AdVantage Pro Software Upgrade

Abstract: This application note describes the process of uploading the new software upgrade, as well as transferring new back-up files to a microSD card.

Overview

The procedure involves uploading the new AdVantage Pro software upgrade to the PLC and transferring new back-up files (containing machine type settings and default factory calibration settings) to a microSD card in the PLC module. (Note that for systems subject to IQ/OQ, it may be necessary to perform requalification after completing this upgrade procedure.)

This procedure must be followed in sequence from start to finish; any omission or deviation may result in "glitches" which may not be found during testing, but may become evident after the system has been handed back to the user.

Do not begin the software upgrade until you have received the factory back-up file from SP Technical Support.

Equipment Required

- Laptop with *Unitronics Downloader* installed.
- Zip files from SP Technical Support: *XXXXXX_SD Card files* (where *XXXXXX* represents the serial number of the system to be upgraded.) and *intel36X.udc* file (where *X* is the software version). Zip files will also contain the back-up file generated from a system running the software with all of that unit's details.
- SD card reader (USB plug-in type or built into laptop).
- Comms cable: RJ11 to serial.
- Adapter: serial to USB A.

Preparation

1. Acquire folder containing zip files from SP Technical Support.
   a. Unzip the files and copy them to the laptop.

   b. Check the following are present:
      - Folder: *XXXXXX_SD Card Files*, containing sub folders:
         - ALARMS
         - DT
         - EXCEL
         - LOG
         - SDBLOCKS
         - SYSTEM
         - TRENDS
         - USER_APP
         - WEB

      - File: *intel36X.udc*

2. Acquire the Unitronics software.
   a. Go to the Unitronics website: http://www.unitronics.com/

   b. Once on the webpage, click **PLC + HMI In One Unit**. In the bar at the top of the page, click **Support** and navigate to the **Downloads** option on the drop-down menu. Then, click **VisiLogic (Vision Series)**.

   c. Download the free software package for **Unitronics Downloader**.

Solution: Upgrade Procedure

1. For systems with Ethernet Option, record the IP address:
   a. Switch on the AdVantage Pro.
   b. Navigate to: *System Status/Menu/Configuration/Com Setup*
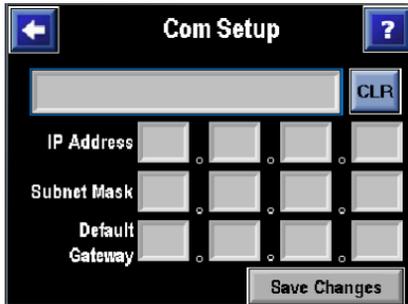
   c. Read the data and record it below:

Name of Machine			
IP Address			
Subnet Mask			
Default Gateway			

   d. Press the *Back* button three times to return to the *System Status* screen.

2. Record the system's alarms and units of measurement.
   a. From the *System Status* screen, press *Menu*, then *Configuration*, then *Alarm Setup 1 & 2*.

Alarm Setup 1	
Preseal Timeout	
Max System Freeze Time SP	
Max System Heating SP	
Temperature Deadband	

Alarm Setup 2		
Condenser Timeout		Off / On
Vacuum Timeout		Off / On
Vacuum Overload		Off / On
Long Term Power Failure		Off / On

   b. Press the *Back* button to get to the *Configuration* screen, then press *Units* to choose the units of measurement.

   c. Set your system to one of the following:
      □ mbar   □ mtorr   □ Pascal

3. Record all recipes that have been loaded onto the AdVantage Pro (there may be up to 16):
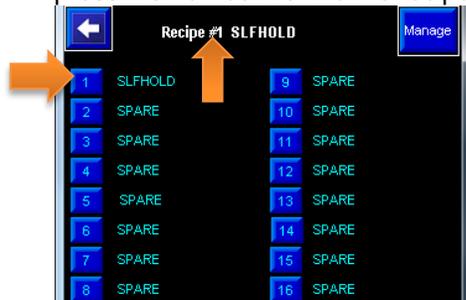
    a. In the *System Status* screen, press *Recipe*.
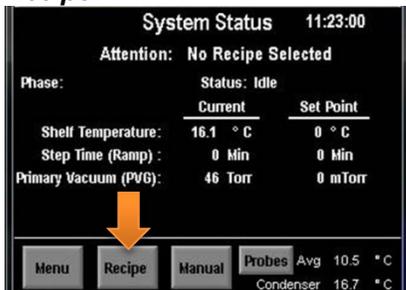
    b. When the *Recipe Mode* screen opens, press *Recipe Manager*.

    c. For the first recipe that has been loaded, press the number next to the recipe.

    d. When the recipe# (number) and name appears at the top of the screen, record the number and name.

        Note: Pages are provided at the end of this document to record recipe information.

    e. Press the left arrow in the top left corner of the screen.

    f. In the *Recipe Mode* screen, press each of the following in turn:
   - *Pre-Freeze*
   - *Thermal Treatment*
   - *Evacuation*
   - *Drying Steps 1-6*
   - *Drying Steps 7-16*
   - *Product Storage*

…and record the settings. Press the arrow in the top, left corner of the screen to return to the *Recipe Mode* screen.

    g. For systems with Stoppering and/or Backfill option installed, press *Backfill Stoppering* and record these settings, as well.
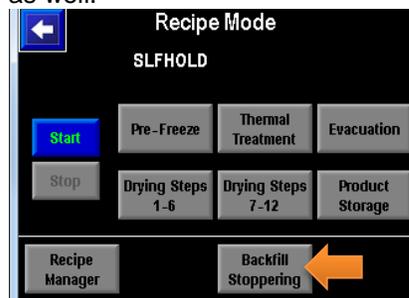
    h. Repeat steps as necessary to record all recipes that have been loaded, there may be up to sixteen.

4. Switch **off** the AdVantage Pro.

5. Remove the door and door seal.

6. Remove the cover.

7. Connect laptop to HMI Port #1 using RJ11 to Serial Lead.

8. Remove the SD card from the AdVantage Pro PLC module. The location of the SD card slot is marked below.

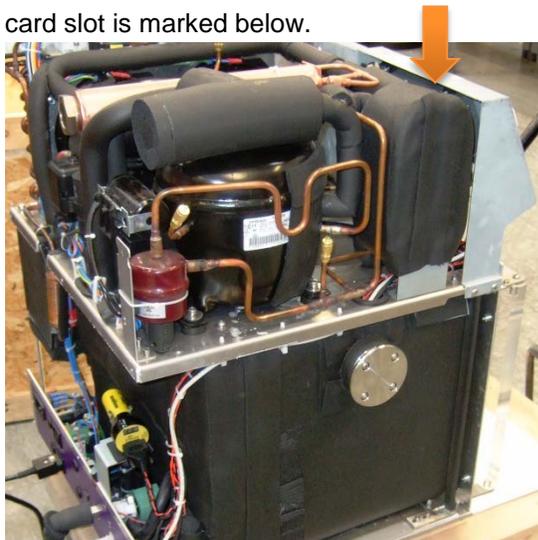9. Insert the SD card from the AdVantage Pro into the SD card reader on the laptop.

10. On the laptop, open the **XXXXXX_SD Card Files** folder (copied to the laptop during Preparation). Use **Organize**, **Select all** to select all folders.
Place the cursor over the highlighted files and right click to copy, then paste selected files to the SD card. When the **Confirm Folder Replace** window opens, check the tick box, then click **Yes** to merge folders.
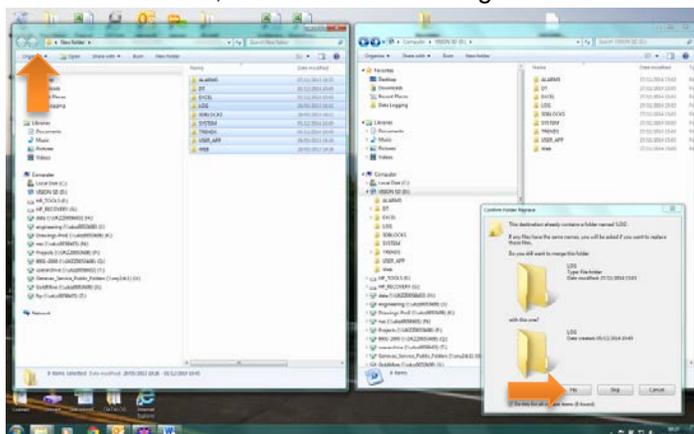
11. When the **Copy file** window opens, click: **Copy and Replace**. Then close the card files.

12. Using the laptop, open the **SYSTEM** folder on the SD card.

13. Delete all files except **XXXXXX.C57** in the **SYSTEM** folder. Rename the remaining backup file to **FACTORY**.
The folder should look like this:
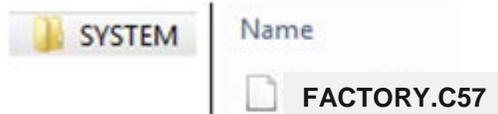
14. Close the folder, then right click and **Eject** (or **Safely Remove Hardware**) and remove the SD card from the laptop.

15. Refit the SD card to the AdVantage Pro PLC module.
Note: Insert the card at the same angle as the PLC. If the card is lowered vertically into the slot on the PLC module, it will likely miss the slot and drop inside the PLC casing.

Incorrect. SD card will drop inside the PLC.

Correct. SD card is aligned with slot.

16. Switch **on** the AdVantage Pro.

17. When the **System Status** screen opens, press anywhere on the screen and hold for five seconds.
Note: If an alarm sounds, press Esc.

18. When the **Info Mode** screen opens, press **Enter Info Mode**.

19. In the password field, enter **1111.** Then press return: ↵

20. When the **Info Mode Main Menu** opens, press **Working Mode**.

21. When the **Working Mode** screen opens, in the bottom right corner of the screen, press **Init**; when asked to confirm the selection, press **Yes**.
Note: If an alarm sounds, press Esc.

22. Right click Unitronics Downloader, select **Run as Administrator** and click **Yes**. Click **Open Runner Design**. Select **New Version UDC file**, then click on **Connection Settings**.

23. Enter appropriate connection settings (comm port for computer, time out = 4 sec).

24. Click **Get OPLC Information** to verify that comms is established between laptop and PLC.

25. In the **UniDownloader** control panel, click the Play button. File transfer may take 15 to 20 minutes.

26. At the end of the process, the **Send PLC Unit Command?** window will open. Click **No**.

27. On the laptop, close **UniDownloader**.

28. Switch **off** the AdVantage Pro. Wait a few seconds and then switch the unit **on** again.
Note: If an alarm sounds, press Esc.

29. In the **System Status** screen, touch anywhere on the screen for five seconds.
Note: If an alarm sounds, press Esc.

30. When the **Info Mode** screen opens, press **Enter Info Mode**.

31. In the password field, enter **1111.** Then press return: ↵

32. When the **Info Mode Main Menu** screen opens, press **SD Card**, then **Full Clone**.

33. Press **Upload to PLC**, then select the file: **FACTORY**.

34. Press **Send File**, then press **Yes** to confirm **Start Cloning**. A progress indicator shows when the process is complete.

35. Switch **off** the AdVantage Pro. Wait a few seconds and then switch the unit **on** again.
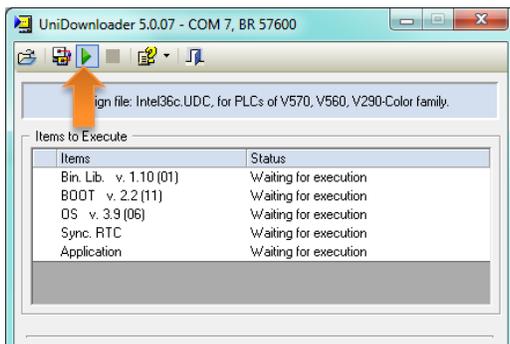
Completion

1. Load the Ethernet settings back in by re-entering the Machine Name and Ethernet IP values recorded earlier (see page 2):

   a. Navigate to: *System Status/Menu/Configuration/Com Setup*
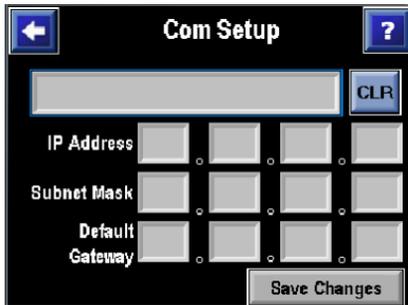
   b. Press the *Back* button three times to return to the *System Status* screen.

2. Re-enter the alarm setup values.

   a. From the *System Status* screen, press *Menu*, then *Configuration*, then *Alarm Setup 1 & 2*.

   b. Change the values to those that were recorded previously (see page 2 of this application note). Use the *Back* button to return to the *System Status* screen.

3. Re-enter all recipes recorded on the *Record of Recipes* pages.

   a. In the *System Status* screen, press *Recipe*.

   b. When the *Recipe Mode* screen opens, press *Recipe Manager*.

   c. Press the number for the first recipe to be re-loaded and verify that the recipe# (number) appears at the top of the screen.

   d. Press where indicated and re-enter recipe name.
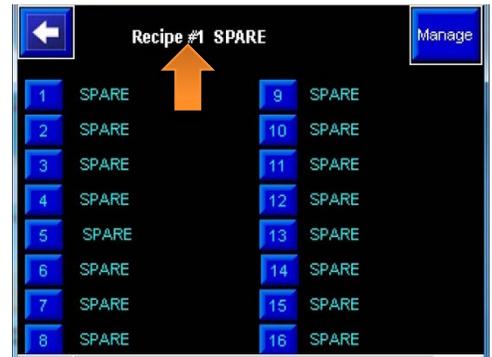
   e. Press *Back* button to return to the *Recipe Mode* screen opens, then press each of the following in turn:
      - *Pre-Freeze*
      - *Thermal Treatment*
      - *Evacuation*
      - *Drying Steps 1-6*
      - *Drying Steps 7-16*
      - *Product Storage*

   … and re-enter the settings recorded at the beginning of the upgrade procedure.

   f. For systems with Backfill and Stoppering, re-enter these settings, as well.

   g. Repeat the process for the remaining recorded recipes.

4. Exit *Recipes* using the *Back* button.

5. Re-calibrate the thermocouple inputs.

6. To finish backing up the system:
   a. Go back to the *System Status* screen.

   b. Press *Menu/Maintenance*.

   c. Then, press *Backup PLC*.
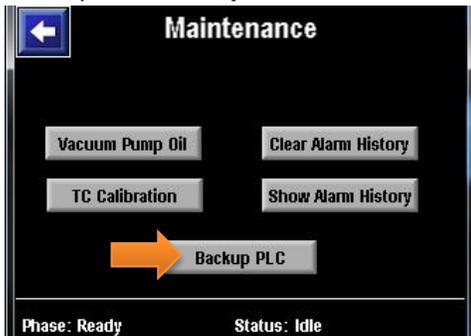
   d. Press *Confirm*.
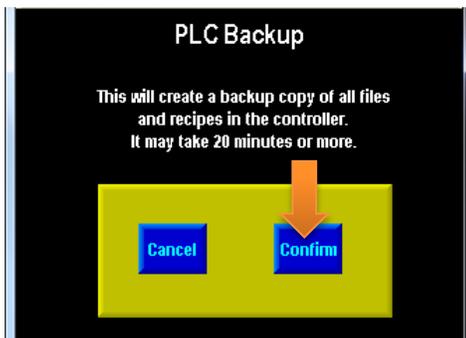
   Note: The process can take up to 20 minutes.

7. Refit the cladding.

8. Refit the door seal.

9. Refit the door.

10. Perform system functional tests to verify that the system is in working order.
    a. Shelf pull down will be done using the Thermal Treatment section of a recipe.

11. If the system does not perform correctly after the software update, the CPR valve will need to be wound up to a **maximum of 1.5 turns** for the system to run correctly after the software update. To do this:
    a. Carefully remove the foam plug from the end of the CPR, then unscrew the cap where indicated below.

    b. Use a ¼ inch Allen key to turn the adjustment screw clockwise.

    c. Refit the cap and foam.

Record of Recipes

Recipe number: [1]   Recipe name: [   ]

Pre-Freeze

Shelf Temp	Set point	Actual
	[ ]	

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start [ ]

Vacuum Check for Drying Start [ ]

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		[ ]
Vacuum		[ ]

Backfill & Stoppering

Set Point
Backfill [ ] Torr

Vacuum Release Time
Shutdown [ ] Min

Recipe number: 2   Recipe name:

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start

Vacuum Check for Drying Start

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

Backfill   Set Point   Torr

Shutdown   Vacuum Release Time   Min

SP SCIENTIFIC

Recipe number: | 3 | Recipe name: |

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start

Vacuum Check for Drying Start

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

Set Point

Backfill | | Torr

Vacuum Release Time

Shutdown | | Min

SP SCIENTIFIC

Recipe number: 4   Recipe name:

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start

Vacuum Check for Drying Start

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

	Set Point	
Backfill		Torr

	Vacuum Release Time	
Shutdown		Min

SP SCIENTIFIC

Recipe number: 5   Recipe name:

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start

Vacuum Check for Drying Start

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

Set Point

Backfill [ ] Torr

Vacuum Release Time

Shutdown [ ] Min

Recipe number: 6   Recipe name:

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start

Vacuum Check for Drying Start

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

Backfill   Set Point [   ] Torr

Shutdown   Vacuum Release Time [   ] Min

SP SCIENTIFIC

Recipe number: 8   Recipe name:

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start

Vacuum Check for Drying Start

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

	Set Point	
Backfill		Torr

	Vacuum Release Time	
Shutdown		Min

SP SCIENTIFIC

Recipe number: 9   Recipe name:

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start

Vacuum Check for Drying Start

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

	Set Point	
Backfill		Torr

	Vacuum Release Time	
Shutdown		Min

Recipe number: 10   **Recipe name:**

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start

Vacuum Check for Drying Start

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

	Set Point	
Backfill		Torr

	Vacuum Release Time	
Shutdown		Min

Recipe number: 11   Recipe name:

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start

Vacuum Check for Drying Start

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

Set Point
Backfill [ ] Torr

Vacuum Release Time
Shutdown [ ] Min

SP SCIENTIFIC

Recipe number: 12   **Recipe name:**

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start

Vacuum Check for Drying Start

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

Backfill   Set Point   Torr

Shutdown   Vacuum Release Time   Min

SP SCIENTIFIC

Recipe number: 13   **Recipe name:**

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start ____

Vacuum Check for Drying Start ____

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

Set Point

Backfill ____ Torr

Vacuum Release Time

Shutdown ____ Min

Recipe number: 14   **Recipe name:**

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start

Vacuum Check for Drying Start

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

	Set Point	
Backfill		Torr

	Vacuum Release Time	
Shutdown		Min

Recipe number: 15   **Recipe name:**

Pre-Freeze

Shelf Temp	Set point	Actual

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start	
Vacuum Check for Drying Start	

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		
Vacuum		

Backfill & Stoppering

	Set Point	
Backfill		Torr

	Vacuum Release Time	
Shutdown		Min

SP SCIENTIFIC

Recipe number: 16   Recipe name: _____

Pre-Freeze

Shelf Temp	Set point	Actual
	[ ]	

Thermal Treatment

Step	Self °C	Ramp Min	Hold Min	Step	Self °C	Ramp Min	Hold Min
1				6			
2				7			
3				8			
4				9			
5				10			

Evacuation

Condenser Temperature for Vacuum Start [ ]

Vacuum Check for Drying Start [ ]

Drying Steps 1-6

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
1				
2				
3				
4				
5				
6				

Drying Steps 7-12

Step	Shelf °C	Ramp Min	Hold Min	Vac mTorr
7				
8				
9				
10				
11				
12				

Storage

	Actual	Set Point
Shelf Temp		[ ]
Vacuum		[ ]

Backfill & Stoppering

	Set Point	
Backfill	[ ]	Torr

	Vacuum Release Time	
Shutdown	[ ]	Min