 of 3

Printed copies of this document are considered for reference only. It is the responsibility of employees to ensure that they are using the correct revision of this document by checking the document revision level with that held in the TQAU Document Repository as listed in WI T-MS-X-X-001.

FIGURE 6-1-7 Example of a Completed Application for USDA Warehouse Approval, page 1 of 3

Attach a warehouse schematic(s) that includes the following: ***All information must be clearly referenced in supporting technical documents.***	
Requirement	**Reference Page or Section**
(a) Delineations of treatment areas to be certified	See Page 5
(b) Cubic capacity of each treatment area to be certified	See page 3
(c) Total cubic capacity of warehouse	see page 2
(d) Sensor location	see page 4
(e) Sensor number	see page 4
(f) Sensor type (air or pulp)	see page 4
(g) Treatment area identifiers	see page 5
(h) Airflow direction	see page 1
(i) Refrigeration unit location	see page 1
(j) Recorder location	see page 1

Also attach a description of the method used to segregate fruit under PPQ treatment from other foreign or domestic articles.

3. Refrigeration Unit

Make of Refrigeration Unit: Carrier	Model of Refrigeration Unit: GSE
Location of Refrigeration Unit: Equipment Room 1	Model Year: 1998
Airflow maximum rate (cfm): 1250	Airflow direction: East to West

4. Temperature Recorder

Manufacturer: ACR	Model: Smartrecoder	Model Year: 2005
Serial number(s): 1251354111		Quantity of recorders: 1
Location of unit(s): Portable		
Accuracy: Recorder (Must be accurate to within +/- 0.15 C in the range of +/- 3.0 C): 0.1 Recorder plus Sensor (Must be accurate to within +/- 0.30 C in the range of +/- 3.0 C): 0.3		
Is this a USDA approved recorder?: Yes		

5. Temperature Sensors

Manufacturer: ACR	Model: 105	Model Year: 2005
Accuracy (Must be accurate to within +/- 0.15 C in the range of +/- 3.0 C): 0.1		
Length of sensor cable (must be long enough to reach fruit in all parts of the stack): 15 meters		
Do sensor numbers matches the numbers on the recorder: Yes (●) **No** ( )		

x _____ 08-05-2008
Requestor's Signature **Date *(mm-dd-yyyy)***

Approved: Signature on File with Original Document

Form T-CT-W-A-123

Approved by: Scott Wood
Date: 10/4/07

Revision: Original
Page 2 of 3

Printed copies of this document are considered for reference only. It is the responsibility of employees to ensure that they are using the correct revision of this document by checking the document revision level with that held in the TQAU Document Repository as listed in WI T-MS-X-X-001.

FIGURE 6-1-8 Example of a Completed Application for USDA Warehouse Approval, page 2 of 3

**********DO NOT WRITE BELOW – FOR USDA PURPOSES ONLY – DO NOT WRITE BELOW**********

Date Application Received_____

Reviewer_____

Approved_____ **Not Approved**_____ **Date**_____

Reviewer's Signature_____

Comments:

Approved: Signature on File with Original Document

Form T-CT-W-A-123

Approved by: Scott Wood
Date: 10/4/07

Revision: Original
Page 3 of 3

Printed copies of this document are considered for reference only. It is the responsibility of employees to ensure that they are using the correct revision of this document by checking the document revision level with that held in the TQAU Document Repository as listed in WI T-MS-X-X-001.

FIGURE 6-1-9 Example of a Completed Application for USDA Warehouse Approval, page 3 of 3

Contact Information

TQAU

USDA-APHIS-PPQ-CPHST
Treatment Quality Assurance Unit
1730 Varsity Drive
Suite 400
Raleigh, NC 27606
Phone: 919-855-7450
FAX: 919-855-7493
Email: cphst.tqau@aphis.usda.gov