



REFERENCE

Performance standards – vapour heat treatment – horticulture exports

In this document

This document contains the following topics.

Purpose of this document.....	1
Definitions.....	2
Performance standards.....	3
Structural and treatment equipment requirements	3
Procedures	6
Verification of treatment	9
Phytosanitary security measures.....	10
Documentation	11
Additional requirements for protocol markets.....	14
Related material.....	15
Document information	15
Version history	15

Purpose of this document

This document:

- outlines the performance standards vapour heat treatment facilities must meet to gain and maintain registration for the treatment of goods for export
- sets the corrective action ratings for those performance standards.

Important: This document must be read in line with:

- [Australian phytosanitary treatment application standard for vapour heat treatment](#)
- Guideline: [Audit of plant export registered establishments](#)
- Guideline: [Maintenance of phytosanitary security for horticulture exports](#)
- Guideline: [Management of plant export registered establishments](#)



Definitions

The following table defines the terms used in this document

Term	Definition
Activity categories	Activities and requirements from the Australian phytosanitary treatment application standard for vapour heat treatment that have been grouped by function.
Checklist item	Requirements under the activity categories that have been grouped by function and corrective action rating.
Documented system	A written process or procedure that defines the steps in a process and who is responsible for those steps. This includes the records used to confirm the process is being followed.
Goods	Goods declared by the regulations to be prescribed goods for the purposes of the <i>Export Control Act 2020</i> .
Performance standards	A benchmark derived from legislation and departmental requirements against which actual performance of third parties is measured.



Performance standards

Structural and treatment equipment requirements

The following table describes the performance standards and non-compliance ratings for structural and treatment equipment for vapour heat treatment providers.

Checklist items	Performance standards – structural and treatment equipment	Reference to standard	Non-compliance rating
1.1.1 Treatment chamber	The treatment chamber: <ul style="list-style-type: none">• is clean and pest free• has the ability to reach and maintain required temperatures and humidity• has separate lockable or sealable entry and exit doors.	2.2.1	Critical
1.2.1 Temperature and humidity recording equipment	<ul style="list-style-type: none">• Temperature and humidity recording equipment secure from tampering• Computer controlled temperature and humidity monitoring• Computer controlled recording equipment.	2.3.1	Major



Checklist items	Performance standards – structural and treatment equipment	Reference to standard	Non-compliance rating
1.2.2 Temperature and humidity recording equipment	Temperature recording equipment must: <ul style="list-style-type: none">• accommodate the required number of sensors• be tamper evident• not be affected by environmental conditions, including vibrations• identify each sensor and its position• record data continuously• record all sensors at least every 5 minutes for the duration of the treatment process• produce data readings of each treatment that identify each sensor, time, temperature and the treatment facility.	2.3.1	Major
1.3.1 Post treatment area	The area where product is cooled, stored and packed post treatment must: <ul style="list-style-type: none">• have all openings sealed or covered in mesh with a gauge no greater than 1.6 mm (hypotenuse)• be clean and pest free.	2.1.2	Major
1.4.1 Entry and exit points	<ul style="list-style-type: none">• Entry points to treatment and post-treatment areas have a system to reduce pest entry.• Exit points from treatment and post-treatment areas have a system to reduce pest entry (for example, airlocks, disinfestation processes, physical barriers, air flow curtains, positive air pressure).	2.1.2	Major



Checklist items	Performance standards – structural and treatment equipment	Reference to standard	Non-compliance rating
1.5.1 Temperature sensors	Temperature sensors must: <ul style="list-style-type: none">• be accurate to ± 0.3 in the range of 37°C to 52°C• have a resolution of 0.1°C• have a unique identification.	2.4.1	Minor



Procedures

The following table describes the performance standards and non-compliance ratings for procedures for vapour heat treatment providers.

Checklist items	Performance standards – procedures	Reference to standard	Non-compliance rating
2.1.1 Temperature mapping on commissioning	<ul style="list-style-type: none">Thermal mapping of the treatment chamber must be carried out:<ul style="list-style-type: none">on commissioning of the VHT unitwhen there is major changes to the equipment or processes that affect attainment of temperature.Thermal mapping must be used to develop a sensor placement plan.	3.1 3.2	<ul style="list-style-type: none">Major orCritical
2.2.1 Annual verification	<p>A Chamber test must be carried out:</p> <ul style="list-style-type: none">annually to ensure the VHT equipment is functioning accuratelyprior to the first treatment of the season.	3.3	<ul style="list-style-type: none">Major orCritical
2.3.1 Calibration of sensors	<ul style="list-style-type: none">Demonstrate the process of calibration of sensors.Sensors must:<ul style="list-style-type: none">be calibrated three times, demonstrating repeatability of readingsread within $\pm 0.3^{\circ}\text{C}$ of 47°Cbe calibrated at the start of the season and monthly during the treatment season.	3.4	<ul style="list-style-type: none">Major orCritical



Checklist items	Performance standards – procedures	Reference to standard	Non-compliance rating
2.3.2 Calibration of sensors	<p>The calibrated reference thermometer required to verify the temperature of the hot water vat is:</p> <ul style="list-style-type: none">• NATA certified within past 3 years• capable of reading to one decimal point.	3.4	<ul style="list-style-type: none">• Minor or• Major
2.4.1 Placements of temperature sensors	<ul style="list-style-type: none">• Has a documented system in place for pre-loading checks (ensuring the largest/heaviest fruit is used for sensor placement).• Has system in place to check sensor placement plan prior to each treatment.• Has a diagram demonstrating correct placement for product sensors in an easy to access spot.• Demonstrates the correct placement of product sensors in fruit.• Demonstrates securing the product sensors to avoid dislodgement.	3.6	<ul style="list-style-type: none">• Minor or• Major or• Critical
2.5.1 Treatment	<p>Provides records demonstrating that:</p> <ul style="list-style-type: none">• prescribed treatment times, temperature and humidity have been met• the product in the chamber has been exposed to the required relative humidity level, or higher, for one hour prior to treatment commencing• the treatment process took longer than 2 hours, including the prescribed treatment time, warm-up phase and the cool-down time.	3.7	Major



Checklist items	Performance standards – procedures	Reference to standard	Non-compliance rating
2.6.1 Sealing treatment chamber	<ul style="list-style-type: none">• Demonstrates the process of sealing the chambers.• Has records for treatment chamber and seal number.• Has a written procedure in place to deal with tampered/broken seals.	3.8	<ul style="list-style-type: none">• Minoror• Major



Verification of treatment

The following table describes the performance standards and non-compliance ratings for verification of treatment for vapour heat treatment providers.

Checklist items	Performance standards – verification of treatment	Reference to standard	Non-compliance rating
3.1.1 Sensor readings	After treatment, the: <ul style="list-style-type: none">• result is determined through analysis of treatment data• data is provided to the department for completion of certification.	4.0.1	Critical
3.2.1 Treatment failure	Explains when a treatment is deemed to have failed because: <ul style="list-style-type: none">• the treatment chamber has been unlocked or seals have been tampered with at any point during the treatment• the sensors are placed incorrectly in the product or in an incorrect location within the treatment chamber• the temperature records show that the temperature and time required by the prescribed treatment schedule have not been maintained• the relative humidity was not maintained at or above the required humidity level throughout the treatment process.	4.1.1	Critical
3.2.2 Treatment failure	<ul style="list-style-type: none">• Has procedures in place to manage treatment failures, which may include circumstances where treatments can restart.• Has taken correct actions to control the goods in the event of a treatment failure (goods have not entered the post treatment area).	4.1.2	Major



Phytosanitary security measures

The following table describes the performance standards actions and non-compliance ratings for phytosanitary security measures for vapour heat treatment providers.

Checklist items	Performance standards – phytosanitary security measures	Reference to standard	Non-compliance rating
4.1.1 Segregation of goods	Treated goods must be: <ul style="list-style-type: none">• identified• segregated from other goods in line with Guideline: Management of plant export registered establishments and Guideline: Maintenance of phytosanitary security for horticulture exports.	5.1.2 5.1.4	<ul style="list-style-type: none">• Majoror• Critical
4.2.1 Traceability	<ul style="list-style-type: none">• Can demonstrate traceability of the goods back to the packhouse.• Can demonstrate traceability of the goods back to the grower, if required.	5.1.3	Major
4.3.1 Post treatment phytosanitary security	Post treatment area must: <ul style="list-style-type: none">• be clean and pest free• have systems in place to prevent insect infestation or re-infestation of goods in line with Departmental Policy: Management of plant export registered establishments and Guideline: Maintenance of phytosanitary security for horticulture exports.	5.0.1 5.1.1	<ul style="list-style-type: none">• Majoror• Critical



Documentation

The following table describes the performance standards and non-compliance ratings for documentation for vapour heat treatment providers.

Checklist items	Performance standards – documentation	Reference to standard	Non-compliance rating
5.1.1 Documented systems	<p>The following procedures must be documented, current and being followed by the relevant staff:</p> <ul style="list-style-type: none">• Treatment procedures, including<ul style="list-style-type: none">○ chamber security, including dealing with tampered/broken seals○ loading, including temperature probe placement○ goods handling, including entry and exit processes○ equipment calibration○ treatment failures.• Phytosanitary security procedure as per <i>Guideline: Maintenance of phytosanitary security for horticulture exports</i>, including<ul style="list-style-type: none">○ pre-treatment security, if the goods have an existing phytosanitary status (infield controls and the like).○ post treatment security.○ load out security.○ security during phytosanitary inspection, if relevant.• Traceability procedures as per Departmental Policy: <i>Management of plant export registered establishments</i>.	6.1 6.2	Major

This is a CONTROLLED document. Any documents appearing in paper form are not controlled and should be checked against the IML version prior to use.



Checklist items	Performance standards – documentation	Reference to standard	Non-compliance rating
5.2.1 Records	<p>The following records have been kept for each treatment:</p> <ul style="list-style-type: none">• date of treatment• name of treatment facility• results from sensor calibrations• sensor placements• date and time chamber was sealed• treatment chamber seal number• treatment parameters, including time, temperature and humidity. <p>Important: Records must be kept for 2 years.</p>	6.1 6.2	<ul style="list-style-type: none">• Minor or• Major
5.2.2 Records	<p>The following traceability records have been kept:</p> <ul style="list-style-type: none">• receipts• storage• dispatch. <p>Important: Records must be kept for 2 years.</p>	6.2	<ul style="list-style-type: none">• Minor or• Major



Checklist items	Performance standards – documentation	Reference to standard	Non-compliance rating
5.2.3 Records	<p>The following records have been kept:</p> <ul style="list-style-type: none">• calibration records• maintenance records• internal verification activities• failed treatments. <p>Important: Records must be kept for 2 years.</p>	6.2	<ul style="list-style-type: none">• Minor or• Major
5.3.1 Training Records	<ul style="list-style-type: none">• Training records must be kept for staff undertaking the following tasks:<ul style="list-style-type: none">○ calibration of sensors○ Placement of sensors○ handling treated goods○ analysing treatment results○ use of software/computer programs to monitor treatments.• Training records must record:<ul style="list-style-type: none">○ details of the training undertaken○ date the training was completed○ name of the individual that was trained○ evidence of competence.• If the training was conducted internally all training material must be made available on request.	6.2	Minor

This is a CONTROLLED document. Any documents appearing in paper form are not controlled and should be checked against the IML version prior to use.



Additional requirements for protocol markets

The following table outlines the additional county requirements. These criteria must be met to gain access to each market.

Protocol country	Performance standards	Non-compliance rating
All markets	Refer to the relevant protocol and/or workplan.	Critical to markets

Related material

The following related material is available in the [Plant Export Operations Manual](#):

- [Australian phytosanitary treatment application standard for vapour heat treatment](#)
- Guideline: [Audit of plant export registered establishments](#)
- Departmental Policy: [Management of plant export registered establishments](#)
- Guideline: [Maintenance of phytosanitary security for horticulture exports](#).

Document information

The following table contains administrative metadata.

Instructional Material Library document ID	Instructional material owner
IMLS-9-4559	Director, Horticulture exports program

Version history

The following table details the published date and amendment details for this document.

Version	Date	Amendment details
1.0	14/01/2019	First publication of this reference.
2.0	7/03/2019	Amended references to guidance material to align with current documents.
3.0	29/03/21	Updated export legislation reference.
4.0	30/06/2022	Updated references to align with current documents.
5.0	4/07/2023	Updated to align with revised VHT Application Standards.