

MONSANTO COMPANY

Safety Data Sheet Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

Product name

Roundup PRO® Herbicide

EPA Reg. No.

524-475

Product use

Herbicide

Chemical name

Not applicable.

Synonyms

None.

Company

MONSANTO COMPANY, 800 N. Lindbergh Blvd., St. Louis, MO, 63167

Telephone: 800-332-3111, **Fax:** 314-694-5557

E-mail: safety.datasheet@monsanto.com

Emergency numbers

FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT Call CHEMTREC - Day or Night: 1-800-424-9300 toll free in the continental U.S., Puerto Rico, Canada, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted).

FOR MEDICAL EMERGENCY - Day or Night: +1 (314) 694-4000 (collect calls accepted).

2. HAZARDS IDENTIFICATION

Emergency overview

Appearance and odour (colour/form/odour): Clear - Amber / Liquid / Sweet

CAUTION!

CAUSES EYE IRRITATION

Potential health effects

Likely routes of exposure

Skin contact, eye contact

Eye contact, short term

May cause temporary eye irritation.

Skin contact, short term

Not expected to produce significant adverse effects when recommended use instructions are followed.

Inhalation, short term

Not expected to produce significant adverse effects when recommended use instructions are followed.

Single ingestion

Not expected to produce significant adverse effects when recommended use instructions are followed.

Refer to section 11 for toxicological and section 12 for environmental information.

OSHA Status

This product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient

Isopropylamine salt of N-(phosphonomethyl)glycine; {Isopropylamine salt of glyphosate}

Composition

COMPONENT	CAS No.	% by weight (approximate)
Isopropylamine salt of glyphosate	38641-94-0	41
Other ingredients		59

Trade secret composition.

4. FIRST AID MEASURES

Use personal protection recommended in section 8.

Eye contact

If in eyes, hold eye open and rinse slowly and gently for 15-20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

Skin contact

Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Inhalation

If inhaled, move person to fresh air. If person is not breathing, call emergency number or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

Ingestion

Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water or milk if able to swallow. Do not induce vomiting unless told to do so by the poison center or doctor. Do not give anything by mouth to an unconscious person.

Advice to doctors

This product is not an inhibitor of cholinesterase.

Antidote

Treatment with atropine and oximes is not indicated.

5. FIRE-FIGHTING MEASURES

Flash point

None.

Extinguishing media

Recommended: Water, foam, dry chemical, carbon dioxide (CO2)

Unusual fire and explosion hazards

Minimise use of water to prevent environmental contamination.

Environmental precautions: see section 6.

Hazardous products of combustion

Carbon monoxide (CO), phosphorus oxides (PxOy), nitrogen oxides (NOx)

Fire fighting equipment

Self-contained breathing apparatus.

Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protection recommended in section 8.

Environmental precautions

SMALL QUANTITIES:

Low environmental hazard.

LARGE QUANTITIES:

Minimise spread.

Keep out of drains, sewers, ditches and water ways.

Methods for cleaning up

SMALL QUANTITIES:

Flush spill area with water.

LARGE QUANTITIES:

Absorb in earth, sand or absorbent material.

Dig up heavily contaminated soil.

Collect in containers for disposal.

Refer to section 7 for types of containers.

Flush residues with small quantities of water.

Minimise use of water to prevent environmental contamination.

Refer to section 13 for disposal of spilled material.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

Handling

Avoid contact with eyes.

When using do not eat, drink or smoke.

Wash hands thoroughly after handling or contact.

Wash contaminated clothing before re-use.

Thoroughly clean equipment after use.

Do not contaminate drains, sewers and water ways when disposing of equipment rinse water.

Refer to section 13 of the safety data sheet for disposal of rinse water.

Emptied containers retain vapour and product residue.

FOLLOW LABELLED WARNINGS EVEN AFTER CONTAINER IS EMPTIED.

Storage

Minimum storage temperature: -15 °C

Maximum storage temperature: 50 °C

Compatible materials for storage: stainless steel, fibreglass, plastic, glass lining

Incompatible materials for storage: galvanised steel, unlined mild steel, see section 10.

Keep out of reach of children.

Keep away from food, drink and animal feed.

Keep only in the original container.

Keep container tightly closed in a cool, well-ventilated place.

Partial crystallization may occur on prolonged storage below the minimum storage temperature.

If frozen, place in warm room and shake frequently to put back into solution.

Minimum shelf life: 5 years.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne exposure limits

Components	Exposure Guidelines
Isopropylamine salt of glyphosate	No specific occupational exposure limit has been established.
Other ingredients	No specific occupational exposure limit has been established.

Engineering controls

No special requirement when used as recommended.

Eye protection

If there is significant potential for contact:

Wear chemical goggles.

Skin protection

If repeated or prolonged contact:

Wear chemical resistant gloves.

Applicators and other handlers must wear:

Wear long sleeved shirt, long pants and shoes with socks.

Respiratory protection

No special requirement when used as recommended.

When recommended, consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

9. PHYSICAL AND CHEMICAL PROPERTIES

These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

Colour/colour range:	Clear - Amber
Odour:	Sweet
Form:	Liquid
Physical form changes (melting, boiling, etc.):	
Melting point:	Not applicable.
Boiling point:	No data.
Flash point:	None.
Explosive properties:	No explosive properties
Auto ignition temperature:	452 °C
Specific gravity:	1.169 @ 20 °C / 15.6 °C
Vapour pressure:	25 mmHg 24 °C
Vapour density:	Not applicable.
Evaporation rate:	No data.
Dynamic viscosity:	73.2 mPa·s
Kinematic viscosity:	62.47 cSt @ 20 °C
Density:	1.172 g/cm ³ @ 20 °C
Solubility:	Water: Completely miscible.
pH:	4.4 - 5.0
Partition coefficient:	log Pow: < -3.2 @ 25 °C (glyphosate)

10. STABILITY AND REACTIVITY

Stability

Stable under normal conditions of handling and storage.

Oxidizing properties

No data.

Materials to avoid/Reactivity

Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

Hazardous decomposition

Thermal decomposition: Hazardous products of combustion: see section 5.

Self-accelerating decomposition temperature (SADT)

No data.

11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals.

Data obtained on product and components are summarized below.

Acute oral toxicity

Rat, LD50: 5,108 mg/kg body weight

Practically non-toxic.

FIFRA category IV.

Acute dermal toxicity

Rat, LD50 (limit test): > 5,000 mg/kg body weight

Practically non-toxic.

FIFRA category IV.

No mortality.

Acute inhalation toxicity

Rat, LC50, 4 hours, aerosol: 2.9 mg/L

Other effects: weight loss, breathing difficulty

Practically non-toxic.

FIFRA category IV.

Skin irritation

Rabbit, 6 animals, OECD 404 test:

Days to heal: 3

Primary Irritation Index (PII): 0.5/8.0

Essentially non irritating.

FIFRA category IV.

Eye irritation

Rabbit, 6 animals, OECD 405 test:

Days to heal: 3

Slight irritation.

FIFRA category III.

Skin sensitization

Guinea pig, 3-induction Buehler test:

Positive incidence: 0 %

N-(phosphonomethyl)glycine; { glyphosate }

Mutagenicity

In vitro and in vivo mutagenicity test(s):

Not mutagenic.

Repeated dose toxicity

Rabbit, dermal, 21 days:

NOAEL toxicity: > 5,000 mg/kg body weight/day

Target organs/systems: none

Other effects: none

Rat, oral, 3 months:

NOAEL toxicity: > 20,000 mg/kg diet

Target organs/systems: none

Other effects: none

Chronic effects/carcinogenicity

Mouse, oral, 24 months:

NOAEL toxicity: ~ 5,000 mg/kg diet

Target organs/systems: liver

Other effects: decrease of body weight gain, histopathologic effects

NOEL tumour: > 30,000 mg/kg diet

Tumours: none

Rat, oral, 24 months:

NOAEL toxicity: ~ 8,000 mg/kg diet

Target organs/systems: eyes

Other effects: decrease of body weight gain, histopathologic effects

NOEL tumour: > 20,000 mg/kg diet

Tumours: none

Toxicity to reproduction/fertility

Rat, oral, 2 generations:

NOAEL toxicity: 10,000 mg/kg diet

NOAEL reproduction: > 30,000 mg/kg diet

Target organs/systems in parents: none

Other effects in parents: decrease of body weight gain

Target organs/systems in pups: none

Other effects in pups: decrease of body weight gain

Effects on offspring only observed with maternal toxicity.

Developmental toxicity/teratogenicity

Rat, oral, 6 - 19 days of gestation:

NOAEL toxicity: 1,000 mg/kg body weight

NOAEL development: 1,000 mg/kg body weight

Other effects in mother animal: decrease of body weight gain, decrease of survival

Developmental effects: weight loss, post-implantation loss, delayed ossification

Effects on offspring only observed with maternal toxicity.

Rabbit, oral, 6 - 27 days of gestation:

NOAEL toxicity: 175 mg/kg body weight

NOAEL development: 175 mg/kg body weight

Target organs/systems in mother animal: none

Other effects in mother animal: decrease of survival

Developmental effects: none

12. ECOLOGICAL INFORMATION

This section is intended for use by ecotoxicologists and other environmental specialists.

Aquatic toxicity, fish

Rainbow trout (*Oncorhynchus mykiss*):

Acute toxicity, 96 hours, static, LC50: 5.4 mg/L

Moderately toxic.

Bluegill sunfish (*Lepomis macrochirus*):

Acute toxicity, 96 hours, static, LC50: 7.3 mg/L

Moderately toxic.

Aquatic toxicity, invertebrates

Water flea (*Daphnia magna*):

Acute toxicity, 48 hours, static, EC50: 11 mg/L
Slightly toxic.

Avian toxicity

Mallard duck (*Anas platyrhynchos*):

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet
Practically non-toxic.

Bobwhite quail (*Colinus virginianus*):

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet
Practically non-toxic.

Arthropod toxicity

Honey bee (*Apis mellifera*):

Oral/contact, 48 hours, LD50: > 100 µg/bee
Practically non-toxic.

Soil organism toxicity, invertebrates

Earthworm (*Eisenia foetida*):

Acute toxicity, 14 days, LC50: > 1,250 mg/kg soil
Practically non-toxic.

Similar formulation

Aquatic toxicity, algae/aquatic plants

Green algae (*Selenastrum capricornutum*):

Acute toxicity, 72 hours, static, EbC50 (biomass): 12.4 mg/L
Slightly toxic.

Similar formulation

Soil organism toxicity, microorganisms

Nitrogen and carbon transformation test:

30 L/ha, 28 days: Less than 25% effect on nitrogen or carbon transformation processes in soil.

N-(phosphonomethyl)glycine: { glyphosate }

Bioaccumulation

Bluegill sunfish (*Lepomis macrochirus*):

Whole fish: BCF: < 1
No significant bioaccumulation is expected.

Dissipation

Soil, field:

Half life: 2 - 174 days
Koc: 884 - 60,000 L/kg
Adsorbs strongly to soil.

Water, aerobic:

Half life: < 7 days

13. DISPOSAL CONSIDERATIONS

Product

Excess product may be disposed of by agricultural use according to label instructions.
Keep out of drains, sewers, ditches and water ways.
Recycle if appropriate facilities/equipment available.
Burn in proper incinerator.
Follow all local/regional/national/international regulations.

Container

See the individual container label for disposal information.
Emptied containers retain vapour and product residue.

- Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.
- Empty packaging completely.
- Triple or pressure rinse empty containers.
- Do NOT contaminate water when disposing of rinse waters.
- Store for collection by approved waste disposal service.
- Ensure packaging cannot be reused.
- Do NOT re-use containers.
- Recycle if appropriate facilities/equipment available.
- Follow all local/regional/national/international regulations.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

Not hazardous under the applicable DOT, ICAO/IATA, IMO, TDG and Mexican regulations.

15. REGULATORY INFORMATION

TSCA Inventory

All components are on the US EPA's TSCA Inventory

OSHA Hazardous Components

Surfactant

SARA Title III Rules

Section 311/312 Hazard Categories

Immediate

Section 302 Extremely Hazardous Substances

Not applicable.

Section 313 Toxic Chemical(s)

Not applicable.

CERCLA Reportable quantity

Not applicable.

16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.

Follow all local/regional/national/international regulations.

Please consult supplier if further information is needed.

In this document the British spelling was applied.

|| Significant changes versus previous edition.

	Health	Flammability	Instability	Additional Markings
NFPA	1	1	1	

0 = Minimal hazard, 1 = Slight hazard, 2 = Moderate hazard, 3 = Severe hazard, 4 = Extreme hazard

Full denomination of most frequently used acronyms. BCF (Bioconcentration Factor), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), EC50 (50% effect concentration), ED50 (50% effect dose), I.M. (intramuscular), I.P. (intraperitoneal), I.V. (intravenous), Koc (Soil adsorption coefficient), LC50 (50% lethality concentration), LD50 (50% lethality dose), LDLo (Lower limit of lethal dosage), LEL (Lower Explosion Limit), LOAEC (Lowest Observed Adverse Effect Concentration), LOAEL (Lowest Observed Adverse Effect Level), LOEC (Lowest Observed Effect Concentration), LOEL (Lowest Observed Effect Level), MEL (Maximum Exposure limit), MTD (Maximum Tolerated Dose), NOAEC (No Observed Adverse Effect Concentration), NOAEL (No Observed Adverse Effect Level), NOEC (No Observed Effect Concentration), NOEL (No Observed Effect Level), OEL (Occupational Exposure Limit), PEL (Permissible Exposure Limit), PII (Primary

Irritation Index), Pow (Partition coefficient n-octanol/water), S.C. (subcutaneous), STEL (Short-Term Exposure Limit), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, MONSANTO Company or any of its subsidiaries makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for the purposes prior to use. In no event will MONSANTO Company or any of its subsidiaries be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR TO THE PRODUCT TO WHICH INFORMATION REFERS.

Pro Scape®

LEBANON

FERTILIZER
with LockUp™ plus Dimension
Weed Control

19-0-6



MESA
AGREEMENT

GUARANTEED ANALYSIS

Total Nitrogen (N) 19%
2.6% Ammoniacal Nitrogen
1.8% Water Insoluble Nitrogen*
11.8% Urea Nitrogen
2.9% Other Water Soluble Nitrogen*
Soluble Potash (K₂O) 6%
Sulfur (S) 3.0%
3.0% Combined Sulfur (S)



22-53703

Derived From: Ammonium Sulfate, Methylene Ureas, Urea, Muriate of Potash.
Chlorine (Cl) not more than 6.0%
*4.6% Slowly available Nitrogen from Methylene Ureas.

SUGGESTED SPREADER SETTINGS

Spreader	19-0-6		17-0-6	
	1500/acre 3,541,800 sq. ft.	1750/acre 4,071,000 sq. ft.	1500/acre 3,541,800 sq. ft.	1750/acre 4,071,000 sq. ft.
Lebanon Turf	4 1/2"	4 1/2"	4 1/2"	4 1/2"
Lebanon AccoPro	4"	4"	4"	4"
Lebanon Safety	4"	4"	4"	4"
Lebanon	4"	4"	4"	4"
Lebanon	4"	4"	4"	4"
Lebanon	4"	4"	4"	4"
Lebanon	4"	4"	4"	4"

*These settings were calibrated and field tested. However, soil and conditions of grounds, speed of operation, and unevenness of terrain may require slightly different settings for desired coverage.

For postemergence control of listed annual and perennial broadleaf weeds, and preemergence control of listed annual grassy weeds and broadleaf weeds, on established residential lawns, golf courses, parks, sports fields, and around commercial buildings and other recreational and commercial turfgrass areas.

ACTIVE INGREDIENTS:
2,4-dichlorophenoxyacetic acid 1.04%
penoxsulam 0.01%
dicamba 0.08%
dithiopyr 0.17%
OTHER INGREDIENTS: 98.70%
TOTAL 100.0%

Acetochloric acid - 0.86% - 11.2 lb/ton
dicamba - 0.08% - 1.0 lb/ton
dithiopyr - 0.17% - 2.1 lb/ton
penoxsulam - 0.01% - 0.1 lb/ton

2,4-D CAS No. 94-75-7
dicamba CAS No. 1508-00-9
dithiopyr CAS No. 9786-45-8
penoxsulam CAS No. 219714-6-2

EPA Reg. No. 961-430
ProScape and MESA are registered trademarks of Lebanon Seaboard Corporation
Dimension® is a registered trademark of Dow AgroSciences LLC
LockUp is a trademark of Dow AgroSciences LLC

EPA Est. 961-PA-01-9614-01
Superscript used is first letter of list number.

KEEP OUT OF REACH OF CHILDREN
CAUTION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)
See back panel for First Aid and additional Precautionary Statements.

NOTICE: Read the entire label. Use only according to label directions. Before buying this product, read the Warranty Section elsewhere on this label. If terms are not acceptable, return the unopened container at once.

In the state of New York, this product may be applied only by commercial applicators at no more than 294 lb (0.5 lb active ingredient of dithiopyr) per acre (6.8 lb per 1000 sq ft) per year. Use of this product in Nassau and Suffolk Counties of New York is prohibited.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION

Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing dust. Wear protective eyewear, long-sleeved shirt, long pants, socks, shoes, and chemical-resistant gloves made of any waterproof material. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove contaminated clothing and wash before reuse. Prolonged or frequently repeated skin contact while handling this material may cause allergic reaction in some individuals.

Personal Protective Equipment (PPE)
All mixers, loaders, applicators and other handlers must wear:
Long-sleeved shirt and long pants
Chemical-resistant gloves made of any waterproof material
Shoes plus socks
Protective eyewear
Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.



Manufactured by:
Lebanon Seaboard Corporation
1600 E. Cumberland St. • Lebanon, PA 17042
Made in the U.S.A.

NET WEIGHT **40** LBS. (18.14 Kg)

FERTILIZER

with LockUp™ plus Dimension Weed Control

19-0-6



MESA

P A T E N T E D

GUARANTEED ANALYSIS

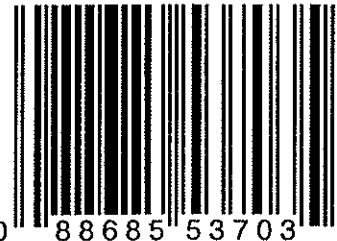
Total Nitrogen (N) 19%

2.6% Ammoniacal Nitrogen
1.8% Water Insoluble Nitrogen*
11.8% Urea Nitrogen
2.8% Other Water Soluble Nitrogen*

Soluble Potash (K₂O) 6%

Sulfur (S) 3.0%

3.0% Combined Sulfur (S)



F699

22-53703

Derived From: Ammonium Sulfate, Methylene Ureas, Urea, Muriate of Potash.
Chlorine (Cl) not more than 6.0%

*4.6% Slowly available Nitrogen from Methylene Ureas.

SUGGESTED SPREADER SETTINGS

Spreader	150#/acre		175#/acre		
	3.5#/1,000 sq. ft.		4#/1,000 sq. ft.		
LebanonTurf	4½	4¾	Lesco (letter/Numeric)	I/17	J/21
Andersons AccuPro	K	M	PennMulch HVO	K	M
Earthway Rotary	14	16	ProScape SS	K	M
Gandy	26	28	Spyker	4½	4¾
Lely	5 II	6 II	Vicon (all models)	24	28

These settings were calibrated and field tested. However, age and condition of spreader, speed of operation, and evenness of terrain may require slightly different settings for desired coverage.

For postemergence control of listed annual and perennial broadleaf weeds, and preemergence control of listed annual grassy weeds and broadleaf weeds, on established residential lawns, golf courses, parks, sports fields, and around commercial buildings and other recreational and commercial turfgrass areas.

FIRST AID
<p>IF SWALLOWED:</p> <ul style="list-style-type: none"> • Call a poison control center 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 center or doctor. • Do not give anything by mouth to an unconscious person. <p>IF ON SKIN OR CLOTHING:</p> <ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice. <p>IF INHALED:</p> <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 mouth to mouth, if possible. • Call a poison control center or doctor for further treatment advice. <p>IF IN EYES:</p> <ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice. <p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact (888)208-1388 for emergency medical treatment information.</p>

ENVIRONMENTAL HAZARDS

This product is toxic to fish and highly toxic to other aquatic organisms including oysters and shrimp. Use with care when applying to turf areas adjacent to any body of water. Drift and runoff from treated turf may adversely affect aquatic organisms in adjacent aquatic sites. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not apply when conditions favor drift from treated areas. Do not contaminate water when disposing of equipment washwaters or rinsate.

This product contains 2,4-D that has properties and characteristics associated with chemicals detected in groundwater. The use of this product in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Application around a cistern or well may result in contamination of drinking water or groundwater.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all Directions for Use carefully before applying.

USE PRECAUTIONS AND RESTRICTIONS

- Not for use on plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes.
- Do not apply this product on dichondra, carpetgrass, St. Augustinegrass, bahiagrass, or to golf course putting greens or tees, or turfgrass containing desirable clovers.
- Do not apply this product directly to, or otherwise permit this product to come into contact with, flowers, ornamental shrubs or trees, or other desirable broadleaf plants, as serious plant injury may occur.
- Do not apply to centipede grass during the period of winter dormancy. Apply to actively growing grass. Use of this product on certain varieties of creeping bentgrass, such as 'Coharney', 'Carmen', 'Seaside', and 'Washington' may result in undesirable turfgrass injury. Not all varieties of creeping bentgrass have been tested.
- Do not apply this product to Colonial bentgrass (*Agrostis tenuis*).
- Use of this product on certain varieties of fine fescue may result in undesirable turf injury. The following fine fescue varieties have been found to be sensitive to this product: 'Alania', 'Banner', 'Beauty', 'Bigart', 'CF-2', 'Enjoy', 'HF-93', 'Highlight', 'Ivalo', 'Jamestown', 'Koket', 'Majenta', 'Mary', 'Pennlawn', 'Tamara', 'Tajana', 'Waldorf', and 'Waldorf'. Not all varieties of fine fescue have been tested.
- Do not use this product on seedling buffalograss in the spring of the first year of establishment until the turfgrass is fully green and has established new roots.
- The active ingredient in this product may leave residues in treated grass clippings which could be harmful to some plants and trees. Do not collect treated grass clippings for use as mulch around plants, vegetables or fruit trees. The applicator must notify in writing the appropriate residences/individuals of this precaution when this product is applied by a lawn service/commercial applicator.
- Some yellowing on solid (monoculture) stands of perennial ryegrass or tall fescue may occur within two weeks of application of this product. Any discoloration is transitory and will dissipate under adequate growing conditions.
- To minimize the potential for turfgrass injury, allow four weeks between applications.
- Do not water, mow or disturb treated area for 48 hours after application.
- Do not make more than two applications of this product per acre per year.
- Do not allow people or pets to enter treated area until dust has settled.
- Do not graze livestock or feed forage cut from areas treated with this product.

Note: It is not possible to evaluate all turfgrass varieties for resistance to this product. It is suggested that the user evaluate the response of turfgrass varieties not listed on this label on a limited area, at specified use rates, prior to initiating large-scale use.

Precautions for Reseeding, Overseeding, or Sprigging

- Reseeding, overseeding, or sprigging of areas treated with this product within 10 weeks after a single application of this product or within 16 weeks after split application program totaling 6.8 lb/1000 sq ft (0.5 lb active ingredient per acre) or more may inhibit the establishment of desirable turfgrasses.
- When reseeding or overseeding, follow established cultural practices for seedbed preparation, seeding, irrigation and fertilization.
- For best overseeding results, use mechanical or power seeding equipment (silt seeders) designed to provide good contact between soil and seed.

Application Directions for Turf

- This product provides preemergence control of listed broadleaf and grassy weeds, including crabgrass in established turfgrasses (including the large, smooth, and southern species) when applied prior to their germination.
- This product provides postemergence control of listed broadleaf weeds.
- This product also provides early postemergence control of crabgrass if applied prior to the 3-leaf stage of growth or first tiller. This stage of growth normally corresponds to the time when crabgrass seedlings first become visible in the established turfgrass. The practical benefit of early postemergence crabgrass control is a 2 - 4 week longer period of time (window of application) during which crabgrass control can be achieved.

This product is for use on the following established turfgrass species

This product may be used on seeded, sodded, or sprigged lawns and ornamental turfs that are well established. Initial application of this product must be made only after turfgrasses have developed a vigorous root system, a uniform stand, and have received at least two mowings following seeding, sodding or sprigging. Use of this product on turfgrasses that are not well established, or weakened by stress from weather, pests, disease, chemical, or mechanical influences, may increase the chances of turf injury.

Established Cool Season Turfgrass

Common Name	Scientific Name
bluegrass, Kentucky	<i>Poa pratensis</i>
lesoue, tall ¹	<i>Festuca arundinaceae</i>
ryegrass, perennial ²	<i>Lolium perenne</i>

Established Warm Season Turfgrass

Common Name	Scientific Name
bermudagrass (common or hybrid)	<i>Cynodon dactylon</i>
centipedegrass ²	<i>Eremochloa ophiuroides</i>
kikuyagrass	<i>Pennisetum clandestinum</i>
zoysiagrass	<i>Zoysia japonica</i>

- ¹ A slight yellowing of turfgrass may occur within two weeks of application. Any discoloration is transient and is generally gone within four weeks of treatment under adequate growing conditions.
- ² Do not apply to centipedegrass during the period of winter dormancy. Apply to actively growing grass.

WHEN TO APPLY

Established Lawns: Apply when broadleaf weeds are actively growing and prior to germination or tillering of crabgrass. This product may be applied as a single application, as a split application or as a sequential application in the spring, summer or fall as described in the following use programs. Use of split applications 5 - 10 weeks apart may provide improved weed control.

Newly Seeded Areas: When establishing a new lawn of Kentucky bluegrass, perennial ryegrass and/or tall fescue, this product may be applied 2 weeks after the first sign of grass germination. For other turfgrass varieties, wait until the grass is well established (3 mowings) before applying this product.

Do not seed, overseed or sprig the treated area for 10 weeks after application

Fall Application: This product may be applied from late summer through early fall (late August through November) for preemergence control of all listed weeds that germinate in fall, including annual bluegrass (*Poa annua*). When applied in the fall, a second application after 10 to 12 weeks may be necessary to control annual bluegrass (*Poa annua*).

HOW TO APPLY

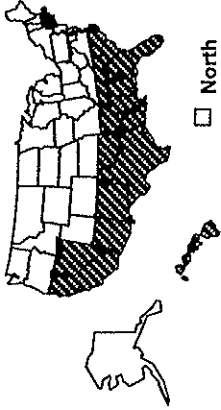
For optimum broadleaf weed control, apply to recently mowed turf when foliage is moist. When possible, delay mowing or irrigation for several days after treatment. The diflufenican preemergent component in this product is not effective until activated by rainfall or irrigation. Performance is improved by 1/2 inch of rainfall or sprinkler irrigation within a 30 day period. Erratic weed control may result if not activated by rainfall or irrigation.

Uniform coverage is essential for best results. Before each application, calibrate the spreader according to the equipment manufacturer's directions. Avoid streaking, skips or overlaps. Adjust the spreader so the spreader delivers the appropriate application rate as specified below.

APPLICATION RATES

Apply 152 to 174 lbs. per acre (0.5 to 4.0 lbs. per 1,000 sq ft.) of this product to control actively growing broadleaf weeds and prevent germination of labeled annual grasses and broadleaf weeds growing in established turf. Broadleaf and grassy weed species germinate at different times. Application rates are based on the user's location, the mowing height of the turfgrass, and whether the application timing is considered to be preemergence or early postemergence. The duration of residual weed control provided by this product is directly related to application rate, but will vary somewhat depending on weather, weed pressure, turfgrass competitiveness, and the users' location within a region. The following charts show application rates and some of the common broadleaf weeds controlled. The rates vary based on region, which are described as follows:

Use "Regions" within the United States:



North
 South

POSTEMERGENCE & PREEMERGENCE PROGRAMS - APPLICATION RATES

	North Region		South Region		
152 LB/ACRE	Pennisulam A1/Acre	0.015	Dicamba A1/Acre	0.122	
3.5 LB/1,000 SQ. FT.			2,4-D A1/Acre	1.307	
				Dithiopyr A1/Acre	0.258
This rate provides postemergent control of the following broadleaf weeds and 3 to 5 months preemergent control of crabgrass that has not begun to tiller, at sites with high cut turf in all areas as defined above. ³					
174 LB/ACRE	Pennisulam A1/Acre	0.0174	Dicamba A1/Acre	0.139	
4.0 LB/1,000 SQ. FT.			2,4-D A1/Acre	1.496	
				Dithiopyr A1/Acre	0.296

Increases postemergent control and provides 4 - 6 months of preemergent control on low cut turf² where weed control has been conducted during the previous year. Also provides early postemergent control of crabgrass that has not reached the tiller stage in high cut turf¹. Applies to all areas as defined above.³

Use 2 applications, 5 to 6 weeks apart, apply to moist foliage, except in New York³.

¹ High cut turf such as home lawns and commercial sites.

² Low cut turf such as golf fairways.

³ In the state of New York, this product may be applied only by commercial applicators at no more than 294 lb (0.5 lb active ingredient of dithiopyr) per acre (6.8 lb per 1000 sq ft) per year. Use of this product in Nassau and Suffolk Counties of New York is prohibited.

Preemergence Weed Control

Used as directed, this product provides preemergence control and suppression of the following weeds when applied prior to their germination.

Annual Grasses	crabgrass, large	goosegrass	ryegrass, annual	Established Broadleaf Weeds	herbicide	mustard	spurge, prostrate
	crabgrass, smooth	foxtail, green	ryegrass, perennial	bittercress†	knockweed, prostrate	oxalis, buttercup	spurge, common
	barrygrass	foxtail, yellow	sandbur	carpetweed	lespedeza, common†	pineappleweed	rocket, London
	bluegrass, annual	kikuygrass†	smutgrass	chickweed†	marestail	pigweed, redroot	shepherd's purse
	brome	oats, wild		geranium, Carolina†	medic, black	parsely-plant†	speedwell, corn†
							spurge, garden
							woodsorrel, creeping
							woodsorrel, yellow

Used as directed, this product provides post emergence control of the following weeds:

Post Emergence Weed Control

Early post emergence control of crabgrass seedlings at the 5-leaf stage of growth when they first become visible in the established turf.

Annual Grasses	bedstraw	chicory	dock	healall	ivy, ground	knockweed	sheep sorrel
	burdock	clover	dollarweed	ivy, ground	knockweed	shepherd's purse	speedwell
	chickweed	dandelion	eclipta	morningglory	plantain, broadleaf	ragweed	thistle
				peppergrass	plantain, buckhorn	sheep sorrel	
				pigweed	purslane	shepherd's purse	
				plantain, broadleaf	ragweed	speedwell	

Storage and Disposal

Do not contaminate water, food, or feed by storage or disposal.

PESTICIDE STORAGE: Store product in its original container in a cool, dry, locked place out of the reach of children and animals.

CONTAINER HANDLING: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available. Completely empty container into application equipment. Then dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke.

NOTE: To the extent consistent with applicable law, Buyer assumes all responsibility for safety and performance if this product is not used according to the directions.

WARRANTY

MATERIAL SAFETY DATA SHEET

Emergency Phone: 800-424-9300
CHEMTREC
Health Emergency: 888-208-1368
Prosar
Effective Date: September 28, 2012

LOCKUP/DIMENSION

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: PROSCAPE 19 0 6 LOCKUP/DIMENSION
Product code: 22-53703 EPA Reg. # 961-420
COMPANY IDENTIFICATION:
Lebanon Seaboard Corporation
1600 East Cumberland Street
Lebanon, PA 17042
Phone: Information 717-273-1685

EXTINGUISHING MEDIA: Use water fog, CO₂ or dry Chemicals

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS: Wear full protective clothing and use Positive-pressure, self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None known.

2. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Color Appearance Odor. Multi-colored granules slight phenoxy odor. May cause eye irritation. Material is toxic to aquatic organisms and slightly toxic when ingested by avian.

EMERGENCY PHONE NUMBER: 800-992-5994

HAZARDOUS COMBUSTION PRODUCTS: Hydrogen chloride may be formed if product is involved in fire.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS: Contain and sweep up material of small spills and use per label instructions. Prevent run-off.

3. COMPOSITION/INFORMATION ON INGREDIENTS:

COMPONENT	CAS NUMBER	W/W%
Penoxsulam	219714-96-2	.01
Dicamba	1918-00-9	.08
2-4/D Acid	000094-75-7	1.04
Dithiopyr	97886-45-8	0.17
Various Inert carriers	various	98.7

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep out of reach of children. Harmful if swallowed or inhaled. Causes eye irritation. Avoid contact with eyes, skin and clothing. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

STORAGE: Store in original container. Keep tightly closed when not in use. See product label for handling/storage precautions relative to the end use of this product.

4. FIRST AID:

EYE: Flush eyes thoroughly with water for several minutes. Remove contact lenses after initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

SKIN: Wash skin with plenty of water.

INGESTION: No emergency medical treatment necessary.

INHALATION: Move person to fresh air; if effects occur, consult a physician.

NOTE TO PHYSICIAN: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINE(S): None established.

ENGINEERING CONTROLS: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

5. FIRE FIGHTING MEASURES:

FLASH POINT: Not applicable
METHOD USED: Not applicable

FLAMMABLE LIMITS:

LFL: Not applicable
UFL: Not applicable

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

EYE/FACE PROTECTION: Use safety glasses.

SKIN PROTECTION: No precautions other than clean body-covering clothing should be needed.

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LOCKUP/DIMENSION

HAND PROTECTION: Chemical protective gloves should not be needed when handling this material. Consistent with general hygienic practice for any material skin contact should be minimized.

RESPIRATORY PROTECTION: In dusty or misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: particulate filter.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

SKIN: Prolonged or repeated exposure is not likely to cause significant skin irritation. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD₅₀ for skin absorption in rabbits is >5,000 mg/kg. Did not cause allergic skin reactions when tested in guinea pigs.

INGESTION: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts. The oral LD₅₀ for rats is >5,000 mg/kg.

INHALATION: No adverse effects are anticipated for single exposure to dust. The LC₅₀ for rats is >3.50 mg/L for 4 hours. This was the highest attainable concentration.

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Multi-colored granules
ODOR: Slight phenoxy
BOILING POINT: Not applicable
MELTING POINT: Not applicable
VAPOR PRESSURE: Not applicable
VAPOR DENSITY: Not applicable
SOLUBILITY IN WATER: Slightly soluble
SPECIFIC GRAVITY: Not applicable
BULK DENSITY: 45-55 lbs/cu.ft.
pH: 6.5
VISCOSITY: Not applicable
EVAPORATION RATE: Not applicable

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: In animals, effects have been reported on the following organs: liver and kidneys.

CANCER INFORMATION: Did not cause cancer in laboratory animals.

TERATOLOGY (BIRTH DEFECTS): Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

REPRODUCTIVE EFFECTS: In animal studies, did not interfere with reproduction.

10. STABILITY AND REACTIVITY:

STABILITY: Stable

INCOMPATIBILITY: None known

HAZARDOUS DECOMPOSITION PRODUCTS:
Under fire conditions, nitrogen oxides, sulfurous oxides and Hydrogen chloride gas may be formed.

HAZARDOUS POLYMERIZATION: Will not occur.

MUTAGENICITY: In-vitro and animal genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL HAZARDS: This product is toxic to fish and highly toxic to other aquatic organisms including oysters and shrimp. Use with care when applying to turf areas adjacent to any body of water. Drift or runoff from treated turf may adversely affect non-target plants and aquatic organisms in adjacent aquatic sites. Do not apply below high water mark. Do not contaminate water when disposing of equipment waters.

ENVIRONMENTAL DATA:

MOVEMENT & PARTITIONING:
Bioconcentration potential is low (BCF is <100 or Low Pow <3).
Potential for mobility in soil is high (Koc is between 50 and 150).
Partition coefficient, n-octanol/water (Log Pow): -0.354 (measured).
Henry's Law Constant (H): 1.66E⁻¹⁶ atm M³/mole; 25°C (estimated).
Partition coefficient, soil organic car/water (Koc): 104 (measured).

11. TOXICOLOGICAL INFORMATION:

Acute Oral Toxicity/Rat: LD50>2000 mg/kg
Acute Dermal Toxicity/Rabbit: LD50>2000 mg/kg
Acute Inhalation/Rat: LC50>2.07 mg/L
Primary Eye Irritation/Rabbit: Mild Irritant
Primary Skin Irritation/Rabbit: Non-irritating
Dermal Sensitization: Not a contact sensitizer

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

EYE: May cause slight eye irritation. Corneal injury is unlikely.

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Prosar

Effective Date: September 28, 2012

LOCKUP/DIMENSION

DEGRADATION & PERSISTENCE:

The rate constant for vapor phase reaction with photochemically produced hydroxyl radicals at 25°C is estimated to be $6.03E^{-11}$ cm³/molecule-sec. In the atmospheric environment, material is estimated to have a tropospheric half-life of 2.130 hrs.

ECOTOXICOLOGY:

Material is very highly toxic to aquatic organisms on an acute basis (LC₅₀ or EC₅₀ is <0.1 in most sensitive species tested).

Material is practically non-toxic to birds on an acute basis (LD₅₀ is >2000 mg/kg).

Material is slightly toxic to birds on a dietary basis (LC₅₀ is between 1001 and 5000 ppm).

The LC₅₀ in earthworm (*Eisenia foetida*) is >1000 mg/kg.

Acute contact LD₅₀ for honeybee (*Apis mellifera*) is >100 µg/bee.

Acute oral LD₅₀ in honeybee (*Apis mellifera*) is >110 µg/bee.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: If empty: do not reuse this container. Place in trash or offer for recycling if available.

If partially filled: Call your local waste agency or toll free number (1-800-CLEANUP) for disposal instructions. Never place unused product down any indoor or outdoor drain. Dispose of DOT drum, waste water and any other waste according to local, state and Federal regulations.

14. TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION (DOT) INFORMATION: The following guidelines apply for domestic ground transport. If shipping by air or ocean, please contact our Transportation Dept. Freight Class: Herbicides, NOI-NMFC #50320 In our current available sizes, this product does not qualify as a Hazardous Material.

15. REGULATORY INFORMATION:

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: This product is not known to contain any substances subject to the disclosure requirements of

Pennsylvania

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): To the best of our knowledge, this product contains no chemical subject to reporting under CERCLA.

16. OTHER INFORMATION:

MSDS STATUS: New