SAFETY DATA SHEET

Prepared on Commission Regulation (EU) no. 453/2010

1. Identification of the substance/mixture and of the company/undertaking

Product/substance name	Nuvogon 480 EC		Original Date: 23/05/2022 Revised Date: 23/05/2022
Product/substance name Herbicide	**CAS Number**	**EINECS Number**	**Index Number**
	64700-56-7	Not available	Not available
Supplier	Future Farm & Forest Services & Supplies (Pty) Ltd P.O. BOX 98165 SLOANE PARK 2152 EMERGENCY CONTACT Tel: (+27) 11 463 5842		
Regd. Office:	Future Farm & Forest Services & Supplies (Pty) Ltd P.O. BOX 98165 SLOANE PARK 2152 EMERGENCY CONTACT Tel: (+27) 11 463 5842		
Emergency telephone number	Transport accident: 086 100 0366 Treatment for poisoning cases: 082 446 8946		

2. Hazards identification

Classification of the substance or mixture

Acute toxicity (Oral)	Category 4: (H302)
Skin sensitisation	Category 1: (H317)
Aspiration hazard	Category 1: (H304)
Specific target organ toxicity - repeated exposure	Category 2: (H373)
Acute aquatic toxicity	Category 1: (H400)
Chronic aquatic toxicity	Category 1: (H410)

Label Elements

Hazard pictograms

Signal word:	DANGER
Hazard statements	H302 - Harmful if swallowed. H317 - May cause an allergic skin reaction. H304 - May be fatal if swallowed and enters airways. H373 - May cause damage to organs (Kidney) through prolonged or repeated exposure. H410 - Very toxic to aquatic life with long lasting effects.
Precautionary statements	P260 - Do not breathe mist/vapours/spray. P264 - Wash hands thoroughly after handling. P270 - Do not eat, drink or smoke when using this product. P272 - Contaminated work clothing should not be allowed out of the workplace. P273 - Avoid release to the environment. – *if this is not the intended use*. P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection. P302 + P352 - IF ON SKIN: Wash with plenty of water. P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do NOT induce vomiting. P314 - Get medical attention if you feel unwell. P330 - Rinse mouth. P333 + P317 - If skin irritation or rash occurs: Get medical help. P362 + P364 - Take off contaminated clothing and wash it before reuse. P391 - Collect spillage. P405 - Store locked up. 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.
Other hazards	No data available

3. Composition/information on ingredients

Mixture

Chemical Name	Weight (%)	CAS No	EC No
Triclopyr-2-butoxyethyl ester	61.2	64700-56-7	265-024-8
Kerosene	> 30 - < 40	8008-20-6	232-366-4
Benzenesulfonic Acid, Mono- C10-13-branched Alkyl Derivs., compds. with N,N-Dimethyl-1,3-propanediamine	< 5	90194-53-9	290-665-5

4. First aid measures

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. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.

Eye contact Hold eyes 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 eyes. Call a poison control center or doctor for treatment advice.

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	Skin contact may aggravate preexisting dermatitis. The decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote. 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.

5. Firefighting measures

Extinguishing media

Suitable extinguishing media:
Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function but will be less effective.

Unsuitable extinguishing media:
No data available.

Special hazards arising from the substance or mixture

Hazardous combustion products:
During a fire, smoke may contain the original material in addition
to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Phosgene. Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards:
Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns.

Advice for firefighters

Fire Fighting Procedures:	Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of

rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. 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 SDS.

Special protective equipment for firefighters:
Wear positive-pressure self-contained breathing apparatus (SCBA) and protective firefighting clothing (includes firefighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during firefighting operations. If contact is likely, change to full chemical resistant firefighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. No smoking in area. 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.

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 the company 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 swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Wash thoroughly after handling. Use with adequate ventilation.

See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.

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.

Storage stability:
To maintain product quality, recommended storage temperature is > -10 °C.

8. Exposure controls/personal protection

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.

Personal protective equipment

Eye/face protection Use safety glasses (with side shields). Safety glasses (with side shields) should be consistent with EN 166 or equivalent.

Hand protection: Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include Chlorinated polyethylene. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include Butyl rubber. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl").

	Viton. When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also consider 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 were indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator. Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2.

General Hygiene Considerations

When using do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing is recommended.

9. Physical and chemical properties

Physical and Chemical Properties

Property		**Values**	**Methods**	**Remarks**
Appearance				
Physical state	:	Liquid		
Color	:	Yellow to light brown		
Odor	:	Mild hydrocarbon		
Odor threshold	:	No test data available		
pH	:	6.4	1% pH Electrode 5,3 at 100 g/L	pH Electrode
Melting point/freezing point (°C)	:	No test data available		
Boiling point/boiling range (°C)	:	> 150		
Flash point (°C)	:	Between 61°C and 93.3°C	EC Method A9	closed cup

Evaporation rate (Butyl Acetate = 1)	:	No test data available		
Flammability (solid, gas)	:	No		
Upper/lower flammability or explosive limits	:	No test data available		
Vapor pressure (kPa)	:	No test data available		
Vapor density	:	No test data available		
Relative density (water = 1)	:	1.079	OECD 109	at 23 °C / 4
Solubility(ies) (mg/l)	:	Emulsifiable		
Partition Coefficient (n-octanol/water) Log Pow:	:	No data available		
Auto-ignition temperature (°C)	:	238		
Decomposition temperature (°C)	:	No test data available		
Dynamic viscosity (mPa.s at 20 °C)		16.4		
Kinematic viscosity (mm2/s 40 °C)	:	7.13		11,2 cSt at 20 °C
Explosive properties	:	No	EEC A14	
Oxidizing properties	:	No		significant increase (>5C) in temperature.

Other Information

Bulk density (g/ml)	:	No data available	
Liquid Density (g/cm^3)		1.08 (approx.)	g/cm^3 at 22°C
Surface tension (mN/ml)	:	27	mN/ml at 25 °C

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: Thermally stable at typical use temperatures.

Possibility of Hazardous Reactions

Hazardous polymerization: Polymerization will not occur.

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

Incompatible Materials: Avoid contact with: Acids. Bases. Oxidizers.

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. Phosgene. Toxic gases are released during decomposition.

11. Toxicological information

Information on toxicological effects

Acute toxicity		Values	Species	Remarks
Oral (LD50 mg/kg)	:	1 150	Rat	Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.
Dermal (LD50 mg/kg)	:	2 000	Rabbit	No deaths occurred at this concentration. Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation (LC50 mg/l/4h)	:	> 5.2	Rat	No deaths occurred at this concentration. No adverse effects are anticipated from single exposure to mist. Mist may cause irritation of upper respiratory tract (nose and throat).
Skin corrosion/irritation	:	-	-	Brief contact may cause slight skin irritation with local redness. May cause drying and flaking of the skin. Repeated contact may cause severe skin irritation with local redness and discomfort.
Serious eye damage/eye irritation	:	-	-	May cause pain disproportionate to the level of irritation to eye tissues. May cause slight eye irritation. Corneal injury is unlikely.
Respiratory/skin sensitization	:	-	-	Has caused allergic skin reactions when tested in guinea pigs. With the dilute mix, no allergic skin reaction is expected.
Chronic toxicity				
Germ cell mutagenicity	:	-	-	For the active ingredient(s): For the solvent(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.
Carcinogenicity	:	-	-	In a lifetime animal dermal carcinogenicity study, an increased incidence of skin tumors was observed when kerosene was applied at doses that also produced skin irritation. This response was similar to that produced in skin by other types of chronic chemical/physical irritation. No increase in tumors was observed when non-irritating dilutions of kerosene were applied at equivalent doses, indicating that kerosene is unlikely to cause skin cancer in the absence of long-term continued skin irritation. Active ingredient did not cause cancer in laboratory animals.
Reproductive toxicity	:	-	-	For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses

				that produced significant toxicity to the parent animals. For the solvent(s): Limited data in laboratory animals suggest that the material does not affect reproduction.
STOT - single exposure	:	-	-	Evaluation of available data suggests that this material is not an STOT-SE toxicant.
STOT - repeated exposure	:	-	-	For the active ingredient(s): In animals, effects have been reported on the following organs: Kidney. Liver. For the solvent(s): In animals, effects have been reported on the following organs after exposure to aerosols: Central nervous system. Respiratory tract.
Aspiration hazard	:	-	-	May be fatal if swallowed and enters airways.
Teratogenicity	:	-	-	For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

12. Ecological information

Toxicity

Aquatic toxicity

Acute toxicity		**Values**	**Species**	**Method**	**Remarks**
Fish (96-hour LC50 mg/l)	:	0.984	*Oncorhynchus mykiss* (rainbow trout)	Flow-through test	Material is very toxic to aquatic organisms
Crustacea (48-hour EC50 mg/l)	:	0.35	*Daphnia magna* (water flea)	Flow-through test	
Algae (72-hour EC50 mg/l)	:	10.6	*Pseudokirchneriella subcapitata* (green algae)	Static test	
Other plants (7 d EC50 mg/l)	:	36.7	*Pseudokirchneriella subcapitata* (microalgae)	Static test	

Terrestrial Toxicity

Bird Oral (mg/kg)	:	1 350	*Colinus virginianus* (Bobwhite quail)	Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg).
Bees Oral LD50 (µg/bee)	:	> 230	*Apis mellifera* (bees)	
Bees Contact LD50 (µg/bee)	:	> 230		

Toxicity to soil-dwelling organisms

Earthworms LD50 (mg/kg 14 d)	2 552	*Eisenia fetida* (earthworms)

Persistence and degradability

Biodegradation: 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.

Bioaccumulative potential

Triclopyr-2-butoxyethyl ester
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water (log Pow): 4,62.
Bioconcentration factor (BCF): 110 Fish.
Kerosene
Bioaccumulation: Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).
Partition coefficient: n-octanol/water (log Pow): 6,23.
Bioconcentration factor (BCF): 207,7.
Benzenesulfonic Acid, Mono-C10-13-branched Alkyl Derivs., compds. with N,N-Dimethyl-1,3-propanediamine
Bioaccumulation: No relevant data found.

Mobility in soil

Triclopyr-2-butoxyethyl ester
Calculation of meaningful sorption data was not possible due to very rapid degradation in the soil.
For the degradation product: Triclopyr. Potential for mobility in soil is very high (Koc between 0 and 50).
Kerosene
Potential for mobility in soil is slight (Koc between 2000 and 5000). Partition coefficient (Koc): 4818
Benzenesulfonic Acid, Mono-C10-13-branched Alkyl Derivs., compds. with N,N-Dimethyl-1,3-propanediamine
No relevant data found.

Results of PBT and vPvB assessment

Triclopyr-2-butoxyethyl ester
This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).
Kerosene
This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
Benzenesulfonic Acid, Mono-C10-13-branched Alkyl Derivs., compds. with N,N-Dimethyl-1,3-propanediamine
This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Other adverse effects

Triclopyr-2-butoxyethyl ester
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.
Kerosene
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.
Benzenesulfonic Acid, Mono-C10-13-branched Alkyl Derivs., compds. with N,N-Dimethyl-1,3-propanediamine
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:

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

Classification for SEA transport (IMO-IMDG):

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

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):

UN number	UN 3082
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Triclopyr)
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

National legislation:

· Regulations For Hazardous Chemical Agents, 2021 as Amended by Notice R 11266 in GG 44366 of 31 March 2021 Republic of South Africa.

· Occupational Health and Safety Act (Act No. 85 of 1993) as amended.

· Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act No. 36 of 1947) as amended. Registration No. L6802 Department of Agriculture, Land Reform and Rural Development.

16. Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Contact:

Future Farm & Forest Services & Supplies (Pty) Ltd
P.O. BOX 98165
SLOANE PARK
2152

Abbreviations and acronyms:

ADR:	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID:	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG:	International Maritime Code for Dangerous Goods
IATA:	International Air Transport Association (IATA)
ICAO:	International Civil Aviation Organization

ICAO-TI:	Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS:	Globally Harmonized System of Classification and Labelling of Chemicals
EINECS:	European Inventory of Existing Commercial Chemical Substances
CAS:	Chemical Abstracts Service (division of the American Chemical Society)
LC50:	Lethal concentration, 50 percent
LD50:	Lethal dose, 50 percent

This Safety Data Sheet (SDS) complies with basic South African and EU regulatory requirements for SDS on the date of publication and is intended for translation and adaptation into European National documents. This document should NOT be relied upon for compliance with the laws and regulations of individual countries without the appropriate local translations and adaptations. It is your responsibility to ensure that any SDS taken or adapted from this system for re-distribution or use complies with all the laws and regulations which apply to any such use or re-distribution.