

ETHYLENE AGRICULTURAL GRADE

ACTIVE INGREDIENT: ETHYLENE 100 PERCENT
CAS: 74-85-1

**DANGER: FLAMMABLE HIGH PRESSURE GAS. MAY FORM
EXPLOSIVE MIXTURES WITH AIR MAY CAUSE FROSTBITE.
MAY CAUSE DIZZINESS AND DROWSINESS.**

ODOR: SWEET

Keep away from heat, flame, and sparks. Avoid contact with skin or eyes. Store and use with adequate ventilation. Do not enter places where used until adequately ventilated. Use with equipment rated for cylinder pressure. Close valve when not in use and when empty. Cylinder temperature should not exceed 125°F (52°C). Use in accordance with tag attached to cylinder valve and Linde Form L-4598 (MSDS).

FIRST AID: IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician. **IN CASE OF FROSTBITE**, obtain medical treatment immediately.

LEAK: Evacuate area and keep personnel upwind. Shut off all sources of ignition. Shut off leak if without risk.

FIRE: Do not extinguish burning gas if flow cannot be shut off immediately. Use water spray or fog nozzle to keep cylinder cool. Move cylinder away from fire if without risk.

IN CASE OF EMERGENCY: Call 1-800-UCC-HELP (1-800-822-4357)

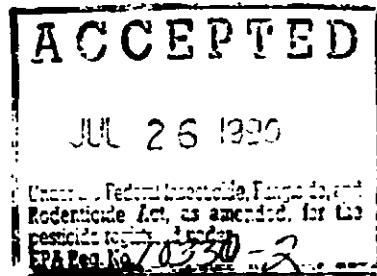
FOR AGRICULTURAL AND INDUSTRIAL USE ONLY.

DOT/IMO Shipping Name: Ethylene UN 1962

EPA Reg. No. 10330-2

EPA Est. No. 10330-

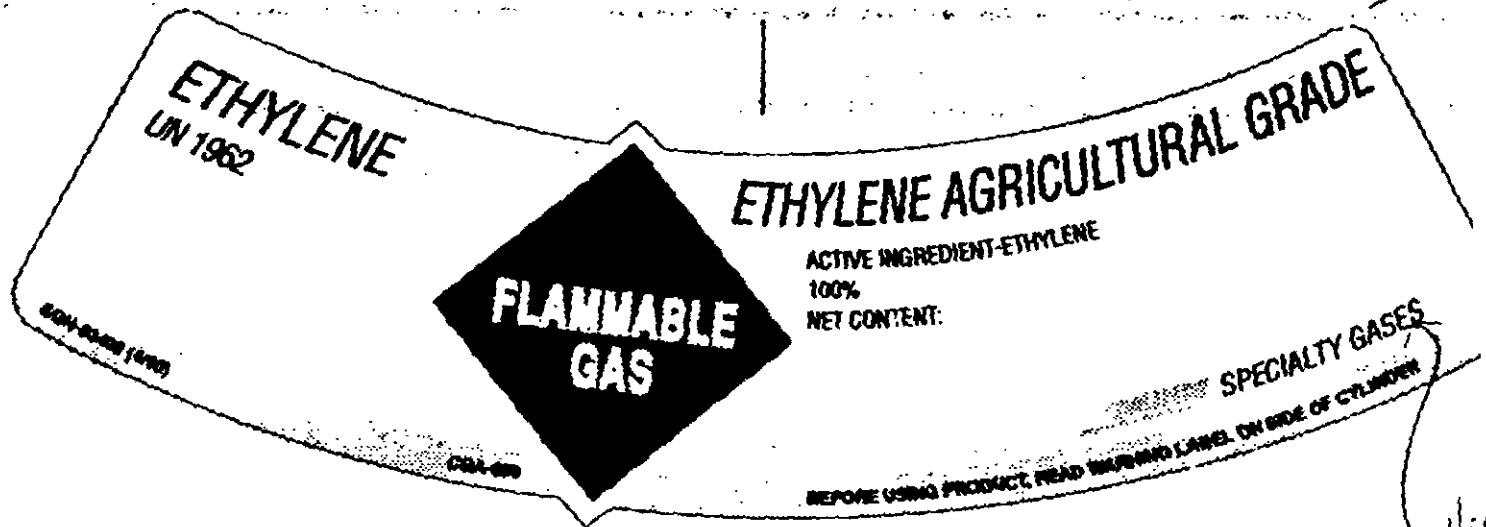
BATCH



Union Carbide Industrial Gases Inc.
Linde Division
Danbury, CT 06817-0001
DO NOT REMOVE THIS LABEL

LINDE SPECIALTY GASES
MADE IN USA SGB-03400 (4/90)

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ALL COPY-BLACK
DIAMOND-D.O.T. GREEN
LOGO- GREEN PMS 354 AND
BLUE PMS 072
BAND ACROSS BOTTOM-BEIGE PMS 466

over-lays

*Similar
Amshel
100*

37 LBS. (76.8 KG)
SMP-2410 (1/80)

30 LBS. (13.6 KG)
SMP-2400 (1/80)

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TECHNICAL REFERENCE: "A Witchweed Seed Germination Stimulant", Robert E. Eplee, USDA Witchweed Development Laboratory, Whiteville, N.C.

For use by or under the supervision of Federal and/or State personnel in accordance with the U.S. Department of Agriculture's manual instructions for witchweed eradication or control.

UNION CARBIDE INDUSTRIAL GASES INC.

Linde Division

Danbury, CT 06817-0001

**Copyright 1988 Union Carbide Industrial Gases Technology Corporation
SNP-2500 (4/90)**

**CRW/lce
SNP2500
120489**



DO NOT DETACH THIS TAG

SNP-2500 (4/90)

ETHYLENE

ACTIVE INGREDIENT: ETHYLENE 100%

DANGER: EXTREMELY FLAMMABLE

Ethylene is extremely flammable when mixed with air and will explode if ignited. Flammable in air between 2.7% to 36% by volume.

DIRECTIONS FOR USE

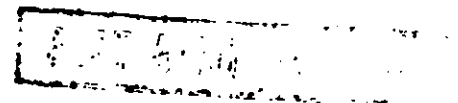
It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

To be used only by persons experienced in fruit ripening and/or witchweed control or under the supervision of experienced personnel. Use only in accordance with directions given on this tag and the safety precautions listed on the body label. See current Union Carbide Industrial Gases Inc., Linde Division, Material Safety Data Sheet, Form L-4598 for additional safety information.

GENERAL PRECAUTIONS

DANGER: EXTREMELY FLAMMABLE

1. DO NOT USE OPEN FLAME HEATERS, EXPOSED ELEMENT ELECTRICAL HEATERS OR ANY SPARK PRODUCING ELECTRICAL EQUIPMENT, SUCH AS ELECTRIC MOTORS WITH EXPOSED BRUSHES. USE FANS WITH AN INDUCTION TYPE OR SEALED-IN MOTOR.
2. Post DANGER: "EXTREMELY FLAMMABLE" and "NO SMOKING" signs inside the sweating room, on the outside of all doors, and in the vicinity of the cylinders and measuring apparatus.
3. Cylinders should be stored in a well-ventilated area. When discharged from a cylinder in a confined space, ethylene gas replaces the air and may be harmful. Do not breathe vapors. Asphyxiant.
4. Use only metal connections and piping capable of withstanding a working pressure of 2,000 pounds per square inch.
5. CYLINDERS MUST BE SECURED IN AN UPRIGHT POSITION WHEN DISCHARGING, and must be grounded before discharging in order to avoid static sparks.



6. **CYLINDER VALVE OUTLET CONNECTION IS CGA 350 (LEFT-HANDED THREAD). USE REGULATOR ESPECIALLY MADE FOR ETHYLENE GAS.**
7. **Comply with all insurance requirements, laws, ordinances and regulations.**

STORAGE AND DISPOSAL

Return cylinders to supplier. Store according to instruction provided on this label.

DANGER: EXTREMELY FLAMMABLE

AMOUNT OF GAS NEEDED

Each application of ethylene should consist of not more than one cubic foot of ethylene to 1,000 cubic feet of room space. Use of an additional quantity of ethylene will not speed up the coloring process. An excess quantity of ethylene may result in an accumulation of a flammable and explosive air-gas mixture which should be avoided.

Before starting the treatment, it is necessary to determine the cubic content of the room by multiplying the length by the width by the height. No allowance is made for the space occupied by the fruit. For instance, a room 20 feet long, 15 feet wide and 10 feet high contains 3,000 cubic feet and requires a maximum of three cubic feet of ethylene, per treatment.

THE PROPER TEMPERATURE

Keep the temperature between 65°F and 90°F depending on the type and condition of the fruit. If the room becomes cooler than 65°F the coloring process is slow. At temperatures over 90°F bacterial growth and rotting may be accelerated.

When the room must be heated, a hot water or steam pipe system is the most suitable. **NEVER USE AN OPEN FLAME.** The heating may be done with a gas or electric heater which has been examined and **LISTED FOR THIS APPLICATION** by Underwriters' Laboratories, Inc. No other heater should be used in the room.

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APPLICATION

Ventilate the room before each application of ethylene, particularly if the room is well sealed. Fruits "breathe" and, like human beings, need plenty of oxygen. The air can be changed by opening the doors and windows for about half an hour before each treatment is made. In specially constructed or large sweating rooms, a ventilating fan should be provided.

A fan is also useful for circulating the air and ethylene mixture. **BUT ONLY IN SPECIALLY BUILT AIRTIGHT ROOMS.** It assists the ethylene to penetrate closely packed fruits and reduces coloring time. In loosely constructed rooms, the fan would quickly drive the ethylene out and should never be used.

All electrical equipment, including lights, fan motors, switches, etc., should comply with National Electric Code for Class 1, Group D equipment and installations. Ethylene is introduced into the room in accurately measured quantities at regular intervals of time. The gas should be conducted from the cylinder through a flowmeter calibrated for measuring flow in cubic feet per minute of ethylene gas. The gas then flows to the treating room through metal pipes or tubing.

The regulator should be operated as follows:

1. Connect the regulator to the cylinder valve. (Note the threads on the valve are left-handed.) See that the union nut is drawn up tight, to prevent any leak at this point. Soapy water applied to this joint will indicate leaks by expanding bubbles. **NEVER USE A MATCH OR OPEN FLAME TO CHECK FOR FLAMMABLE GAS LEAKS.**
2. Attach a flexible metal hose from the outlet connection of the regulator to the piping which leads to the building or vault containing the fruit. **THIS LEAD-IN PIPE MUST BE GROUNDED.**
3. See that the handwheel on the regulator is backed up by turning it to the left so that it is loose. Open the valve at the top of the cylinder **SLOWLY** by turning it to the left all the way.

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- 4. Assume the sweating room is 20 feet long, 15 feet wide and 10 feet high, or 3,000 cu. ft. in volume. This would usually require approximately three (3) cu. ft. of ethylene. Time the gas flow by holding a watch in one hand, and turn the pressure adjusting screw clockwise until the needle starts to move. Start the timing from this point, and continue to turn the pressure adjusting screw in until the pointer shows 1/2 cu. ft. of ethylene is flowing from the cylinder each minute. Allow the ethylene to flow for six minutes (six minutes times 1/2 cu. ft. per minute equals three cu. ft.) and then reverse the pressure adjusting screw on regulator counterclockwise until it is loose. **THEN CLOSE THE CYLINDER VALVE TIGHTLY.**

- 5. Detach the hose from the regulator so that it becomes impossible for any more ethylene to get into the ripening room. A low rate of flow, rather than a high rate, is desirable as the longer time required will assure greater accuracy in measuring the gas. The following rates of flow are recommended.

For Rooms up to 5,000 cu. ft. in volume: 1/2 cu. ft. per min.

For Rooms between 5,000 and 10,000 cu. ft.: 1 cu. ft. per min.

For Rooms over 10,000 cu. ft.: 2 to 2 1/2 cu. ft. per min.

THOROUGH VENTILATION ESSENTIAL. It is customary to treat the fruits twice each day, usually in the morning and at night. In many cases, better results are obtained from four treatments per day at 6-hour intervals.

FRUIT RIPENING

RECOMMENDED DOSAGE: To be used in air in a tightly enclosed treatment room. Do not degreen until time to ready the fruit for market.

MATURE FRUIT	PPM	TEMP	RH	USE	TIME OF EXPOSURE
BANANAS	1000	65-70°F	90%	To initiate degreening & ripening	3-4 days
CITRUS	5		90%	To initiate degreening	2-1/2 - 5 days
Grapefruit		80-90°F			
Orange		80-90°F		Use adequate Ventilation before each application	Apply 2x/day
Tangerines		70°F			
Lemon	1	70°F	80%		
MELONS	1000	65°F		To initiate degreening	3-4 days
Honeydew					
PEARS Bartlett	1000	65°F		To initiate degreening & ripening use adequate ventilation before each application	4-8 days Apply 2x/day
Bosc					
PERSIMMON	1000	65°F	80%	To initiate degreening to remove astringency and to soften	2 days
PINEAPPLE	1000	65°F	40%	To initiate degreening	3-4 days
TOMATOES	100-150	65-70°F	85-95%	To initiate degreening & ripening	6 days Observe Daily
WALNUTS	1000	70- 80°F	Low	To loosen hulls Thoroughly ventilate before each application	2-1/2-3-1/2 days Apply 2 x/day

PINEAPPLE PLANT 2.5 lb./acre. To induce flowering. When plant is mature. Apply as pressure spray using 500-1,200 gallons water/acre vegetative growth. Use of china clay, bentonite or other suitable absorbent in suspension in the water is recommended.

WITCHWEED CONTROL. . . CROPS: Corn, Cotton, Peanuts, Soybeans

APPLICATION DATES: May through July

PRECONDITIONING PERIOD: The witchweed seeds must be exposed to adequate moisture and temperatures above 72°F for a period of at least two weeks prior to application of the ethylene.

APPLICATION: A soil injector is used to apply the ethylene and the gas is delivered from the cylinder through a regulator and a flowmeter. Shanks attached to the tool bar release the gas approximately 6 to 10 inches below the soil surface. The maximum shank spacing will not exceed 40 inches. The rate of application is 1.5 pounds per acre (1.5 pounds per acre equals 19.47 cubic feet). The treatment rate can be calculated using the following formula (Tractor speed, MPH) X (0.12) X Treatment width feet) X (Recommended application rate, cubic feet per acre). Flow rate in cubic feet per hour.

NOTE: The flowmeter is used to measure the flow rate in cubic feet per hour of the gas applied. The ethylene may be broadcast throughout an infected field or it may be injected between the crop rows.

Do not till the soil within 8 hours after application.

Witchweed commonly occurs in sandy soil, however, the use of ethylene to control witchweed is not restricted to soil texture. In coarse sandy soil the ethylene disperses in a 48-inch radius from the point of injection, while a 30-inch radius of dispersal is found in clay soils.

For use by or under supervision of USDA Personnel only. . . Sequential applications with other herbicides may result in crop injury injection between row crops without additional weed control techniques will give no witchweed control in current season.