

SAFETY DATA SHEET

Emergency Telephone Chemtrec 1-800-424-9300

1. IDENTIFICATION

PRODUCT NAME: Valkos SC
DESCRIPTION: Liquid Herbicide
EPA REG. NO.: 34704-1183
COMPANY IDENTIFICATION: LOVELAND PRODUCTS, INC. P.O. Box 1286
Greeley, CO 80632-1286
retail-SDS@nutrien.com

2. HAZARD IDENTIFICATION

WARNING

Suspected of damaging fertility or the unborn child (H361)
May cause damage to bone marrow through prolonged or repeated exposure (H373)
Very toxic to aquatic life with long lasting effects (H400+H410)



HAZARD CLASSIFICATION

Health Hazards	Category	Environmental Hazards	Category
Reproductive toxicity	2	Hazardous to the aquatic environment, short-term	1
Specific target organ toxicity (repeated exposure)	2	Hazardous to the aquatic environment, long-term	1
Physical Hazards	None		

HAZARDS NOT REQUIRING CLASSIFICATION

Do not mix or allow coming in contact with oxidizing agents. Hazardous chemical reaction may occur.

PRECAUTIONARY STATEMENTS

Do not handle until all safety precautions have been read and understood. Wear protective clothing as described in Section 8 of this document. (P202+ P280)

IF exposed or concerned: Get medical advice / attention. Get medical advice/attention if you feel unwell. (P308+P313+P314)

Do not breathe fume/mists/vapors/spray. (P260)

Avoid release to the environment not in accordance with the product label. (P273)

Collect spillage. (P391)

Store locked up. (P405)

Dispose of contents / container in accordance with local regulations. Refer to the product label for specific disposal instructions. (P501)

3. COMPOSITION / INFORMATION ON INGREDIENTS

Common Name	Chemical Name	CAS #	Composition
Flumioxazin	1H-Isindole-1,3(2H)-dione, 4,5,6,7-tetrahydro-2-(7-fluoro-3,4-dihydro-3-oxo-4-(2-propynyl)-2H-1,4-benzoxazin-6-yl)-	103361-09-7	41.4%
Propylene glycol	1,2-Propanediol	57-55-6	5-8%

4. FIRST AID MEASURES

Have the product container or label with you when calling a poison control center or doctor or going for treatment. For additional information in this pesticide product (including health concerns, medical emergencies, or pesticide incidents) you may call MEDICAL EMERGENICES at 1-800-301-7976 24 hours per day, 7 days per week.]
For chemical emergency: spill, leak, fire, exposure or accidents call CHEMTREC: 1-800-424-9300 or U.S. Coast Guard National Response Center at 1-800-424-8802.

5. FIREFIGHTING MEASURES

Flash Point: >100°C (>212°F)

Fire and Explosion Hazards: None known.

Extinguishing Medium: Water fog, carbon dioxide, foam, and dry chemical.

Fire Fighting Equipment: Firefighters should wear full protective clothing and self-contained breathing apparatus.

Fire Fighting Instructions: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) and full protective gear. Evacuate area and fight fire upwind from a safe distance to avoid hazardous vapors and decomposition products. Dike and collect water used to fight fire to prevent environmental damage due to run off.

Hazardous Combustion Products: Thermal decomposition or combustion may produce harmful/irritant gas or fumes such as nitrogen oxides, carbon oxides, hydrogen fluoride or organic compounds.

NFPA Ratings: Health - 1 / Flammability - 1 / Reactivity - 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Isolate area and keep unnecessary and unprotected personnel from entering. Wear suitable personal protective clothing and equipment as described in Section 8 of this document.

Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

Spill Cleanup: This material will disperse or dissolve in water. Stop the source of the release. Contain and isolate to prevent further release on to soil or into surface water. Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal. Pump free liquid into an appropriate container. Absorb residual with inert absorbent material. Wash entire spill area with detergent slurry, absorb and sweep into container for disposal. Decontaminate tools and equipment following cleanup.

7. HANDLING AND STORAGE

Handling: Avoid breathing spray mist. Avoid contact with skin, eyes or clothing. Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

Storage: Store in a tightly closed container in a cool, dry place. Store in original container and out of reach of children, preferably in a locked storage area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

Protective Clothing: When working with any chemical, avoid contact with eyes. Eye contact can be avoided by wearing safety glasses. Applicators and other handlers must wear long-sleeved shirt and long pants, shoes plus socks and chemical-resistant gloves made of any waterproof material.

General: Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Exposure Limits:

Chemical Name	ACGIH Exposure Limits	OSHA Exposure Limits	Manufacturer's Exposure Limits
Flumioxazin	None	None	None
Propylene glycol	None	10 (WEEL)	None
Others	None	None	None

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	white viscous liquid
Odor:	moderately sour
Melting/freezing point:	not available
Boiling point/Boiling range:	not available
Flammability:	not available
Flammability limits (upper/lower):	not available

Flash point:	>100°C (>212°F)
Auto-ignition temperature:	not available
Decomposition temperature:	not available
pH:	6.38 @ 25°C (1% aq.)
Kinematic viscosity:	487.2 cP (24°C) 266.8 cP (40°C)
Solubility:	not available
Partition coefficient:	not available
Vapor pressure:	not available
Specific Gravity:	not available
Bulk Density:	1.15 g/mL @ 20°C or 9.6 lbs./gal @ 20°C
Relative vapor density:	not available
Particle characteristics:	not available

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Extremes of temperature and direct sunlight.

CHEMICAL STABILITY: Stable under recommended storage conditions.

INCOMPATIBILITY WITH OTHER MATERIALS: None known based on information supplied.

HAZARDOUS DECOMPOSITION PRODUCTS: None known based on information supplied.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

The following data is from a similar substance:

ORAL TOXICITY (rat LD₅₀): 5,000 mg/kg

DERMAL TOXICITY (rat LD₅₀): > 5,000 mg/kg

INHALATION TOXICITY (rat LC₅₀): > 2.10 mg/L (4-hr) (no mortalities)

EYE IRRITATION: Non-irritating (Rabbit)

SKIN IRRITATION: Slightly irritating (rabbit)

SKIN SENSITIZATION: Guinea pig – Non-sensitizer

CARCINOGENICITY:

EPA: Not likely to be carcinogenic to humans (flumioxazin)

ACGIH: Not Listed **NTP:** Not Listed

IARC: Not Listed **OSHA:** Not Listed

MUTAGENIC TOXICITY: Flumioxazin Technical was not mutagenic in most in vitro assays: gene mutation and a chromosome aberration assay in the absence of metabolic activation. In three in vivo assays, chromosome aberration, unscheduled DNA synthesis and micronucleus assay, Flumioxazin Technical was not mutagenic. The only positive response was observed in the in vitro chromosome aberration assay in the presence of metabolic activation. Overall, Flumioxazin Technical does not present a genetic hazard.

REPRODUCTIVE TOXICITY: Reproductive effects were observed in rats exposed to high levels of flumioxazin technical. Flumioxazin technical produced birth defects in the offspring of female rats.

SUBCHRONIC TOXICITY: Compound related effects of Flumioxazin Technical noted in rats following subchronic exposures at high dose levels were hematotoxicity including anemia, and increases in liver, spleen, heart, kidney, and thyroid weights. In dogs, the effects

11. TOXICOLOGICAL INFORMATION (CONT.)

produced at high dose levels included a slight prolongation in activated partial thromboplastin time, increased cholesterol and phospholipid, elevated alkaline phosphatase, increased liver weights and histological changes in the liver. The lowest no-observable-effect-level (NOEL) in subchronic studies was 30 ppm in the three-month toxicity study in rats.

CHRONIC/CARCINOGENICITY: In a one year dog feeding study, Flumioxazin Technical produced treatment-related changes in blood chemistry and increased liver weights at 100 and 1000 mg/kg/day. Minimal treatment-related histological changes were noted in the livers of animals in the 1000 mg/kg/day group. Based on these data the NOEL is 10 mg/kg/day. Dietary administration of Flumioxazin Technical for 18 months produced liver changes in mice of the 3000 and 7000 ppm groups. There was no evidence of any treatment-related oncogenic effect. The NOEL for this study is 300 ppm. Dietary administration of Flumioxazin Technical for 24 months produced anemia and chronic nephropathy in rats of the 500 and 1000 ppm groups. The anemia lasted throughout the treatment period, however, it was not progressive nor aplastic in nature. No evidence of an oncogenic effect was observed. The NOEL for this study is 50 ppm.

DEVELOPMENTAL TOXICITY: Flumioxazin Technical produces developmental toxicity in rats in the absence of maternal toxicity at doses of 30 mg/kg/day by the oral route and 300 mg/kg/day by the dermal route. The developmental effects noted consisted primarily of decreased number of live fetuses and fetal weights, cardiovascular abnormalities, wavy ribs and decreased number of ossified sacrococcygeal vertebral bodies. The developmental NOEL in the rat oral and dermal developmental toxicity studies were 10 and 100 mg/kg/day, respectively. The response in rabbits was very different from that in rats. No developmental toxicity was noted in rabbits at doses up to 3000 mg/kg/day, a dose well above the maternal NOEL of 1000 mg/kg/day.

Mechanistic studies indicate that the effects seen in the rat are highly unlikely to occur in the human and that flumioxazin would not be a developmental toxicant in the human.

REPRODUCTION: Reproductive toxicity was observed in F1 males, P1 females and F1 females at 300 ppm Flumioxazin Technical, the highest dose tested and a dose that also produced signs of systemic toxicity. Toxicity was also observed in the F1 and F2 offspring at doses of 200 ppm and greater.

STOT- REPEATED EXPOSURE: Cat 2 – Rat 90-day repeated dose toxicity study: Bone Marrow

12. ECOLOGICAL INFORMATION

This pesticide is practically non-toxic to bees and avian species. It is slightly to moderately toxic to freshwater fish and moderately to highly toxic to aquatic invertebrates.

The following information is for the active ingredient, Flumioxazin:

AQUATIC TOXICITY

Fish (Rainbow Trout) (96-hour LC₅₀): 2.3 mg/kg; (NOEC): >7.7µg/L, <16µg/L

Fish (Bluegill Sunfish) (96-hour LC₅₀): >21 mg/L

Fish (Sheepshead Minnow) (96-hour LC₅₀): >4.7 mg/L

Daphnia magna (Water Flea) (48-hour EC₅₀): >5.5 mg/L; NOEC >52 µg/L, <99µg/L

Invertebrate (Mysid Shrimp) (96-hour LC₅₀): >0.23 mg/L; (NOEC): >15µg/L, <27µg/L

Shell Deposition (Eastern Oyster) (96-hour EC₅₀): 2.8 mg/L

AVIAN TOXICITY

Bobwhite Quail (Oral LD₅₀): > 2,250 ppm

Bobwhite Quail (Dietary LC₅₀): > 5,620 ppm

Mallard Duck (Dietary LC₅₀): >5,620 ppm

OTHER NON-TARGET ORGANISM TOXICITY:

Flumioxazin Technical is practically non-toxic to bees. The acute contact LC50 in bees was greater than 105 µg/bee.

13. DISPOSAL CONSIDERATIONS

PESTICIDE DISPOSAL: Pesticide spray mixture or rinsate that cannot be used should be disposed of in a landfill approved for pesticides. Improper disposal of excess pesticide spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by the use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Nonrefillable container. Do not reuse or refill this container. Refer to the product label for specific container disposal instructions.

14. TRANSPORT INFORMATION

US-DOT: Not regulated^{1,2}

IMDG:

Containers ≤ 1.3 gal. (5 L) in strong outer packaging:

Not regulated

Containers > 1.3 gal. (5 L) or containers not in strong outer packaging:

Shipped internationally by vessel: UN3082, Environmentally hazardous substance, liquid, N.O.S. (contains flumioxazin), 9, PG III, Marine Pollutant

IATA:

Shipments by air: UN3082, Environmentally hazardous substance, liquid, N.O.S. (contains flumioxazin), 9, PG III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

¹ 49 CFR §173.155(b)(2)

² 49 CFR §172.101 Appendix B(4)

15. REGULATORY INFORMATION

FIFRA –

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. The following is the hazard information as required on the pesticide label:

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

Harmful if inhaled or absorbed through the skin. Causes moderate eye irritation. Avoid breathing spray mist. Avoid contact with skin, eyes, or clothing. Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

15. REGULATORY INFORMATION (CONT.)

See inside label booklet for additional precautionary statements.

ENVIRONMENTAL HAZARDS

This product is toxic to non-target plants and aquatic invertebrates. DO NOT apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift or runoff may be hazardous to non-target plants and aquatic organisms in neighboring areas. DO NOT apply where runoff is likely to occur. DO NOT apply when weather conditions favor drift from treated areas. DO NOT contaminate water when disposing of equipment washwaters or rinsate.

This pesticide is toxic to plants and should be used strictly in accordance with the drift and run-off precautions on this label in order to minimize off-site exposures.

Under some conditions this product may have a potential to run-off to surface water or adjacent land. Where possible, use methods which reduce soil erosion, including no till, limited till and contour plowing; these methods also reduce pesticide run-off. Use of vegetation filter strips along rivers, creeks, streams, wetlands or on the downhill side of fields where run-off could occur will minimize water run-off.

PHYSICAL OR CHEMICAL HAZARDS

DO NOT mix or allow coming in contact with oxidizing agent. Hazardous chemical reaction may occur.

All pesticides are governed under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The regulatory information presented below is pertinent only when this product is handled outside of the normal use and application as a pesticide. This product is excluded from listing requirements under EPA/TSCA.

SARA Title III – Section 302 Extremely Hazardous Substances

Not listed

SARA Title III – Section 311/312 Hazard Categories

Immediate (acute), Delayed (chronic)

SARA Title III – Section 312 Threshold Planning Quantity

The threshold planning quantity (TPQ) for this product treated as a mixture is 10,000 lbs. This product contains no ingredients with a TPQ of less than 10,000 lbs.

SARA Title III – Section 313 Reportable Ingredients

None

CERCLA Reportable Quantity (RQ) –

None

CALIFORNIA PROP 65 STATUS –

This product does not contain any chemical known to the State of California to cause cancer or other reproductive harm.

CANADA –

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

16. OTHER INFORMATION

Disclaimer

This safety data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.