Post-harvest treatment

Product sheet – Ethylene Buster® sachets

General

- Post harvest product for ethylene sensitive flowers (e.g. Cymbidium, Dendrobium, Dianthus, Lilium), tulip bulbs and pot plants (e.g. Achimenes, Campanula, Miltonia, Dendrobium, Ficus benjamina, Kalanchoe, Phalaenopsis, Plectranthus, Schlumbergera, Streptocarpus).
- Available in a permeable powdered sachet.
- Silver free product, based on the active ingredient 1-MCP (1-Methylcyclopropene).
- For availability in your state see list on page 4.

Effects

- Blocks ethylene receptors, thus protecting against internally as well as externally produced ethylene.
- Prolongs vase life of cut flowers, display life of tulip bulbs and shelf life of pot plants.
- Improves bud opening.
- Prevents premature shrinking and dropping of buds, leaves and blooms.

Applications

- Should be used in a closed box preferably with plastic liner inside, during transport.
- For use by growers, bouquet makers and transporters.

Savings

- Reduces flower, tulip bulb and pot plant wastage.
- Extension of distribution and sales period possible.

Recommendations

- Store under cool and dark conditions, preferably between 41°F and 77°F (5°C – 25°C).
- Shelf life: 24 months in sealed packaging and stored under the right conditions.
- Ethylene Buster® sachets can be used without harm to flowers, plants and users.

Instruction for use

- To treat a box containing flowers or plants, dip each of the sachets in tap water.
- Place the wetted sachets in the box and immediately close it.
- Keep treatment area closed during storage and shipping for at least four hours to ensure the flowers or plants have received an effective treatment.

T763 / US / v2301

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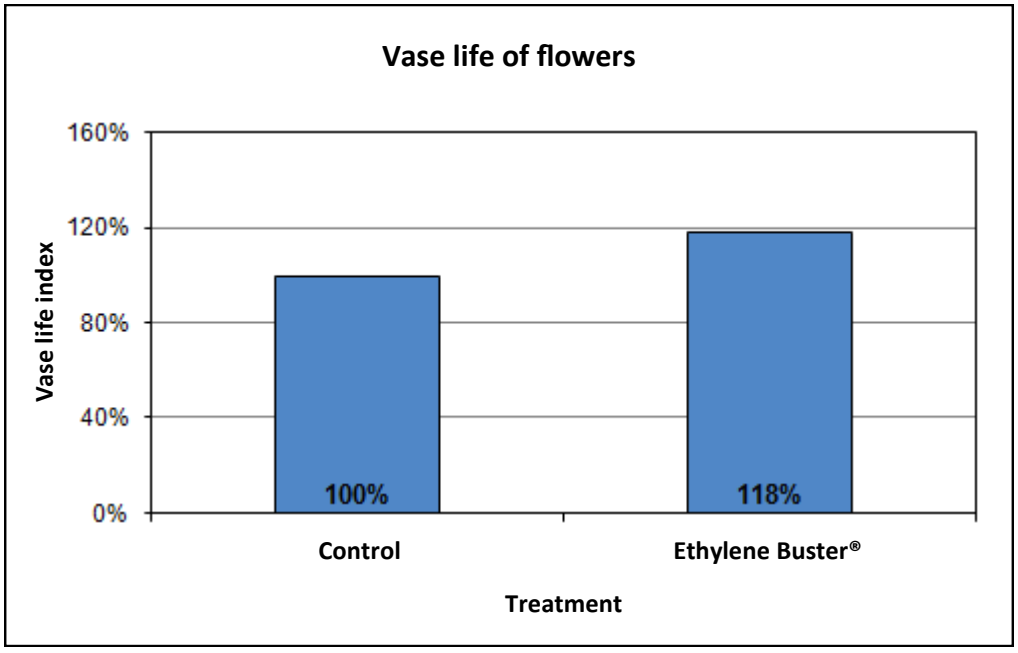
Post-harvest treatment

Dosage

Box / container volume (ft3)	Box / container volume (m3)	Number of sachets to use per box or container
0 – 3	0 – 0.08	2
3 – 6	0.08 – 0.17	4
6 – 9	0.17 – 0.25	6
9 – 12	0.25 – 0.34	8
12 – 15	0.34 – 0.42	10

Test Results

The following graph shows the effect of Ethylene Buster® on the vase life of flowers compared to flowers without any ethylene treatment.



Tests show positive effect on the following ethylene sensitive flowers & plants:

Calathea
Campanula
Citrofortunella
Cyclamen
Cymbidium
Dendrobium compactum
Dendrobium nobile
Dianthus
Hibiscus rosa-sinensis
Kalanchoe
Miltoniopsis
Narcissus
Nephthytis
Nephrolepis
Pelargonium
Petunia
Phalaenopsis
Philodendron
Poinsettia (Euphorbia pulcherima)
Rhipsalidopsis / Schlumbergera / Zygocactus

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Post-harvest treatment

Vase life of Dianthus 'Delphi'

Treatment: none
Total vase life: 9 days
Photo taken: day 12

Treatment: Ethylene Buster®
Total vase life: 12 days
Photo taken: day 12

Phalaenopsis

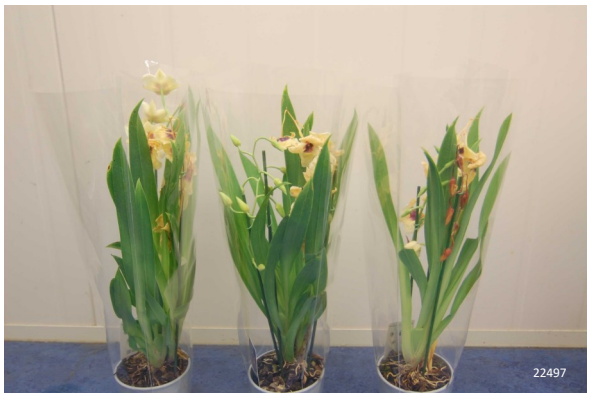
5 days transport simulation – Photo taken day 7 in store

Control

Ethylene Buster®

Miltonia

5 days transport simulation – Photo taken day 7 in store



Control

Ethylene Buster®

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Post-harvest treatment

Dendrobium nobile

3 days transport simulation – Photo taken day 8 in store

Control

Ethylene Buster®

Registration

Ethylene Buster® sachets are registered in the following states:

Alabama	*Michigan*	*Tennessee*
California	*New Jersey*	*Texas*
Florida	*Ohio*	*Utah*
Illinois	*Pennsylvania*	*Virginia*
Kentucky	*South Carolina*	*Washington*

Please feel free to contact Chrysal USA, www.chrysalusa.com, or contact your sales manager for more information.

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Post-harvest treatment

Ethylene Buster® – Test Protocol

Do you want to test the effects of Ethylene Buster® for yourself?
With this test protocol we will guide you.
In order to compare, this test should always contain treated and control plants. Select plants that are uniform of stage and development. Use at least 6 plants per treatment.

The plant hormone ethylene stimulates ageing symptoms like leaf, bud and flower drop, flower wilting and fruit ripening on sensitive flowers and plants. More damage effects of ethylene are observed at when plants are exposed to higher temperatures, sources of higher concentration of external ethylene or when exposed for longer periods.

Ethylene can have multiple causes, internal and external.

- *External ethylene*: Sources of external ethylene include fruits, old flowers, polluted air, insulation in new trucks and buildings and exhaust fumes.
- *Internal ethylene*: Internal ethylene production is enhanced by the plant and flowers in 'stress situations' such as darkness for a longer period, transport movements, large temperature fluctuation even for a few hours etc.

Requirements of the test

- 4 boxes
- Fruit such as tomatoes or bananas
- Plants treated with Ethylene Buster®
- Control plants

Test procedure external and internal ethylene:

- Apply Ethylene Buster® on the plants; for usage and dosage see product sheet.
- Be aware that the ethylene damage can take a few days, sometimes even weeks, before it comes visible. Internal ethylene can especially have a delayed effect.
- For some crops the ability of re-blooming is negatively affected by ethylene, in case of crops which are able to re-bloom, use a long observation period.
- Take photos of the effects.

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The following test scheme can be used:

Box no.	Box content	Treatment
1	Sealed box without fruit	None
2	Sealed box without fruit	Ethylene Buster® sachet
3	Sealed box with fruit	None
4	Sealed box with fruit	Ethylene Buster® sachet

1. Fully saturate the soil with water and number each plant related to a treatment.
2. For testing with *internal ethylene* we create a 'stress situation'. In this case:
   a. Place the plants in a box without light for 7 days at 68°F (20°C), without opening the box during the test.
   b. Another option could be to put the plants in a box and exposed to wide temperature fluctuations for example one day at 46 – 50°F (8 – 10°C) and three days at 64 – 68°F (18 – 20°C).
3. For testing the effect of *external ethylene* we put the plants in a box containing ripening fruit such as bananas or tomatoes (3 – 5 pieces per box).
4. Place a control treatment in the box with and without the presence of ripening fruit.
5. Let the plants stay in the box for around 7 days. Do not open the boxes during the test. Keep the boxes far apart from each other, preferably in a separate room.
6. After 4 – 7 days remove the plants from the boxes and put them in a climate controlled room. A climate controlled room has a stable climate (ideally ± 68°F (± 20°C) and ± 60% relative humidity) and make sure that the plants of each treatment are in similar conditions (light, airflow) to be able to make good comparisons.
7. Observe the plants every day on flower opening, leaf drop, leaf yellowing, shelf life and bud loss.
8. Compare the results between the untreated control plants and the plants treated with Ethylene Buster®.
9. Re-water the plants if necessary.

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