

****Container Label****

Restrained Fuel

Solution

Plant Growth Regulator

For sprout inhibition in stored potatoes and onions and accelerated ripening in greenhouse tomatoes.

COMMERCIAL

ACTIVE INGREDIENT: denatured ethanol..... 90%

For use only by Restrained trained operators. Restrained Fuel is only to be used with the proprietary Restrained Generator B100 and B200.

READ THE LABEL BEFORE USING
KEEP OUT OF REACH OF CHILDREN



DANGER – EYE IRRITANT

REGISTRATION NO. 34152
PEST CONTROL PRODUCTS ACT

NET CONTENTS: 10L – 210L

Registrant:
Restrained Company Ltd. (UK address)
Floods Ferry Road
Doddington, March, United Kingdom PE15 0UW
+44 (0)173 337 2526

Restrained Netherlands BV (Netherlands address)
Minervum 7030, 4817 ZL Breda, The Netherlands

Canadian Representative:
N2 Compliance Ltd.
108 Wycliffe Cove, P.O. Box 425
Victoria Harbour, Ontario
Canada L0K 2A0
(519) 837-0629

GENERAL INFORMATION:

Restrain Fuel is intended for sprout inhibition of stored potatoes and onions and ripening acceleration of greenhouse tomatoes. Restrain Fuel is to be used only in outdoor air cooled and mechanically cooled storage areas or greenhouses with ventilation systems. The Restrain Generator converts Restrain Fuel *in situ* to produce ethylene gas at levels to inhibit stored potatoes and onions from sprouting and to accelerate the ripening of greenhouse tomatoes. Ethylene gas is produced during the ripening process of a number of fruits and vegetables and is a naturally occurring compound in the plant.

Neither the Restrain Generator nor the Restrain Fuel contains ethylene gas. The ethylene gas is produced *in situ* from the conversion of Restrain Fuel by the Restrain Generator.

Producing ethylene gas in a storage area or greenhouse provides the following benefits:

- delayed sprouting of potatoes provides firmer healthier seed potatoes for planting or table potatoes for consumption
- delayed internal sprouting in onions provides a firmer and healthier onion for consumption or planting
- accelerated ripening of tomatoes provides a more uniform crop to be harvested

SAFETY AND HANDLING:

PRECAUTIONS

KEEP OUT OF REACH OF CHILDREN

PREVENT ACCESS BY UNAUTHORIZED PERSONNEL

FLAMMABLE – Flammable liquid. Keep away from heat/sparks/open flames/hot surfaces and other ignition sources. No smoking.

Take precautionary measures against static discharge.

Avoid breathing fumes.

Severely irritating to the eye. DO NOT get in eyes.

May cause drowsiness or dizziness.

Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse.

Prior to re-entry, ventilate areas after application either by opening windows and doors or using fans, where required, to aid in the circulation of air. Air exchange/ventilation systems confirmed to be operational may also be used.

Workers must wear a long-sleeved shirt, long pants, chemical-resistant gloves, socks and shoes during loading and removal of Restrain Fuel containers. In addition, wear protection eyewear (goggles or face shield) during loading. A respirator with a NIOSH-approved organic-vapour-removing cartridge with a prefilter approved for pesticides, or a NIOSH-approved canister approved

for pesticides is required if levels of ethylene oxide are above permissible levels (ACGIH TLV – TWA 1 ppm.)

Follow manufacturer’s instructions for cleaning/maintaining personal protective equipment (PPE). Keep and wash PPE separately from other laundry.

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if contaminated. Wash thoroughly and put on clean clothing.
- Remove Personal Protective Equipment immediately after handling this product.
- Wash the outside of gloves before removing.
- As soon as possible, wash thoroughly and change into clean clothing.

FIRST AID:

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

If swallowed	<ul style="list-style-type: none">• Call a poison control centre or doctor immediately for treatment advice.• Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor.• Do not give anything by mouth to an unconscious person.
If in eyes	<ul style="list-style-type: none">• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye.• Call a poison control centre or doctor for treatment advice.
If on skin or clothing	<ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15 to 20 minutes.• Call a poison control centre or doctor for treatment advice.
If inhaled	<ul style="list-style-type: none">• Move person to fresh air.• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.• Call a poison control centre or doctor for further treatment advice.

TOXICOLOGICAL INFORMATION:

No specific antidote is available. Treat symptomatically.

DIRECTIONS FOR USE:

See the printed brochure provided with this container.

ENVIRONMENTAL PRECAUTIONS:

Restrain Fuel is to be used indoors only.

STORAGE

Store any unused Restrain Fuel in its original container in a cool, dry place. Store this product away from food and feed. Store out of reach of children, preferably in a locked storage area.

DISPOSAL

DO NOT reuse this container for any other purpose. This is a recyclable container and is to be disposed of at a container collection site. Contact your local distributor/dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site:

1. Triple- or pressure-rinse the empty container. Dispose of the rinsings in accordance with provincial requirements.
2. Make the empty, rinsed container unsuitable for further use.

If there is no container collection site in your area, dispose of the container in accordance with provincial requirements.

For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for cleanup of spills.

NOTICE TO USER

This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label.

****Booklet Label****

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TOXICOLOGICAL INFORMATION:

No specific antidote is available. Treat symptomatically.

DIRECTIONS FOR USE:**CROPS, PESTS, APPLICATION RATES AND METHODS**

STORED POTATO APPLICATION			
Crop	Ethylene Rate	Interval	Remarks
Stored Potatoes (Sprout Inhibition)	12.5 mg/m ³ 0.01 L/m ³ (10 ppm)	Apply continuously until potatoes are removed from storage. For seed potatoes, apply continuously until 5-days prior to planting.	<ul style="list-style-type: none">• Monitor storage area temperature and commence application once eyes of potatoes begin to develop.• For use on seed potatoes remove the Restrain Generator five days prior to planting.• Check the Restrain Generator and sensor daily during operation to ensure the proper rate of ethylene gas is being generated continuously.• Maintain an appropriate level of Restrain Fuel to ensure the proper delivery of the ethylene gas.• Monitor the potato storage area temperature and ventilation to ensure the appropriate dispersion of the ethylene gas during application.

STORED ONION APPLICATION			
Crop	Ethylene Rate	Interval	Remarks
Stored Onions (Sprout Inhibition)	19.0 mg/m ³ 0.015 L/m ³ (15 ppm)	Apply continuously until onions are removed from storage.	<ul style="list-style-type: none"> • Monitor storage area temperature and commence application once onions have been cured and dried. • Check the Restrain Generator and sensor daily during operation to ensure the proper rate of ethylene gas is being generated continuously. • Maintain an appropriate level of Restrain Fuel to ensure the proper delivery of the ethylene gas. • Monitor the onion storage area temperature and ventilation to ensure the appropriate dispersion of the ethylene gas during application.

GREENHOUSE TOMATO APPLICATION			
Crop	Ethylene Rate	Interval	Remarks
Greenhouse Tomatoes (Accelerated ripening)	1.75 mg/m ³ (0.0014 L/m ³) (1.4 ppm)	Apply at BBCH 81 – 89) for 4.5 days continuously.	<ul style="list-style-type: none"> • Monitor crops and commence application once the desired plant growth stage has been reached. • Check the Restrain Generator and sensor* during operation to ensure the proper rate of ethylene gas is being generated continuously. • Maintain an appropriate level of Restrain Fuel to ensure the proper delivery of the ethylene gas. • Monitor greenhouse temperature and ventilation to ensure the appropriate dispersion of the ethylene gas during application.

* Not applicable if using Restrain Generator B100.

APPLICATION INSTRUCTIONS:

Follow all safety precautions and use directions listed in the Restrain Generator Operators Manual (B100 or B200) for the correct unit placement. Follow all generator program prompts/settings for the application requirements.

Follow the instructions in the Restrain Generator Operators Manual (B100 or B200) for proper use, maintenance and clean-up procedures.

STORED POTATOES

The Restrain Generator should be located within the storage area that is being treated. This machine is not intended for use in temperatures below – 1.0 °C (30 °F).

Install the Restrain Generator when potatoes have reached desired storage temperature and eyes have started to develop. For table potatoes install the Restrain Generator when the storage area has reached 4 °C (39.2 °F) and for processing potatoes when the storage area reaches 8 °C (46.4 °F). If used on seed potatoes allow for continuous application until 5 days prior to planting to keep the potatoes dormant and sprout free.

For the Restrain Generator B200 the room should be at least an empty volume of > 200 m³ (7,000 cubic feet which is equivalent to approximately 60 one-tonne boxes) for normal cold storage areas, or 500 m³ (17,500 cubic feet) if it has been totally sealed to controlled atmosphere standards. The maximum size of the potato storage area depends on the standard construction, room air leakage, and the target level of ethylene (calculated in ppm).

For use in potato storage areas the Restrain Generator B200 includes a B-ECHT Sensor that monitors and records the storage area temperature, CO₂ and humidity at the same time as the % Restrain reading. The B-ECHT Sensor must be connected to the Restrain Generator B200 and placed 15 m (50 ft) away from the generator in an area of good circulation. The B-ECHT Sensor must be placed away from the Restrain Fuel container to prevent false readings.

Place the Restrain Generator B200 at floor level or not greater than 1.0 m above the floor in a position of good circulation with the bottom in a location with a maximum gradient of 5 degrees with at least 60 cm (2.0 ft) minimum free space surrounding it and not above or close to a source of ignition. The location in the storage area depends on the layout and design. The Restrain Fuel container is connected to the Restrain Generator B200 using the Micro Pump MF4-34 tube which is fitted with a filter prior to being placed in the container of the Restrain Fuel.

Note: Follow all safety precautions and use directions listed in the Restrain Generator B200 Operations Manual for correct unit placement and follow the generator program prompts/settings.

For use in potato storage areas, the “Slow Start Up” program is initiated from the “Start Menu” as standard procedure. The Slow Start Up program in the Restrain Generator B200 will automatically be set to gradually increase the level of ethylene in the storage area from a starting level of 0.2% Restrain Fuel (0.1 ppm ethylene) to 20% Restrain Fuel (10 ppm ethylene) over a 21 day period. When ethylene is introduced, the air must be circulated continuously within the storage area for the first 3 weeks to avoid the localized build-up of CO₂ (carbon dioxide). Once the Slow Start Up program has run for 21 days the level of ethylene produced and maintained in the potato storage area will have reached 20% Restrain Fuel and will be maintained at this level for the duration of the ware season.

The machine and sensor should be checked DAILY for correct operation. Daily fresh air intake to reduce the CO₂ levels is recommended (daily flushing fresh air for a maximum of 6 hours) and does not harm the obtained dormancy of the potatoes.

Note: Follow the instructions in the Restrain Generator B200 Operations manual for proper use, maintenance and clean-up procedures.

STORED ONIONS

The Restrain Generator should be located within the storage area that is being treated. This machine is not intended for use in temperatures below – 1.0 °C (30 °F).

Install the Restrain Generator B200 when onions have reached desired storage temperature and have been dried and cured.

For the Restrain Generator B200 the room should be at least an empty volume of > 200 m³ (7,000 cubic feet which is equivalent to approximately 60 one-tonne boxes) for normal cold storage areas, or 500 m³ (17,500 cubic feet) if it has been totally sealed to controlled atmosphere standards. The maximum size of the onion storage area depends on the standard construction, room air leakage, and the target level of % Restrain Fuel (= calculation in ppm ethylene concentration).

For use in onion storage areas the Restrain Generator B200 includes a B-ECHT Sensor that monitors and records the storage area temperature, CO₂ and humidity at the same time as the % Restrain reading. The B-ECHT Sensor must be connected to the Restrain Generator B200 and placed 15 m (50 ft) away from the generator in an area of good circulation. The B-ECHT Sensor must be placed away from the Restrain Fuel container to prevent false readings.

Place the Restrain Generator B200 at floor level or not greater than 1.0 m above the floor in a position of good circulation with the bottom in a location with a maximum gradient of 5 degrees with at least 60 cm (2.0 ft) minimum free space surrounding it and not above or close to a source of ignition. The location in the storage area depends on the layout and design. The Restrain Fuel container is connected to the Restrain Generator B200 using the Micro Pump MF4-34 tube which is fitted with a filter prior to being placed in the container of the Restrain Fuel.

Note: Follow all safety precautions and use directions listed in the Restrain Generator B200 Operations Manual for correct unit placement and follow the generator program prompts/settings.

For use in onion storage areas, the program is initiated from the “Start Menu” as standard procedure. The onion program in the Restrain Generator B200 will automatically be set to the level of ethylene in the storage area of 30% Restrain Fuel (15 ppm ethylene) and will be maintained at this level for the duration of the storage. When ethylene is introduced, the air must be circulated continuously within the storage area to avoid the localized build-up of CO₂.

The machine and sensor should be checked DAILY for correct operation. Daily fresh air intake to reduce the CO₂ levels is recommended (up to 6 hours) and will not reduce onion dormancy

Note: Follow the instructions in the Restrain Generator B200 Operations manual for proper use, maintenance and clean-up procedures.

GREENHOUSE TOMATOES

The Restrain Generator should be located within the greenhouse (glass, plastic) that is being treated. The Restrain Generator's B100 and B200 are not intended for use in temperatures below – 1.0 °C (30 °F).

Install the Restrain Generator when crop has reached the desired growth stage (BBCH 81 – 89) and allow the application to continue for 4.5 days to accelerate the ripening process of the greenhouse tomato crop. For greenhouse tomatoes the Restrain Generator B100 or B200 is recommended to be used overnight, with the windows closed and switched off at approximately 4:00 am and all windows re-opened to flush out the humidity and ethylene gas.

The Restrain Generator B100 can be used in areas with an empty volume of > 200 m³. The maximum size greenhouse depends on the standard construction, air leakage, and the target level of ethylene gas. The setting for the Restrain Generator B100 (1.44 L/24 hrs., 2.88 L/24 hrs. or 4.32 L/24 hrs.) to produce the recommended level of ethylene gas (1.4 ppm) will be determined by the total greenhouse volume.

Place the Restrain Generator B100 with the bottom in a location with a maximum gradient of 5 degrees with at least 60 cm (2.0 ft) minimum free space surrounding it. The location in the greenhouse depends on the layout and design. A Micro Pump MF4-34 tube is fitted with a filter and placed into the container of Restrain Fuel. Select the recommended dosage setting using the switch on the Restrain Generator B100 and begin operation.

Note: Follow all safety precautions and use directions listed in the Restrain Generator B100 Operations Manual for correct unit placement and follow the generator program prompts/settings.

Note: Follow the instructions in the Restrain Generator B100 Operations manual for proper use, maintenance and clean-up procedures.

For the Restrain Generator B200 the tomato greenhouse should be at least an empty volume of > 200 m³ (7,000 cubic feet). The maximum size of the tomato greenhouse depends on the standard construction, room air leakage, and the target level of % Restrain Fuel (= calculation in ppm ethylene concentration).

For use in tomato greenhouses the Restrain Generator B200 includes a B-ECHT Sensor that monitors and records the storage area temperature, CO₂ and humidity at the same time as the ethylene ppm reading. The B-ECHT Sensor must be connected to the Restrain Generator B200 and placed 15 m (50 ft) away from the generator in an area of good circulation. The B-ECHT Sensor must be placed away from the Restrain Fuel container to prevent false readings.

Place the Restrain Generator at floor level or not greater than 1.0 m above the floor in a position of good circulation with the bottom in a location with a maximum gradient of 5 degrees with at least 60 cm (2.0 ft) minimum free space surrounding it and not above or close to a source of ignition. The location in the greenhouse depends on the layout and design. The Restrain Fuel container is connected to the Restrain Generator using the Micro Pump MF4-34 tube which is fitted with a filter prior to being placed in the container of the Restrain Fuel.

Note: Follow all safety precautions and use directions listed in the Restrain Generator B200 Operations Manual for correct unit placement and follow the generator program prompts/settings.

For use in tomato greenhouses, the "Ripen Start Up" program is initiated from the "Start Menu" as standard procedure. Select the Ripen Start Up program in the Restrain Generator B200 and

set to the level of ethylene required for the accelerated ripening of tomatoes in the greenhouse, 1.4 ppm ethylene over a 4.5 day period.

The machine and sensor should be checked DAILY for correct operation.

Note: Follow the instructions in the Restrain Generator B200 Operations manual for proper use, maintenance and clean-up procedures.

ENVIRONMENTAL PRECAUTIONS:

Restrain Fuel is to be used indoors only.

STORAGE

Store any unused Restrain Fuel in its original container in a cool, dry place. Store this product away from food and feed. Store out of reach of children, preferably in a locked storage area.

DISPOSAL

DO NOT reuse this container for any other purpose. This is a recyclable container, and is to be disposed of at a container collection site. Contact your local distributor/dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site:

1. Triple- or pressure-rinse the empty container. Dispose of the rinsings in accordance with provincial requirements.
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