SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name	BETANAL MAX PRO OD209 4X5L BOT UA
Product code (UVP)	85752375

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use	Herbicide

1.3 Details of the supplier of the safety data sheet

Supplier	Bayer AG Kaiser-Wilhelm-Allee 1 51373 Leverkusen Germany
Telefax	+49(0)2173-38-7394
Responsible Department	Substance Classification & Registration +49(0)2173-38-3409 (during business hours only) Email: BCS-SDS@bayer.com

1.4 Emergency telephone no.

Emergency telephone no.	Global Incident Response Hotline (24h) +1 (760) 476-3964 (Company 3E for Bayer AG, Crop Science Division)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification in accordance with Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures, as amended.

Skin sensitisation: Category 1
H317 May cause an allergic skin reaction.

Serious eye damage: Category 1
H318 Causes serious eye damage.

Carcinogenicity: Category 2
H351 Suspected of causing cancer.

Acute aquatic toxicity: Category 1
H400 Very toxic to aquatic life.

Chronic aquatic toxicity: Category 1
H410 Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling in accordance with Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures, as amended.

Hazard label for supply/use required.

Hazardous components which must be listed on the label:

- Desmedipham
- Ethofumesate
- Lenacil
- Phenmedipham
- Phenol ethoxylate phosphate ester
- iso-Tridecyl alcohol, ethoxylated, phosphated

Signal word: Danger

Hazard statements

H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H351	Suspected of causing cancer.
H410	Very toxic to aquatic life with long lasting effects.
EUH401	To avoid risks to human health and the environment, comply with the instructions for use.

Precautionary statements

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.
P310	Immediately call a POISON CENTER/doctor/ physician.
P501	Dispose of contents/container in accordance with local regulation.

2.3 Other hazards

No other hazards known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Chemical nature

Oil dispersion (OD)
Desmedipham/Ethofumesate/Lenacil/Phenmedipham 47:75:27:60 g/l

Hazardous components

Hazard statements according to Regulation (EC) No. 1272/2008

Name	CAS-No. / EC-No. / REACH Reg. No.	Classification REGULATION (EC) No 1272/2008	Conc. [%]
Desmedipham	13684-56-5 237-198-5	Aquatic Acute 1, H400 Aquatic Chronic 1, H410	4,35
Ethofumesate	26225-79-6 247-525-3	Aquatic Chronic 2, H411	6,94
Lenacil	2164-08-1	Aquatic Acute 1, H400	2,5

	218-499-0	Aquatic Chronic 1, H410 Carc. 2, H351	
Phenmedipham	13684-63-4 237-199-0	Aquatic Acute 1, H400 Aquatic Chronic 1, H410	5,56
Tributyl phenol polyglycol ether	9046-09-7	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Aquatic Chronic 2, H411	> 10,0 – < 25,0
Phenol ethoxylate phosphate ester	39464-70-5	Eye Dam. 1, H318 Skin Irrit. 2, H315	> 1,0 – < 5,0
iso-Tridecyl alcohol, ethoxylated, phosphated	73038-25-2	Skin Irrit. 2, H315 Eye Dam. 1, H318 Aquatic Chronic 3, H412	> 1,0 – < 3,0

Further information

Desmedipham	13684-56-5	M-Factor: 10 (acute), 10 (chronic)
Lenacil	2164-08-1	M-Factor: 10 (acute), 10 (chronic)
Phenmedipham	13684-63-4	M-Factor: 1 (acute)

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

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice Move out of dangerous area. Place and transport victim in stable position (lying sideways). Remove contaminated clothing immediately and dispose of safely.

Inhalation Move to fresh air. Keep patient warm and at rest. Call a physician or poison control center immediately.

Skin contact Wash off immediately with polyethylene glycol 400, then with plenty of water. If symptoms persist, call a physician.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.

Ingestion Rinse mouth. Do NOT induce vomiting. Call a physician or poison control center immediately.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms The following symptoms may occur:, Cough, Daze, Allergic reactions, Rapid respiration, Breathing difficulties, Cyanosis, Fever

4.3 Indication of any immediate medical attention and special treatment needed

Risks Risk of respiratory disorders. This product, although being a carbamate, is NOT a cholinesterase inhibitor. Risk of pneumonia.

Treatment	Treat symptomatically. In case of ingestion gastric lavage should be considered in cases of significant ingestions only within the first 2 hours. However, the application of activated charcoal and sodium sulphate is always advisable. Carefully monitor the kidney functions. Carefully monitor the respiratory functions. Symptoms of poisoning may appear several hours later. Keep under medical supervision for at least 48 hours.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable	High volume water jet
5.2 Special hazards arising from the substance or mixture	In the event of fire the following may be released:, Hydrogen cyanide (hydrocyanic acid), Carbon monoxide (CO), Nitrogen oxides (NOx), Sulphur oxides

5.3 Advice for firefighters

Special protective equipment for firefighters	In the event of fire and/or explosion do not breathe fumes. In the event of fire, wear self-contained breathing apparatus.
Further information	Contain the spread of the fire-fighting media. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Precautions	Avoid contact with spilled product or contaminated surfaces. Use personal protective equipment.
6.2 Environmental precautions	Do not allow to get into surface water, drains and ground water.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Clean contaminated floors and objects thoroughly, observing environmental regulations. Keep in suitable, closed containers for disposal.
Additional advice	Check also for any local site procedures.
6.4 Reference to other sections	Information regarding safe handling, see section 7. Information regarding personal protective equipment, see section 8. Information regarding waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling	No specific precautions required when handling unopened packs/containers; follow relevant manual handling advice. Ensure adequate ventilation.
Advice on protection against fire and explosion	Keep away from heat and sources of ignition.
Hygiene measures	Avoid contact with skin, eyes and clothing. Keep working clothes separately. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing immediately and dispose of safely.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	Store in original container. Store in a place accessible by authorized persons only. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight.
Advice on common storage	Keep away from food, drink and animal feedingstuffs.
Suitable materials	in process
7.3 Specific end use(s)	Refer to the label and/or leaflet.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Desmedipham	13684-56-5	1,2 mg/m3 (TWA)		OES BCS*
Ethofumesate	26225-79-6	10 mg/m3 (TWA)		OES BCS*
Phenmedipham	13684-63-4	1,5 mg/m3 (TWA)		OES BCS*

*OES BCS: Internal Bayer AG, Crop Science Division "Occupational Exposure Standard"

8.2 Exposure controls

Personal protective equipment
In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

Respiratory protection	Respiratory protection is not required under anticipated circumstances of exposure. Respiratory protection should only be used to control residual risk of short duration activities, when all reasonably practicable steps have been taken to reduce exposure at source e.g. containment and/or local extract ventilation. Always follow respirator manufacturer's instructions regarding wearing and maintenance.
Hand protection	Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which

	the product is used, such as the danger of cuts, abrasion, and the contact time. Wash gloves when contaminated. Dispose of when contaminated inside, when perforated or when contamination on the outside cannot be removed. Wash hands frequently and always before eating, drinking, smoking or using the toilet. Material: Nitrile rubber Rate of permeability: > 480 min Glove thickness: > 0,4 mm Protective index: Class 6 Directive: Protective gloves complying with EN 374.
Eye protection	Wear goggles (conforming to EN166, Field of Use = 5 or equivalent).
Skin and body protection	Wear standard coveralls and Category 3 Type 4 suit. If there is a risk of significant exposure, consider a higher protective type suit. Wear two layers of clothing wherever possible. Polyester/cotton or cotton overalls should be worn under chemical protection suit and should be professionally laundered frequently. If chemical protection suit is splashed, sprayed or significantly contaminated, decontaminate as far as possible, then carefully remove and dispose of as advised by manufacturer.
General protective measures	If product is handled while not enclosed, and if contact may occur: Complete suit protecting against chemicals

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Form	dispersion
Colour	white to beige
Odour	characteristic
pH	1,5 - 3,5 at 10 % (23 °C) (deionized water)
Flash point	> 101 °C
Ignition temperature	410 °C
Density	ca. 1,08 g/cm³ at 20 °C
Water solubility	dispersible
Partition coefficient: n-octanol/water	Desmedipham: log Pow: 3,39 Ethofumesate: log Pow: 2,7 at 25 °C Lenacil: log Pow: 1,7 Phenmedipham: log Pow: 3,59 Ethoxylated alcohols: log Pow: 1,97
Viscosity, kinematic	141 mm²/s at 40 °C Shear rate of 100/sec
Surface tension	31,4 mN/m at 25 °C
Oxidizing properties	No oxidizing properties

Explosivity	Not explosive 92/69/EEC, A.14 / OECD 113
9.2 Other information	Further safety related physical-chemical data are not known.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Thermal decomposition	Stable under normal conditions.
10.2 Chemical stability	Stable under recommended storage conditions.
10.3 Possibility of hazardous reactions	No hazardous reactions when stored and handled according to prescribed instructions.
10.4 Conditions to avoid	Extremes of temperature and direct sunlight.
10.5 Incompatible materials	Strong oxidizing agents Store only in the original container.
10.6 Hazardous decomposition products	No decomposition products expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute oral toxicity	LD50 (Rat) > 5.000 mg/kg
Acute inhalation toxicity	LC50 (Rat) > 2,6 mg/l Exposure time: 4 h Determined in the form of a respirable aerosol. Highest attainable concentration.
Acute dermal toxicity	LD50 (Rat) > 2.000 mg/kg
Skin irritation	No skin irritation (Rabbit)
Eye irritation	Severe eye irritation. (Rabbit)
Sensitisation	Sensitising (Mouse) OECD Test Guideline 429, local lymph node assay (LLNA)

Assessment STOT Specific target organ toxicity – single exposure

Desmedipham: Based on available data, the classification criteria are not met.

Ethofumesate: Based on available data, the classification criteria are not met.

Phenmedipham: Based on available data, the classification criteria are not met.

Assessment STOT Specific target organ toxicity – repeated exposure

Desmedipham caused methaemoglobinaemia, haemolytic anaemia in animal studies. The observed effects do not appear to be relevant for humans.
Ethofumesate did not cause specific target organ toxicity in experimental animal studies.
Lenacil did not cause specific target organ toxicity in experimental animal studies.

Phenmedipham caused haemolytic anaemia, methaemoglobinaemia in animal studies. The observed effects do not appear to be relevant for humans.
Ethoxylated alcohols did not cause specific target organ toxicity in experimental animal studies.

Assessment mutagenicity

Desmedipham was not mutagenic or genotoxic based on the overall weight of evidence in a battery of in vitro and in vivo tests.
Ethofumesate was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.
Lenacil was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.
Phenmedipham was not mutagenic or genotoxic based on the overall weight of evidence in a battery of in vitro and in vivo tests.
Ethoxylated alcohols was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

Assessment carcinogenicity

Desmedipham was not carcinogenic in lifetime feeding studies in rats and mice.
Ethofumesate was not carcinogenic in lifetime feeding studies in rats and mice.
Lenacil was not carcinogenic in lifetime feeding studies in mice. Lenacil caused at high dose levels an increased incidence of tumours in female rats in the following organ(s): Mammary gland.
Phenmedipham was not carcinogenic in lifetime feeding studies in rats and mice.
Ethoxylated alcohols was not carcinogenic in lifetime feeding studies in rats and mice.

Assessment toxicity to reproduction

Desmedipham caused a reduced litter size and a reduced pup weight. The reproduction toxicity seen with Desmedipham is related to parental toxicity.
Ethofumesate did not cause reproductive toxicity in a two-generation study in rats.
Lenacil did not cause reproductive toxicity in a two-generation study in rats.
Phenmedipham caused reproduction toxicity in a two-generation study in rats only at dose levels also toxic to the parent animals. The reproduction toxicity seen with Phenmedipham is related to parental toxicity.
Ethoxylated alcohols did not cause reproductive toxicity in a two-generation study in rats.

Assessment developmental toxicity

Desmedipham caused developmental toxicity only at dose levels toxic to the dams. Desmedipham caused a delayed ossification of foetuses, an increased incidence of variations. The developmental effects seen with Desmedipham are related to maternal toxicity.
Ethofumesate did not cause developmental toxicity in rats and rabbits.
Lenacil did not cause developmental toxicity in rats and rabbits.
Phenmedipham caused developmental toxicity only at dose levels toxic to the dams. Phenmedipham caused a delayed ossification of foetuses. The developmental effects seen with Phenmedipham are related to maternal toxicity.
Ethoxylated alcohols did not cause developmental toxicity in rats and rabbits.

Aspiration hazard

Based on available data, the classification criteria are not met.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 (Oncorhynchus mykiss (rainbow trout)) 10,2 mg/l Exposure time: 96 h
Toxicity to aquatic invertebrates	EC50 (Daphnia magna (Water flea)) 6,9 mg/l Exposure time: 48 h

Chronic toxicity to aquatic invertebrates	NOEC (Daphnia (water flea)): 0,01 mg/l Exposure time: 21 d The value mentioned relates to the active ingredient desmedipham.
Toxicity to aquatic plants	IC50 (Raphidocelis subcapitata (freshwater green alga)) 0,496 mg/l Growth rate; Exposure time: 72 h IC50 (Lemna gibba (gibbous duckweed)) 0,797 mg/l Growth rate; Exposure time: 7 d

12.2 Persistence and degradability

Biodegradability	Desmedipham: Not rapidly biodegradable Ethofumesate: Not rapidly biodegradable Lenacil: Not rapidly biodegradable Phenmedipham: Not rapidly biodegradable Ethoxylated alcohols: Not rapidly biodegradable
Koc	Desmedipham: Koc: > 5000 Ethofumesate: Koc: 147 Lenacil: Koc: 83 Phenmedipham: Koc: 888 Ethoxylated alcohols: Koc: 8913

12.3 Bioaccumulative potential

Bioaccumulation	Desmedipham: Bioconcentration factor (BCF) 157 Does not bioaccumulate. Ethofumesate: Bioconcentration factor (BCF) 144 Does not bioaccumulate. Lenacil: Bioconcentration factor (BCF) 18 Does not bioaccumulate. Phenmedipham: Bioconcentration factor (BCF) 165 Does not bioaccumulate. Ethoxylated alcohols: Bioconcentration factor (BCF) 12,7 Does not bioaccumulate.

12.4 Mobility in soil

Mobility in soil	Desmedipham: Immobile in soil Ethofumesate: Moderately mobile in soils Lenacil: Moderately mobile in soils Phenmedipham: Slightly mobile in soils Ethoxylated alcohols: Immobile in soil

12.5 Results of PBT and vPvB assessment

PBT and vPvB assessment	Desmedipham: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB). Ethofumesate: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB).

Lenacil: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB).
Phenmedipham: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB).
Ethoxylated alcohols: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB).

12.6 Other adverse effects

Additional ecological information No other effects to be mentioned.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product In accordance with current regulations and, if necessary, after consultation with the site operator and/or with the responsible authority, the product may be taken to a waste disposal site or incineration plant.

Contaminated packaging Not completely emptied packagings should be disposed of as hazardous waste.

Waste key for the unused product **02 01 08*** agrochemical waste containing hazardous substances

SECTION 14: TRANSPORT INFORMATION

ADR/RID/ADN

14.1 UN number	**3082**
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ETHOFUMESATE, LENACIL SOLUTION)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environm. Hazardous Mark	YES
Hazard no.	90

This classification is in principle not valid for carriage by tank vessel on inland waterways. Please refer to the manufacturer for further information.

IMDG

14.1 UN number	**3082**
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ETHOFUMESATE, LENACIL SOLUTION)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Marine pollutant	YES

IATA

14.1 UN number	**3082**
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ETHOFUMESATE, LENACIL SOLUTION)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environm. Hazardous Mark	YES

14.6 Special precautions for user
See sections 6 to 8 of this Safety Data Sheet.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code
No transport in bulk according to the IBC Code.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Further information

WHO-classification: III (Slightly hazardous)

15.2 Chemical safety assessment

A chemical safety assessment is not required.

SECTION 16: OTHER INFORMATION

Text of the hazard statements mentioned in Section 3

H315	Causes skin irritation.
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.

Abbreviations and acronyms

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
ATE	Acute toxicity estimate
CAS-Nr.	Chemical Abstracts Service number
Conc.	Concentration
EC-No.	European community number
ECx	Effective concentration to x %
EINECS	European inventory of existing commercial substances
ELINCS	European list of notified chemical substances

EN	European Standard
EU	European Union
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code)
ICx	Inhibition concentration to x %
IMDG	International Maritime Dangerous Goods
LCx	Lethal concentration to x %
LDx	Lethal dose to x %
LOEC/LOEL	Lowest observed effect concentration/level
MARPOL	MARPOL: International Convention for the prevention of marine pollution from ships
N.O.S.	Not otherwise specified
NOEC/NOEL	No observed effect concentration/level
OECD	Organization for Economic Co-operation and Development
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
TWA	Time weighted average
UN	United Nations
WHO	World health organisation

The information contained within this Safety Data Sheet is in accordance with the guidelines established by Regulation (EU) 1907/2006 and Regulation (EU) 2015/830 amending Regulation (EU) No 1907/2006 and any subsequent amendments. This data sheet complements the user's instructions, but does not replace them. The information it contains is based on the knowledge available about the product concerned at the time it was compiled. Users are further reminded of the possible risks of using a product for purposes other than those for which it was intended. The required information complies with current EEC legislation. Addressees are requested to observe any additional national requirements.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.