

Material group	8810-02	Page 1 of 11
Product name	Maintain NT 8810-02, TRINEXAPAC-ETHYL 120 g/l ME	December 2015
Safety data sheet according to EU Reg. 1907/2006 as amended		Supersedes May 2013

SAFETY DATA SHEET

Maintain NT TRINEXAPAC-ETHYL 120 g/l ME

Sections containing a revision or new information are marked with a ♦.

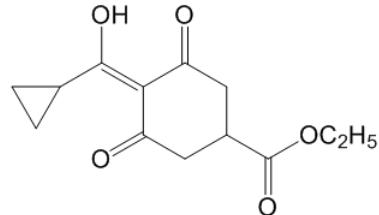
SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING	
1.1. Product identifier	MAINTAIN NT 8810-02, TRINEXAPAC-ETHYL 120 g/l ME
1.2. Relevant identified uses of the substance or mixture and uses advised against	Can be used as plant growth regulator only.
1.3. Details of the supplier of the safety data sheet	CHEMINOVA A/S P.O. Box 9 DK-7620 Lemvig Denmark sds@cheminova.dk
1.4. Emergency telephone number ...	(+45) 97 83 53 53 (24 h; for emergencies only)
♦ SECTION 2: HAZARDS IDENTIFICATION	
2.1. Classification of the substance or mixture	Hazards to the aquatic environment, chronic: Category 3 (H412)
WHO classification	Class U (unlikely to present acute hazard in normal use)
Health hazards	The product may cause mild to moderate eye irritation.
Environmental hazards	The product is harmful to aquatic organisms.
2.2. Label elements <i>According to EU Reg. 1272/2008 as amended</i>	
Product identifier	8810-02, Trinexapac-ethyl 120 g/l ME
Hazard pictograms	None
Signal word	None

Material group	8810-02	Page 2 of 11
Product name	Maintain NT 8810-02, TRINEXPAC-ETHYL 120 g/l ME	December 2015

Hazard statement	
H412	Harmful to aquatic life with long lasting effects.
Supplementary hazard statement	
EUH401	To avoid risks to human health and the environment, comply with the instructions of use.
Precautionary statements	
P273	Avoid release to the environment.
P501	Dispose of contents/container as hazardous waste.
2.3. Other hazards	None of the ingredients in the product meets the criteria for being PBT or vPvB.

◆ SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances	The product is a mixture, not a substance
3.2. Mixtures	See section 16 for full text of hazard statements .
<i>Active ingredient</i>	
Trinexpac-ethyl	Content: 11% by weight
CAS name	Cyclohexanecarboxylic acid, 4-(cyclopropylhydroxymethylene)-3,5-dioxo-, ethyl ester
CAS no.	95266-40-3
IUPAC name(s)	4-(Cyclopropylhydroxymethylene)-3,5-dioxocyclohexane-carboxylic acid ethyl ester
ISO name/EU name	Ethyl 4-cyclopropyl(hydroxy)methylene-3,5-dioxocyclohexane-carboxylate
EC no. (EINECS no.)	Trinexpac-ethyl
EU index no.	None
Classification of the ingredient	None
Structural formula	Hazards to the aquatic environment: Chronic Category 2 (H411)



<i>Reportable ingredient</i>	Content (% w/w)	CAS no.	EC no.	Classification
Arylethylphenyl polyglycol ether	31			Aquatic Chronic 3 (H412)

◆ SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures	
Inhalation	If experiencing any discomfort, immediately remove from exposure. Get medical attention if discomfort does not disappear.
Skin contact	Immediately remove contaminated clothing and footwear. Flush skin with much water. Wash with water and soap. See physician if any symptom develops.

Material group	8810-02	Page 3 of 11
Product name	Maintain NT 8810-02, TRINEXAPAC-ETHYL 120 g/l ME	December 2015

Eye contact	Immediately rinse eyes with much water or eyewash solution, occasionally opening eyelids, until no evidence of chemical remains. Remove contact lenses after a few minutes and rinse again. Get medical attention if irritation persists.
Ingestion	Inducing vomiting is not recommended. Rinse mouth and drink several glasses of water or milk. If vomiting does occur, rinse mouth and drink fluids again. Consult a physician.
4.2. Most important symptoms and effects, both acute and delayed	To our knowledge, adverse effects in humans have not been reported.
4.3. Indication of any immediate medical attention and special treatment needed	Immediate medical attention is required in case of ingestion. It may be helpful to show this safety data sheet to physician.
Notes to physician	A specific antidote for exposure to this material is not known. Gastric lavage and/or administration of activated charcoal can be considered. After decontamination, treatment of exposure should be directed at the control of symptoms and the clinical condition.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media	Dry chemical or carbon dioxide for small fires, water spray or foam for large fires. Avoid heavy hose streams.
5.2. Special hazards arising from the substance or mixture	The essential breakdown products are carbon monoxide and carbon dioxide.
5.3. Advice for firefighters	Use water spray to keep fire-exposed containers cool. Approach fire from upwind to avoid hazardous vapours and toxic decomposition products. Fight fire from protected location or maximum possible distance. Dike area to prevent water runoff. Firemen should wear self-contained breathing apparatus and protective clothing.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures	<p>It is recommended to have a predetermined plan for the handling of spills. Empty, closable vessels for the collection of spills should be available.</p> <p>In case of large spill (involving 10 tonnes of the product or more):</p> <ol style="list-style-type: none"> 1. Use personal protection equipment; see section 8 2. Call emergency telephone no.; see section 1 3. Alert authorities. <p>Observe all safety precautions when cleaning up spills. Use personal protection equipment. Depending on the magnitude of the spill this may mean wearing respirator, face mask or eye protection, chemical resistant clothing, gloves and boots.</p> <p>Stop the source of the spill immediately if safe to do so. Avoid and reduce mist formation as much as possible. Remove sources of ignition.</p>
---	---

Material group	8810-02	Page 4 of 11
Product name	Maintain NT 8810-02, TRINEXAPAC-ETHYL 120 g/l ME	December 2015

- 6.2. **Environmental precautions** Contain the spill to prevent any further contamination of surface, soil or water. Wash waters must be prevented from entering surface water drains. Uncontrolled discharge into water courses must be alerted to the appropriate regulatory body.
- 6.3. **Methods and materials for containment and cleaning up** It is recommended to consider possibilities to prevent damaging effects of spills, such as bunding or capping. See GHS (Annex 4, Section 6).
- Use non-sparking tools and equipment. If appropriate, surface water drains should be covered. Minor spills on the floor or other impervious surface should be absorbed onto an absorptive material such as universal binder, Fuller's earth or other absorbent clays. Collect the contaminated absorbent in suitable containers. Clean area with detergent and much water. Absorb wash liquid with absorbent and transfer to suitable containers. The used containers should be properly closed and labelled.
- Large spills which soak into the ground should be dug up and transferred to suitable containers.
- Spills in water should be contained as much as possible by isolation of the contaminated water. The contaminated water must be collected and removed for treatment or disposal.
- 6.4. **Reference to other sections** See subsection 8.2. for personal protection.
See section 13 for disposal.

SECTION 7: HANDLING AND STORAGE

- 7.1. **Precautions for safe handling** Keep away from sources of ignition and protect from exposure to fire and heat.
- In an industrial environment it is recommended to avoid all personal contact with the product, if possible by using closed systems with remote system control. Otherwise, the material should be handled by mechanical means as much as possible. Adequate ventilation or local exhaust ventilation is required. The exhaust gases should be filtered or treated otherwise. For personal protection in this situation, see section 8.
- For its use as a plant growth regulator, first look for precautions and personal protection measures on the officially approved label on the packaging or for other official guidance or policy in force. If these are lacking, see section 8.
- Remove contaminated clothing immediately. Wash thoroughly after handling. Wash protective clothing and protective equipment with water and soap after each use.
- Do not discharge to the environment. Collect all waste material and remains from cleaning equipment, etc., and dispose of as hazardous waste. See section 13 for disposal.
- 7.2. **Conditions for safe storage, including any incompatibilities** The product is stable under normal conditions of warehouse storage.

Material group	8810-02	Page 5 of 11
Product name	Maintain NT 8810-02, TRINEXAPAC-ETHYL 120 g/l ME	December 2015

Keep in closed, labelled containers. The storage room should be constructed of incombustible material, closed, dry, ventilated and with impermeable floor, without access of unauthorised persons or children. The room should only be used for storage of chemicals. Food, drink, feed and seed should not be present. A hand wash station should be available.

7.3. Specific end use(s)

The product is a registered plant growth regulator which may only be used for the applications it is registered for, in accordance with a label approved by the regulatory authorities.

◆ SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Personal exposure limits

To our knowledge not established for trinexapac-ethyl or any other component in this product.

However, personal exposure limits defined by local regulations may exist and must be observed.

Trinexapac-ethyl

DNEL, oral
PNEC, aquatic environment

0.34 mg/kg bw/day
0.0034 mg/l

8.2. Exposure controls

When used in a closed system, personal protection equipment will not be required. The following is meant for other situations, when the use of a closed system is not possible, or when it is necessary to open the system. Consider the need to render equipment or piping systems non-hazardous before opening.

The precautions mentioned below are primarily meant for handling of the undiluted product and for preparing the spray solution, but can be recommended for spraying as well.



Respiratory protection

The product is not likely to present an inhalation hazard during normal use, but in the event of an accidental discharge of the material which produces a heavy vapour or mist, workers should put on officially approved respiratory protection equipment with a universal filter type including particle filter.



Protective gloves

Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber. The breakthrough times of these gloves for the product are unknown, but it is expected that they will give adequate protection. It is recommended to limit the work to be done manually.



Eye protection

Wear goggles or safety glasses. It is recommended to have an eye wash fountain immediately available in the work area when there is a potential for eye contact.



Other skin protection

Wear appropriate chemical resistant clothing to prevent skin contact depending on the extent of exposure. During most normal work situations where exposure to the material cannot be avoided for a limited time span, waterproof pants and apron of chemical

Material group	8810-02	Page 6 of 11
Product name	Maintain NT 8810-02, TRINEXPAC-ETHYL 120 g/l ME	December 2015

resistant material or coveralls of polyethylene (PE) will be sufficient. Coveralls of PE must be discarded after use if contaminated. In cases of appreciable or prolonged exposure, coveralls of barrier laminate may be required.

◆ SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on physical and chemical properties

Appearance	Yellow to brown liquid
Odour	Ester-like
Odour threshold	Not determined
pH	Not determined
Melting point/freezing point	Not determined
Initial boiling point and boiling range	Not determined
Flash point	Trinexpac-ethyl : decomposes, starting at 310°C 81°C (Setaflash closed cup)
Evaporation rate	Not determined
Flammability (solid/gas)	Not applicable (liquid)
Upper/lower flammability or explosive limits	Not determined
Vapour pressure	Trinexpac-ethyl : 2.16×10^{-3} Pa at 25°C
Vapour density	Not determined
Relative density	1.016 at 20°C
Solubility(ies)	Solubility of trinexpac-ethyl at 25°C in: acetone > 500 g/l hexane 45 g/l water 1.1 g/l at pH 3.5 2.8 g/l at pH 4.9 10.2 g/l at pH 5.5 21.1 g/l at pH 8.2
Partition coefficient n-octanol/water	Trinexpac-ethyl : $\log K_{ow} = 1.5$ at pH 5 and 25°C $\log K_{ow} = -0.29$ at pH 6.9 and 25°C $\log K_{ow} = -2.1$ at pH 8.9 and 25°C
Autoignition temperature	215°C
Decomposition temperature	Not determined
Viscosity	20.2 mPa.s at 20°C, 14.7 mPa.s at 40°C
Explosive properties.....	Not explosive
Oxidising properties	Not oxidising

9.2. Other information

Miscibility	The product is dispersible in water.
-------------------	--------------------------------------

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity	To our knowledge, the product has no special reactivities.
10.2. Chemical stability	Stable at ambient temperatures.
10.3. Possibility of hazardous reactions	None known.
10.4. Conditions to avoid	Heating of the product will produce harmful and irritant vapours.
10.5. Incompatible materials	None known.
10.6. Hazardous decomposition products	See subsection 5.2.

Material group	8810-02	Page 7 of 11
Product name	Maintain NT 8810-02, TRINEXAPAC-ETHYL 120 g/l ME	December 2015

◆ SECTION 11: TOXICOLOGICAL INFORMATION

11.1. **Information on toxicological effects** * = Based on available data, the classification criteria are not met.

Product

Acute toxicity	The product is not harmful by inhalation, in contact with skin or if swallowed. * However, it should always be treated with the usual care of handling chemicals. The acute toxicity of the product is measured as:	
Route(s) of entry	- ingestion	LD ₅₀ , oral, rat: > 2000 mg/kg (method OECD 425)
	- skin	LD ₅₀ , dermal, rabbit: > 4000 mg/kg (method OECD 402)
	- inhalation	LC ₅₀ , inhalation, rat: > 4,86 mg/l/4 h (method OECD 403)
Skin corrosion/irritation		Not irritating to skin (method OECD 404). *
Serious eye damage/irritation		Not irritating to eyes (method OECD 405). *
Respiratory or skin sensitisation ...		Not a skin sensitizer (method OECD 429). *
Germ cell mutagenicity		The product contains no ingredients known to be mutagenic. *
Carcinogenicity		The product contains no ingredients known to be carcinogenic. *
Reproductive toxicity		The product contains no ingredients known to have adverse effects on reproduction. *
STOT – single exposure		To our knowledge, no specific effects have been observed after single exposure. *
STOT – repeated exposure		The following was measured on the active ingredient trinexapac-ethyl: Target organ: kidneys, liver NOAEL: 500 ppm (34 mg/kg bw/day) in a 90-day rat study (method OECD 408) based on histological effects on kidneys and increase in liver weight. *
Aspiration hazard		The product does not present an aspiration hazard. *
Symptoms and effects, acute and delayed		To our knowledge, adverse effects in humans have not been reported. In animal tests, reduced activity and shortness of breath were seen at high dosage.

Trinexapac-ethyl

Acute toxicity	Trinexapac-ethyl is not harmful by single exposure. * The acute toxicity is measured as:	
Route(s) of entry	- ingestion	LD ₅₀ , oral, rat (female): 4210 mg/kg (method OECD 401)
	- skin	LD ₅₀ , oral, rat (male): 4610 mg/kg
	- inhalation	LD ₅₀ , dermal, rat: > 4000 mg/kg (method OECD 402)
Skin corrosion/irritation		LC ₅₀ , inhalation, rat: > 5.3 mg/l/4 h (method OECD 403)
		Not irritating to skin (method OECD 404). *

Material group	8810-02	Page 8 of 11
Product name	Maintain NT 8810-02, TRINEXAPAC-ETHYL 120 g/l ME	December 2015

Serious eye damage/irritation	Slightly irritating to eyes (method OECD 405). *
Respiratory or skin sensitisation ...	Not sensitising (method OECD 406). *
<i>Arylethylphenyl polyglycol ether</i>	
Acute toxicity	The substance is not harmful by ingestion. * The acute toxicity is:
Route(s) of entry - ingestion	LD ₅₀ , oral, rat: > 5000 mg/kg
Skin corrosion/irritation	Not irritating to skin. *
Serious eye damage/irritation	Not irritating to eyes. *
Respiratory or skin sensitisation ...	No sensitising effects are known. *

♣ SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity	Trinexapac-ethyl has growth inhibiting effects on many plants. The product is considered as non-toxic to fish, aquatic invertebrates, birds, mammals, insects and soil micro- and macro-organisms.
The toxicity of the product is measured as:	
- Fish Rainbow trout (<i>Oncorhynchus mykiss</i>)	96-h LC ₅₀ : 20.1 mg/l
- Invertebrates Daphnids (<i>Daphnia magna</i>)	48-h EC ₅₀ : > 100 mg/l
- Algae Green algae (<i>Pseudokirchneriella subcapitata</i>) ...	72-h EC ₅₀ : 175 mg/l
- Aquatic plants Duckweed (<i>Lemna gibba</i>)	7-day EC ₅₀ : 584 mg/l 7-day NOEC: 8.2 mg/l
- Earthworms <i>Eisenia fetida</i>	56-day LC ₅₀ : > 205 mg/kg dry soil
- Insects Honeybees (<i>Apis mellifera</i> L.)	48-h LD ₅₀ , contact: 909 µg/bee 48-h LD ₅₀ , oral: 612 µg/bee
12.2. Persistence and degradability	Trinexapac-ethyl does not fulfil the criteria for being readily biodegradable, but it is degraded in the environment. Half-life times are usually less than 1 day in soil. Degradation products are further degraded, but slower. Degradation occurs mainly microbiologically.
	The product contains minor amounts of not readily biodegradable ingredients, which may not be degradable in waste water treatment plants.
12.3. Bioaccumulative potential	See section 9 for octanol-water partition coefficients.
	Due to its relatively high solubility in water and degradability, trinexapac-ethyl does not bioaccumulate.
12.4. Mobility in soil	Under normal conditions trinexapac-ethyl is moderately mobile in soil.
12.5. Results of PBT and vPvB assessment	None of the ingredients meets the criteria for being PBT or vPvB.

Material group	8810-02	Page 9 of 11
Product name	Maintain NT 8810-02, TRINEXAPAC-ETHYL 120 g/l ME	December 2015

12.6. **Other adverse effects** Other relevant hazardous effects in the environment are not known.

◆ SECTION 13: DISPOSAL CONSIDERATIONS

- 13.1. **Waste treatment methods** Remaining quantities of the material and empty but unclean packaging should be regarded as hazardous waste.
- Disposal of product Disposal of waste and packagings must always be in accordance with all applicable local regulations.
- Disposal of packaging According to the Waste Framework Directive (2008/98/EC), possibilities for reuse or reprocessing should first be considered. If this is not feasible, the material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing.
- Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.
- It is recommended to consider possible ways of disposal in the following order:
1. Reuse or recycling should first be considered. If offered for recycling, containers must be emptied and triply rinsed (or equivalent). Do not discharge rinsing water to sewer systems.
 2. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.
 3. Delivery of the packaging to a licensed service for disposal of hazardous waste.
 4. Disposal in a landfill or burning in open air should only occur as a last resort. For disposal in a landfill containers should be emptied completely, rinsed and punctured to make them unusable for other purposes. If burned, stay out of smoke.

SECTION 14: TRANSPORT INFORMATION

ADR/RID/IMDG/IATA/ICAO classification

- 14.1. **UN number** Not classified as hazardous material for transport
- 14.2. **UN proper shipping name** Not applicable
- 14.3. **Transport hazard class(es)** Not applicable
- 14.4. **Packing group** Not applicable
- 14.5. **Environmental hazards** The substance is harmful to aquatic organisms
- 14.6. **Special precautions for user** Do not discharge to the environment.
- 14.7. **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code** The product should not be transported in bulk by ship.

Material group	8810-02	Page 10 of 11
Product name	Maintain NT 8810-02, TRINEXAPAC-ETHYL 120 g/l ME	December 2015

SECTION 15: REGULATORY INFORMATION

- 15.1. **Safety, health and environmental regulations/legislation specific for the substance or mixture** To our knowledge, no specific regulations apply.
All ingredients are covered by EU chemical legislation.
- 15.2. **Chemical safety assessment** A chemical safety assessment is not required to be included for this product.

◆ SECTION 16: OTHER INFORMATION

Relevant changes in the safety data sheet	Toxicity and ecotoxicity data measured on the product have been included.	
List of abbreviations	AIHA	American Industrial Hygiene Association
	CAS	Chemical Abstracts Service
	Dir.	Directive
	DNEL	Derived No Effect Level
	EC	European Community
	EC ₅₀	50% Effect Concentration
	EINECS	European INventory of Existing Commercial Chemical Substances
	GHS	Globally Harmonized classification and labelling System of chemicals, Fifth revised edition 2013
	IBC	International Bulk Chemical code
	ISO	International Organisation for Standardization
	IUPAC	International Union of Pure and Applied Chemistry
	LC ₅₀	50% Lethal Concentration
	LD ₅₀	50% Lethal Dose
	MARPOL	Set of rules from the International Maritime Organisation (IMO) for prevention of sea pollution
	ME	Micro-Emulsion
	NOAEL	No Observed Adverse Effect Level
	NOEC	No Observed Effect Concentration
	OECD	Organisation for Economic Cooperation and Development
	PBT	Persistent, Bioaccumulative, Toxic
	PNEC	Predicted No Effect Concentration
	Reg.	Regulation
	STOT	Specific Target Organ Toxicity
	vPvB	very Persistent, very Bioaccumulative
	WHO	World Health Organisation
References	Data measured on the product are unpublished company data. Data on ingredients are available from published literature and can be found several places.	
Method for classification	Calculation method	
Used hazard statements	H411	Toxic to aquatic life with long lasting effects.
	H412	Harmful to aquatic life with long lasting effects.
	EUH401	To avoid risks to human health and the environment, comply with the instructions of use.
Advice on training	This material should only be used by persons who are made aware	

Material group	8810-02	Page 11 of 11
Product name	Maintain NT 8810-02, TRINEXAPAC-ETHYL 120 g/l ME	December 2015

of its hazardous properties and have been instructed in the required safety precautions.

The information provided in this safety data sheet is believed to be accurate and reliable, but uses of the product vary and situations unforeseen by Cheminova A/S may exist. The user has to check the validity of the information under local circumstances.

Prepared by: Cheminova A/S / GHB