



Material Safety Data Sheet

STELLAR[®] Herbicide (High Flash Formulation)

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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 is regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling. 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.

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: STELLAR[®] Herbicide (High Flash Formulation)
VC NUMBER(S): VC-1064, VC-1198, VC-1207 and VC-1208
EPA REGISTRATION NUMBER: 59639-92
SYNONYM(S): None

MANUFACTURER
VALENT USA CORPORATION
P.O. Box 8025
1333 N. California Blvd., Suite 600
Walnut Creek, CA 94596-8025

EMERGENCY TELEPHONE NUMBERS
HEALTH EMERGENCY OR SPILL (24 hr):
(800) 892-0099
TRANSPORTATION (24 hr.): CHEMTREC
(800) 424-9300 or (202) 483-7616

PRODUCT INFORMATION
AGRICULTURAL PRODUCTS: (800) 6VALENT
PROFESSIONAL PRODUCTS: (800) 89VALENT

SECTION 2: COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name (CAS #) [Chemical Name]	Weight Percent	Exposure Limit	Ref.
FLUMICLORAC PENTYL (87546-18-7) [pentyl[2-chloro-4-fluoro-5-(1,3,4,5,6,7-hexahydro-1,3-dioxo-2H-isoindol-2-yl)phenoxy]acetate]	7 - 8	None	---
LACTOFEN* (77501-63-4) [1-(carboethoxy)ethyl 5-{2-chloro-4-(trifluoromethyl)phenoxy}-2-nitrobenzoate]	26 - 27	None	---
N-METHYL-2-PYRROLIDONE (872-50-4)	14 - 15	100 ppm	Mfgr.
NAPHTHALENE (91-20-3)	3	100 ppm TWA 15 ppm STEL	OSHA & ACGIH
TOTAL HYDROCARBONS (64742-94-5)	32	100 ppm	Mfgr.
Other**	10-15	None	---

* Active Ingredient

** Other ingredients, which are maintained as trade secrets, are any substances other than an active ingredient contained in this product. Some of these may be hazardous, but their identity is withheld because they are considered trade secrets. The hazards associated with the other ingredients are addressed in this document. Specific information on other ingredients for the management of exposures, spills, or safety assessments can be obtained by a treating physician or nurse by calling **1-800-892-0099** at any time.

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER:

- **CORROSIVE TO EYES**
- **CAUSES IRREVERSIBLE EYE DAMAGE**
- **HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH THE SKIN**
- **MAY CAUSE ALLERGIC SKIN REACTIONS**
- **SUSPECT CANCER HAZARD**
- **ASPIRATION HAZARD, DO NOT INDUCE VOMITING**
- **AVOID BREATHING VAPOR OR SPRAY MIST**
- **DO NOT GET IN EYES, ON SKIN OR ON CLOTHING**
- **KEEP OUT OF REACH OF CHILDREN**

POTENTIAL HEALTH EFFECTS**Acute Toxicity (Primary Routes of Exposure)**

Signs and Symptoms of Systemic Effects: Signs of toxicity in test animals exposed to lethal or near-lethal oral doses included salivation, lacrimation, decreased activity, lethargy and irregular gait. This product contains a solvent mixture. Solvents, when inhaled, can cause nasal and respiratory irritation and central nervous system effects including dizziness, weakness, fatigue, nausea, headache and possibly unconsciousness and even death. Ingestion of solvents can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of low viscosity products can cause chemical pneumonitis which can be fatal. Acute exposure to naphthalene by inhalation, ingestion, and dermal contact has been associated with hemolytic anemia, damage to the kidneys, cataracts, and, in infants, brain damage.

Eye: This product has been shown to be corrosive to eyes. The degree of injury will depend on the amount and duration of contact and the speed and thoroughness of the first aid treatment. The expected adverse health effects resulting from an exposure may include irreversible eye damage and possibly blindness.

Skin: This product is expected to cause moderate skin irritation. The degree of injury will depend on the amount and duration of contact and the speed and thoroughness of the first aid treatment. The expected adverse health effects resulting from an exposure may include redness and swelling.

This product has been shown to cause allergic skin reactions. In sensitized individuals even small exposures can trigger allergic reactions. The expected adverse health effects may include itching, redness, swelling and blistering of the skin.

This product has been shown to be slightly toxic when absorbed through the skin. The degree of injury will depend on the amount of material inhaled and the speed and thoroughness of the first aid treatment. The expected adverse systemic health effects are described above.

Ingestion: This product has been shown to be slightly toxic when ingested. The degree of injury will depend on the amount of material ingested and the speed and thoroughness of the first aid treatment. The expected adverse systemic health effects are described above.

Ingestion of this product may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Because of the low viscosity of this substance, it can directly enter the lungs if it is swallowed (this is called aspiration). This can occur during the act of swallowing or when vomiting the substance. Once in the lungs, the substance is very difficult to remove and can cause injury to the lungs and death.

Inhalation: Exposure to high concentrations may result in respiratory irritation. Signs and symptoms may include, but not be limited to, nasal discharge, sore throat, coughing and difficulty in breathing.

This product has been shown to be minimally toxic when inhaled. The degree of injury will depend on the amount of material inhaled and the speed and thoroughness of the first aid treatment. The expected adverse systemic health effects are described above.

Chronic Toxicity (Including Cancer): Studies with Lactofen Technical indicate that repeated high exposures produced changes primarily in the liver and blood cells. Other organs were affected but only at very high dose levels. No toxic effects were observed in a study with chimpanzees.

Lactofen Technical did produce liver tumors in both rats and mice and EPA has classified Lactofen Technical as a Group B2 carcinogen (probable human carcinogen) on the basis of these findings. Studies with Flumiclorac Pentyl Technical indicate that repeated high exposures can produce changes in the liver, kidney and red blood cells but did not produce cancer in test animals.

Prolonged or repeated dermal exposures may cause drying, scaling and even blistering of the skin.

Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Symptoms include fatigue, concentration difficulties, anxiety, depression, rapid mood swings and short-term memory loss. The reports are not clear with regard to the types of solvents that may cause these symptoms, and there is controversy among scientists to whether the condition exists or is caused by this type of product. Since many other diseases cause some or all of these conditions, a doctor should be consulted if any appear.

Chronic (long-term) exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Lesions in the kidneys and thymus, signs of anemia, and reduced spleen weights have been observed in rats and mice chronically exposed via gavage.

Teratology (Birth Defects) Information: In studies with Lactofen Technical birth defects were produced in animals only at doses that were also toxic to the pregnant female. No developmental toxicity was produced in animals exposed to Flumiclorac Pentyl Technical, even at doses that were toxic to the pregnant animal. There is limited evidence of fetal and maternal toxicity from exposure to naphthalene.

Reproduction Information: Studies with Lactofen Technical showed reproductive effects in animals only at doses that produced other types of general toxicity. Flumiclorac Pentyl Technical did not produce reproductive toxicity in animal studies.

Potentially Aggravated Condition: Individuals with preexisting diseases of the liver, kidney, red blood cell and central nervous system may have increased susceptibility to the toxicity of excessive exposures.

For complete discussion of the toxicology data from which this evaluation was made, refer to Section 11. For Regulatory Information, refer to Section 15.

SECTION 4: FIRST AID MEASURES

EMERGENCY NUMBER (800) 892-0099

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact **1-800-892-0099** for emergency medical treatment information.

EYES:

- 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.

SKIN:

- 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.

INGESTION:

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

INHALATION:

- 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 center or doctor for further treatment advice.

NOTES TO PHYSICIAN: Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid, which can cause pneumonitis. If ingested, probable mucosal damage may contraindicate the use of gastric lavage.

SECTION 5: FIRE FIGHTING MEASURES

FLASH POINT: 151° F **METHOD:** Setaflash Closed Cup

AUTOIGNITION: NDA

EXTINGUISHING MEDIA: CO₂, dry chemical, foam, water fog.

FLAMMABLE LIMITS (% by volume in air): Lower: NDA Upper: NDA

NFPA RATINGS: Health 3; Flammability 2; Reactivity 0; Special None

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using professional judgement. Values were not available in the guidelines or published evaluations prepared by the National Fire Protection Association, NFPA.

FIRE FIGHTING INSTRUCTIONS: Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85 °F.

Products of combustion from fires involving this material may be toxic. Avoid breathing smoke and mists. Avoid personnel and equipment contact with fallout and runoff. Minimize the amount of water used for fire fighting. Do not enter any enclosed area without full protective equipment, including self-contained breathing equipment. Contain and isolate runoff and debris for proper disposal. Decontaminate personal protective equipment and fire fighting equipment before reuse. Read the entire document.

HAZARDOUS COMBUSTION PRODUCTS: Normal combustion forms carbon dioxide, water vapor and may produce oxides of nitrogen. Combustion may produce toxic compounds of chlorine and fluorine. Incomplete combustion can produce carbon monoxide.

SECTION 6: ACCIDENTAL RELEASE MEASURES

VALENT EMERGENCY PHONE NUMBER: (800) 892-0099

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300

OBSERVE PRECAUTIONS IN SECTION 8: PERSONAL PROTECTION

Stop the source of the spill if safe to do so. Contain the spill to prevent further contamination of the soil, surface water, or ground water.

FOR SPILLS ON LAND:

CONTAINMENT: Avoid runoff into storm sewers and ditches which lead to waterways. Contain spilled liquids with dry sorbents.

CLEANUP: Clean up spill immediately. Absorb spill with inert material (such as dry sand or earth), then place in a chemical waste container. Wash area with soap and water. Pick up wash liquid with additional absorbent and place in a chemical waste container.

FOR SPILLS IN WATER:

CONTAINMENT: This material forms an emulsion in water. Stop or reduce contamination of any water. Isolate contaminated water.

CLEANUP: Remove contaminated water for treatment or disposal.

SECTION 7: HANDLING AND STORAGE**END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.**

DO NOT USE OR STORE near flame, sparks or hot surfaces. Use only in well ventilated area. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

Keep pesticide in original container. Do not store or transport near food or feed. Do not contaminate food or feed. Do not put concentrate into food or drink containers. Do not dilute concentrate in food or drink containers. Store in a cool, dry place, out of direct sunlight.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.**

EYE PROTECTION: Appropriate eye protection must be worn when working with this material or serious harm can result. Wear protective eyewear.

RESPIRATION/VENTILATION: This material may be a respiratory irritant and, unless ventilation is adequate, the use of approved respiratory protection is recommended. Use this material only in well ventilated areas.

SKIN PROTECTION: Do not get on skin or clothing. Skin contact should be avoided by wearing protective clothing including chemical resistant gloves, long sleeved shirt, long pants, shoes and socks. Discard clothing and other absorbent materials that may have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Dark amber, clear liquid.
ODOR: Aromatic type odor.

MELTING POINT:	NA
BOILING POINT:	NDA
DENSITY:	9.15 lb/gal
SOLUBILITY:	Emulsifies in water
VAPOR PRESSURE:	NA
DISSOCIATION CONSTANT:	NA
OCTANOL/WATER PARTITION COEFFICIENT:	NA
pH:	6.1 (5% emulsion)
VISCOSITY:	NDA
CORROSION CHARACTERISTICS:	NDA

SECTION 10: STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable.

INCOMPATIBILITY: May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

OXIDATION/REDUCTION PROPERTIES: Not reactive

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE (Product Specific Information):

Eye Irritation: This product produced moderate to severe eye irritation and irreversible corneal damage in rabbits. (Toxicity Category I, Corrosive)

Skin Irritation: This product produced moderate skin irritation (72 hour PPI = 2.1) in rabbits. (Toxicity Category III)

Dermal Toxicity: The dermal LD₅₀ in rabbits is greater than 2 g/kg. (Toxicity Category III)

Oral Toxicity: The oral LD₅₀ in rats is 1.289 g/kg. (Toxicity Category III)

Inhalation Toxicity: The 4-hour LC₅₀ in rats is greater than 3.6 mg/l. (Toxicity Category IV) This product is also expected to be a respiratory irritant.

Skin Sensitization: This product produced a positive response in a modified Buehler Guinea Pig Sensitization Test.

TOXICITY OF FLUMICLORAC PENTYL TECHNICAL

SUBCHRONIC: Compound-related effects noted at very high dose levels of Flumiclorac Pentyl Technical in rodents and/or dogs included: increased liver and kidney weights; histological changes in the kidney and liver; slight changes in blood biochemistry parameters; decreased red blood cell count, hemoglobin and hematocrit and slight decreases in body weight. The NOEL in rats and mice was 1000 ppm.

CHRONIC/CARCINOGENICITY: Effects of long-term high dose exposures to Flumiclorac Pentyl Technical in rodents and/or dogs consisted primarily of increases in kidney and liver weights, slight changes in blood biochemistry, and histological changes in the liver. The lowest NOEL was 300 ppm in the mouse study. Flumiclorac Pentyl Technical was not carcinogenic in either rats or mice.

Acute exposure to naphthalene by inhalation, ingestion, and dermal contact has been associated with hemolytic anemia, damage to the kidneys, cataracts, and, in infants, brain damage. There is limited evidence of fetal and maternal toxicity from exposure to naphthalene.

Chronic (long-term) exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Lesions in the kidneys and thymus, signs of anemia, and reduced spleen weights have been observed in rats and mice chronically exposed via gavage.

For a summary of the potential for adverse health effects from exposure to this product, refer to Section 3. For information regarding regulations pertaining to this product, refer to Section 15.

SECTION 12: ECOLOGICAL INFORMATION

TOXICITY OF LACTOFEN TECHNICAL:

AVIAN TOXICITY: The following results were obtained from studies with Lactofen Technical:

LD₅₀ quail: greater than 2510 mg/kg
LC₅₀ duck: greater than 5620 ppm
LC₅₀ quail: greater than 5620 ppm

AQUATIC ORGANISM TOXICITY: The following effects were noted in studies with Lactofen Technical:

96-hour LC₅₀ bluegill sunfish: greater than 100 ppb¹
96-hour LC₅₀ rainbow trout: greater than 100 ppb¹
48-hour LC₅₀ *Daphnia magna* greater than 100 ppb¹; 2.0 ppm
Fish early life stage toxicity (sheepshead minnow): MATC (Maximum Allowable Toxicant Concentration) greater than 0.78 ppm but less than 1.6 ppm

¹ Maximum solubility of Lactofen Technical.

OTHER NON-TARGET ORGANISM TOXICITY: Lactofen Technical is practically nontoxic to bees with an acute topical LD₅₀ of greater than 160 ug/bee.

TOXICITY OF FLUMICLORAC PENTYL TECHNICAL:

AVIAN TOXICITY: Flumiclorac Pentyl Technical is practically non-toxic to avian species. The following results were obtained from studies with Flumiclorac Pentyl Technical.

LD₅₀ quail: greater than 2250 mg/kg
LC₅₀ duck: greater than 5620 ppm
LC₅₀ mallard: greater than 5620 ppm

Quail Reproduction NOEC: 500 ppm
Duck Reproduction NOEC: 250 ppm

AQUATIC ORGANISM TOXICITY: The toxicity of Flumiclorac Pentyl Technical to freshwater fish and invertebrates ranges from slight to moderate. To saltwater/estuarine fish and invertebrates, its toxicity ranges from slight to moderate.

96-hour LC₅₀ bluegill sunfish: 17.4 mg/l
96-hour LC₅₀ rainbow trout: 1.1 mg/l
48-hour LC₅₀ *Daphnia magna*: greater than 38.0 mg/l
96-hour LC₅₀ sheepshead minnow: greater than 24 mg/l
96-hour EC₅₀ eastern oyster: greater than 1.8 mg/l

96-hour LC₅₀ mysid shrimp: 0.56 mg/l

OTHER NON-TARGET ORGANISM TOXICITY: Flumiclorac Pentyl Technical is practically non-toxic to bees. The acute contact LD₅₀ is greater than 106 ug/bee.

SECTION 13: DISPOSAL CONSIDERATIONS

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.

DISPOSAL METHODS: Check governmental regulations and local authorities for approved disposal of this material. Dispose in accordance with applicable laws and regulations.

SECTION 14: TRANSPORT INFORMATION

D.O.T. SHIPPING NAME:	Compounds, weed killing, liquid, non-regulated.
TECHNICAL SHIPPING NAME:	Lactofen 26.6% and Flumiclorac Pentyl 7.6% Solution
RQ:	400 gal
D.O.T. HAZARD CLASS:	NA
U.N./N.A. NUMBER:	NA
REMARKS:	Regulated when shipped in bulk (>119 gal)
EXCEPTION REQUIREMENT:	49 CFR 173.150

SECTION 15: REGULATORY INFORMATION

REGULATIONS UNDER FIFRA: All pesticides are governed under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act). Therefore, the regulations presented below are pertinent only when handled outside of the normal use and applications of pesticides. This includes waste streams resulting from manufacturing/formulation facilities, spills or misuse of products, and storage of large quantities of products containing hazardous or extremely hazardous substances.

OTHER U.S. FEDERAL REGULATIONS:

OSHA:	See Section 2
CERCLA RQ*:	Product RQ = 400 gal; naphthalene RQ = 100 lb
RCRA**:	Naphthalene waste code = U165
SARA TITLE III:	
Sara (313) Chemicals:	1,2,4 trimethylbenzene, naphthalene, lactofen, n-methyl-2-pyrrolidone (NMP)
Sara (311,312):	Immediate Health Effects: YES Chronic Health Effects: YES Fire Hazard: YES Sudden Release of Pressure: NO Reactivity Hazard: NDA
Sara Section 302:	NA

Clean Water Act/Oil Pollution Act: A component of this product is classified as an oil under Section 311 of the Clean Water Act (40 CFR 110) and the Oil Pollution Act of 1990. Discharge or spills that produce a visible sheen on either surface or in

Waterways/sewers that lead to surface water must be reported to the National Response Center at 800-424-8802.

This product is not listed as a carcinogen by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), or the Occupational Safety and Health Administration (OSHA).

STATE REGULATIONS: Each state may promulgate standards more stringent than the federal government. This section cannot encompass an inclusive list of all state regulations. Therefore, the user should consult state or local authorities.

Proposition 65:

WARNING: This product contains a chemical known to the State of California to cause cancer.

* RQ: Reportable Quantity

** RCRA waste codes must be determined on a case-by-case basis (i.e., spill, processing waste, etc.).

For information regarding potential adverse health effects from exposure to this product, refer to Sections 3 and 11.

SECTION 16: OTHER INFORMATION

REASON FOR ISSUE:	Revisions to Sections 1, 4 and 15.
REVISION NUMBER:	2
REVISION DATE:	08/25/2000
SUPERSEDES DATE:	08/11/1999
MSDS NUMBER:	0168

THE INFORMATION IN THIS MSDS IS BASED ON DATA AVAILABLE TO US AS OF THE REVISION DATE GIVEN HEREIN, AND BELIEVED TO BE CORRECT. CONTACT VALENT USA CORPORATION TO CONFIRM IF YOU HAVE THE MOST CURRENT MSDS.

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