SAFETY DATA SHEET

DOW AGROSCIENCES SOUTHERN AFRICA PTY LTD

Product name: PLENUM™ 160 ME

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DOW AGROSCIENCES SOUTHERN AFRICA PTY LTD encourages you and expects you to read and understand the entire SDS as there is important information throughout the document. This SDS provides users with information relating to the protection of human health and safety at the workplace, protection of the environment and supports emergency response. Product users and applicators should primarily refer to the product label attached to or accompanying the product container.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PLENUM™ 160 ME

Recommended use of the chemical and restrictions on use
Identified uses: Plant Protection Product

COMPANY IDENTIFICATION
DOW AGROSCIENCES SOUTHERN AFRICA PTY LTD
GROUND FLOOR MAGWA BUILDING
MAXWELL OFFICE PARK MAGWA CRESCENT
MIDRAND
1686
SOUTH AFRICA
Customer Information Number:
SDS@corteva.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: +32 3 575 55 55
Local Emergency Contact: +27 82 895 0621

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture
Serious eye damage - Category 1 - H318
Carcinogenicity - Category 2 - H351
Long-term (chronic) aquatic hazard - Category 2 - H411
For the full text of the H-Statements mentioned in this Section, see Section 16.

Label elements

Hazard pictograms

Signal word: DANGER

Hazard statements

H318	Causes serious eye damage.
H351	Suspected of causing cancer.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

P202	Do not handle until all safety precautions have been read and understood.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P311	IF exposed or concerned: Call a POISON CENTER/doctor.
P391	Collect spillage.
P501	Dispose of contents/container in accordance with applicable regulations.

Supplemental information

EUH401	To avoid risks to human health and the environment, comply with the instructions for use.
EUH208	Contains: Picloram triisopropanolamine salt. May produce an allergic reaction.
Contains	Ethoxylated Alcohols, C12 to C15; Hydrocarbons, C10-C13, aromatics, >1% naphthalene

Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

CASRN / EC-No. / Index-No.	**Concentration**	**Component**	**Classification**
CASRN 6753-47-5 **EC-No.** 229-815-1 **Index-No.** –	13,2%	Picloram triisopropanolamine salt	Skin Sens. - 1B - H317 Aquatic Acute - 1 - H400 Aquatic Chronic - 1 - H410
CASRN 81406-37-3 **EC-No.**	10,7%	Fluroxypyr 1-methylheptyl ester	Aquatic Acute - 1 - H400 Aquatic Chronic - 1 - H410

279-752-9 **Index-No.** 607-272-00-5			
CASRN 78330-21-9 **EC-No.** – **Index-No.** –	> 20,0 - < 30,0 %	Ethoxylated Alcohols, C12 to C15	Acute Tox. - 4 - H302 Eye Dam. - 1 - H318
CASRN 34590-94-8 **EC-No.** 252-104-2 **Index-No.** –	> 10,0 - < 20,0 %	Dipropylene glycol monomethyl ether	Not classified
CASRN 64742-94-5 **EC-No.** 265-198-5 **Index-No.** 649-424-00-3	> 10,0 - < 20,0 %	Heavy aromatic naphtha	Asp. Tox. - 1 - H304 Aquatic Chronic - 3 - H412
CASRN 91-20-3 **EC-No.** 202-049-5 **Index-No.** 601-052-00-2	< 5,0 %	Naphthalene	Acute Tox. - 4 - H302 Carc. - 2 - H351 Aquatic Acute - 1 - H400 Aquatic Chronic - 1 - H410
CASRN 122-20-3 **EC-No.** 204-528-4 **Index-No.** 603-097-00-3	< 5,0 %	Triisopropanolamine	Eye Irrit. - 2 - H319
CASRN 91-57-6 **EC-No.** 202-078-3 **Index-No.** –	< 5,0 %	2-Methylnaphthalene	Acute Tox. - 4 - H302 Aquatic Chronic - 2 - H411
CASRN 90-12-0 **EC-No.** 201-966-8 **Index-No.** –	< 5,0 %	1-Methylnaphthalene	Acute Tox. - 4 - H302 Aquatic Chronic - 2 - H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

Description of first aid measures
General advice:
First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). 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.

Eye contact: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

Ingestion: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:
Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If hemolysis is suspected, monitor hemoglobin, hematocrit, plasma free hemoglobin, and urinalysis. Whole blood or packed RBC transfusion may be required in severe cases. Alkalinization of urine with bicarbonate may prevent renal damage. Administer 100% oxygen to relieve headache and a general sense of weakness. Determine methemoglobin concentration of blood every 3 to 6 hours for first 24 hours. It should return to normal within 24 hours. The treatment of toxic methemoglobinemia may include the intravenous administration of methylene blue. If methemoglobin >10-20% consider methylene blue 1-2 mg/kg body weight as 1% solution intravenously over 5 minutes followed by 15-30 cc flush (Price D, Methemoglobinemia, Goldfrank Toxicologic Emergencies, 5th ed., 1994). Also provide 100% oxygen. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment. Skin contact may aggravate preexisting dermatitis. Excessive exposure may aggravate preexisting liver and kidney disease. Repeated excessive exposure may aggravate preexisting lung disease.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture
Hazardous combustion products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn. If exposed to fire from another source and water is evaporated, exposure to high temperatures may cause toxic fumes.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Evacuate area. Refer to section 7, Handling, for additional precautionary measures. Only trained and properly protected personnel must be involved in clean-up operations. Keep upwind of spill. Ventilate area of leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Do not get in eyes. Do not swallow. Avoid contact with skin and clothing. Avoid breathing vapor or mist. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value/Notation
Fluroxypyr 1-methylheptyl ester	Dow IHG	TWA	10 mg/m3
Dipropylene glycol monomethyl ether	ACGIH	TWA	100 ppm
	ACGIH	TWA	SKIN
	ACGIH	STEL	150 ppm
	Dow IHG	TWA	10 ppm
	ACGIH	STEL	SKIN
	Dow IHG	TWA	SKIN
	Dow IHG	STEL	30 ppm
	Dow IHG	STEL	SKIN
	2000/39/EC	TWA	308 mg/m3 50 ppm
	2000/39/EC	TWA	SKIN
Heavy aromatic naphtha	ACGIH	TWA	200 mg/m3 , total hydrocarbon vapor
	Dow IHG	TWA	100 mg/m3
	Dow IHG	STEL	300 mg/m3
Naphthalene	ACGIH	TWA	10 ppm
	ACGIH	TWA	SKIN
	Dow IHG	TWA	10 ppm
	Dow IHG	TWA	SKIN
	Dow IHG	STEL	15 ppm
	Dow IHG	STEL	SKIN
	91/322/EEC	TWA	50 mg/m3 10 ppm
	ZA OEL	TWA OEL-RL	50 mg/m3 10 ppm
	ZA OEL	STEL OEL-RL	75 mg/m3 15 ppm
Triisopropanolamine	Dow IHG	TWA	10 mg/m3
2-Methylnaphthalene	ACGIH	TWA	0,5 ppm
1-Methylnaphthalene	ACGIH	TWA	0,5 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls
Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent.

Skin protection

Hand protection: Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. When prolonged or frequently repeated contact may occur, a glove with a protection class of 4 or higher (breakthrough time greater than 120 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 1 or higher (breakthrough time greater than 10 minutes according to EN 374) is recommended. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2 (meeting standard EN 14387).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Tan to brown
Odor	Amine.
Odor Threshold	No test data available
pH	7,4 *pH Electrode*
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	No test data available

Flash point	**closed cup** > 100 °C *Closed Cup*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	No data available
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	No test data available
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	1,083 at 20 °C
Water solubility	emulsifiable
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Dynamic Viscosity	77,2 mPa.s at 20 °C
Kinematic Viscosity	No test data available
Explosive properties	No test data available
Oxidizing properties	No test data available
Liquid Density	1,083 g/cm3 at 20 °C *Pyknometer*
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Can coagulate if frozen. Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with: Oxidizers. Addition of chemicals may cause phase separation.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen chloride. Nitrogen oxides. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

As product:
LD50, Rat, > 5 000 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:
LD50, Rat, > 5 000 mg/kg

Acute inhalation toxicity
Prolonged exposure is not expected to cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs.

As product:
LC50, Rat, 4 Hour, dust/mist, > 5,56 mg/l

Skin corrosion/irritation
Brief contact may cause slight skin irritation with local redness.
May cause drying and flaking of the skin.

Serious eye damage/eye irritation
May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Sensitization
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant information found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Liver.

Based on information for component(s):
Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.
Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust.
Excessive exposure may cause hemolysis, thereby impairing the blood's ability to transport oxygen.
Ingestion of naphthalene by humans has caused hemolytic anemia.
In animals, effects have been reported on the following organs:
Lung.
Gastrointestinal tract.
Thyroid.

Urinary tract.
Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

Carcinogenicity
Contains naphthalene which has caused cancer in some laboratory animals. In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative. For similar active ingredient(s). Picloram. Fluroxypyr-meptyl. Did not cause cancer in laboratory animals.

Teratogenicity
For the active ingredient(s): Fluroxypyr 1-methylheptyl ester. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the component(s) tested: Did not cause birth defects in laboratory animals.

Reproductive toxicity
For similar active ingredient(s). Picloram. For the active ingredient(s): Fluroxypyr 1-methylheptyl ester. In animal studies, did not interfere with reproduction. For the minor component(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
No aspiration toxicity classification

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Acute toxicity to fish
Based on information for component(s):
Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

For the active ingredient(s):
Fluroxypyr 1-methylheptyl ester.
LC50, Cyprinodon variegatus (sheepshead minnow), 96 Hour, > 0,0866 mg/l, OECD Test Guideline 203 or Equivalent

Toxicity to aquatic species occurs at concentrations above material's water solubility.

Acute toxicity to aquatic invertebrates
For the active ingredient(s):
Fluroxypyr 1-methylheptyl ester.
EC50, Daphnia magna (Water flea), semi-static test, 48 Hour, > 0,183 mg/l, OECD Test Guideline 202 or Equivalent

Toxicity to aquatic species occurs at concentrations above material's water solubility.

Acute toxicity to algae/aquatic plants
For the active ingredient(s):
Fluroxypyr 1-methylheptyl ester.
ErC50, diatom Navicula sp., 72 Hour, Biomass, 0,24 mg/l

Toxicity to Above Ground Organisms
As product:
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

As product:

oral LD50, Apis mellifera (bees), 48 Hour, > 200micrograms/bee

As product:

oral LD50, Coturnix japonica (Japanese quail), > 2250mg/kg bodyweight.

Persistence and degradability

Picloram triisopropanolamine salt
Biodegradability: For similar active ingredient(s). Picloram. Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions. Biodegradation may occur under aerobic conditions (in the presence of oxygen). Surface photodegradation is expected with exposure to sunlight.

Fluroxypyr 1-methylheptyl ester
Biodegradability: Material is not readily biodegradable according to OECD/EEC guidelines.
10-day Window: Fail
Biodegradation: 32 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 2,2 mg/mg

Stability in Water (1/2-life)
Hydrolysis, half-life, 454 d

Ethoxylated Alcohols, C12 to C15
Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: > 90 %
Exposure time: 28 d
Method: OECD Test Guideline 301E or Equivalent
10-day Window: Pass
Biodegradation: > 60 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent

Dipropylene glycol monomethyl ether

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).
10-day Window: Pass
Biodegradation: 75 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent

Heavy aromatic naphtha
Biodegradability: Material is not readily biodegradable according to OECD/EEC guidelines.

Naphthalene
Biodegradability: Material is expected to be readily biodegradable.

Triisopropanolamine
Biodegradability: Material is not readily biodegradable according to OECD/EEC guidelines.
10-day Window: Fail
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent

Theoretical Oxygen Demand: 2,35 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitization: OH radicals
Atmospheric half-life: 3 Hour
Method: Estimated.

2-Methylnaphthalene
Biodegradability: Expected to degrade slowly in the environment.

1-Methylnaphthalene
Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Not applicable
Biodegradation: 0 - 2 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent

Bioaccumulative potential

Picloram triisopropanolamine salt
Bioaccumulation: No data available for this product. For similar active ingredient(s). Picloram. Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Fluroxypyr 1-methylheptyl ester
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 5,04 Measured
Bioconcentration factor (BCF): 26 Oncorhynchus mykiss (rainbow trout) Measured

Ethoxylated Alcohols, C12 to C15

Bioaccumulation: No relevant data found.

Dipropylene glycol monomethyl ether
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 1,01 Measured

Heavy aromatic naphtha
Bioaccumulation: For similar material(s): Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

Naphthalene
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3,3 Measured
Bioconcentration factor (BCF): 40 - 300 Fish 28 d Measured

Triisopropanolamine
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -0,015 at 23 °C Measured
Bioconcentration factor (BCF): < 0,57 Fish 42 d Measured

2-Methylnaphthalene
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3,86 Estimated.

1-Methylnaphthalene
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3,87 Estimated.

Mobility in soil

Picloram triisopropanolamine salt
For similar active ingredient(s).
Picloram.
Potential for mobility in soil is very high (Koc between 0 and 50).

Fluroxypyr 1-methylheptyl ester
Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient (Koc): 6200 - 43000

Ethoxylated Alcohols, C12 to C15
No relevant data found.

Dipropylene glycol monomethyl ether
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): 0,28 Estimated.

Heavy aromatic naphtha
No relevant data found.

Naphthalene

Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient (Koc): 240 - 1300 Measured

Triisopropanolamine

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): 10 Estimated.

2-Methylnaphthalene

No relevant data found.

Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Other adverse effects

Picloram triisopropanolamine salt

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Fluroxypyr 1-methylheptyl ester

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Ethoxylated Alcohols, C12 to C15

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Dipropylene glycol monomethyl ether

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Heavy aromatic naphtha

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Naphthalene

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Triisopropanolamine

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

2-Methylnaphthalene

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

1-Methylnaphthalene

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or

otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

Classification for ROAD and Rail transport:

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Fluroxypyr, Naphthalene)
UN number	UN 3082
Class	9
Packing group	III
Environmental hazards	Fluroxypyr, Naphthalene

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Fluroxypyr, Naphthalene)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Fluroxypyr, Naphthalene
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Fluroxypyr, Naphthalene)
UN number	UN 3082
Class	9
Packing group	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.

15. REGULATORY INFORMATION

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.
Listed in Regulation: ENVIRONMENTAL HAZARDS
Number in Regulation: E2
200 t
500 t
Listed in Regulation: Petroleum products: (a) gasolines and naphthas, (b) kerosenes (including jet fuels), (c) gas oils (including diesel fuels, home heating oils and gas oil blending streams),(d) heavy fuel oils (e) alternative fuels serving the same purposes and with similar properties as regards flammability and environmental hazards as the products referred to in points (a) to (d)
Number in Regulation: 34
2 500 t
25 000 t

Classification and labeling have been performed according to Regulation (EC) No 1272/2008.

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H351	Suspected of causing cancer.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

2000/39/EC	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
91/322/EEC	Europe. Commission Directive 91/322/EEC on establishing indicative limit values
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline
SKIN	Absorbed via skin
STEL	Short-term exposure limit
STEL OEL-RL	Short term occupational exposure limits - recommended limit
TWA	Limit Value - eight hours
TWA OEL-RL	Long term occupational exposure limits - recommended limit
ZA OEL	South Africa. Hazardous Chemical Substances Regulations, Occupational Exposure Limits
Acute Tox.	Acute toxicity
Aquatic Acute	Short-term (acute) aquatic hazard

Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration hazard
Carc.	Carcinogenicity
Eye Dam.	Serious eye damage
Eye Irrit.	Eye irritation
Skin Sens.	Skin sensitisation

Full text of other abbreviations
ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

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