



## BETANAL TURBO

Version 2 / GB  
1020000005951/11  
Revision Date: 09.05.2014  
Print Date: 09.05.2014

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

#### 1.1 Product identifier

Trade name BETANAL TURBO  
Product code (UVP) 05942888

#### 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 CropScience Limited  
230 Cambridge Science Park  
Milton Road  
Cambridge  
Cambridgeshire CB4 0WB  
United Kingdom

Telephone +44(0)1223 226500  
Telefax +44(0)1223 426240  
Responsible Department Email: [ukinfo@bayercropscience.com](mailto:ukinfo@bayercropscience.com)

#### 1.4 Emergency telephone no.

Emergency telephone no. 0800-220876 (UK 24 hr)  
+44(0)1635-563000 (Overseas 24 hr)

### 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.

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

Classification according to EU Directives 67/548/EEC or 1999/45/EC

N Dangerous for the environment, R51/53

#### 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:

- Phenmedipham
- Desmedipham



Signal word: Warning

**BETANAL TURBO**Version 2 / GB  
102000000595

2/11

Revision Date: 09.05.2014  
Print Date: 09.05.2014**Hazard statements**

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**

P501 Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste.

**2.3 Other hazards**

No other hazards known.

**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS****3.2 Mixtures****Chemical nature**

Emulsifiable concentrate (EC)  
 Phenmedipham/Desmedipham 160:160 g/l

**Hazardous components**

R-phrase(s) according to EC directive 67/548/EEC  
 Hazard statements according to Regulation (EC) No. 1907/2006

Name	CAS-No. / EC-No.	Classification		Conc. [%]
		EC Directive 67/548/EEC	Regulation (EC) No 1272/2008	
Phenmedipham	13684-63-4 237-199-0	N; R50/53	Aquatic Acute 1, H400 Aquatic Chronic 1, H410	15.53
Desmedipham	13684-56-5 237-198-5	N; R50/53	Aquatic Acute 1, H400 Aquatic Chronic 1, H410	15.53
Phenol ethoxylate phosphate ester	39464-70-5 609-691-9	Xi; R41	Eye Dam. 1, H318	> 1.00 - < 3.00
iso-Tridecyl alcohol, ethoxylated, phosphated	73038-25-2 615-892-2	Xi; R38, R41 N; R51/53	Skin Irrit. 2, H315 Eye Dam. 1, H318 Aquatic Chronic 2, H411	> 1.00 - < 5.00
Tributyl phenol polyglycol ether	9046-09-7 618-560-5	Xi; R36/38 N; R51/53	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Aquatic Chronic 2, H411	> 10.00
N,N-Dimethyl decanamide	14433-76-2 238-405-1	Xi; R36/38	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Aquatic Chronic 3, H412	> 10.00
N,N-Dimethyloctanamide	1118-92-9 214-272-5	Xi; R38, R41	Skin Irrit. 2, H315 Eye Dam. 1, H318	> 10.00

**Further information**

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

For the full text of the R-phrases/ Hazard statements mentioned in this Section, see Section 16.

**BETANAL TURBO**Version 2 / GB  
102000000595

3/11

Revision Date: 09.05.2014

Print Date: 09.05.2014

---

**SECTION 4: FIRST AID MEASURES****4.1 Description of first aid measures**

<b>General advice</b>	Move out of dangerous area. Place and transport victim in stable position (lying sideways). Remove contaminated clothing immediately and dispose of safely.
<b>Inhalation</b>	Move to fresh air. Keep patient warm and at rest. Call a physician or poison control center immediately.
<b>Skin contact</b>	Wash off thoroughly with plenty of soap and water, if available with polyethyleneglycol 400, subsequently rinse with water.
<b>Eye contact</b>	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. Get medical attention if irritation develops and persists.
<b>Ingestion</b>	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** Lethargy**4.3 Indication of any immediate medical attention and special treatment needed**

<b>Risks</b>	This product, although being a carbamate, is NOT a cholinesterase inhibitor.
<b>Treatment</b>	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. There is no specific antidote. Forced alkaline diuresis and hemodialysis may be considered.

---

**SECTION 5: FIREFIGHTING MEASURES****5.1 Extinguishing media****Suitable** Water spray, Carbon dioxide (CO<sub>2</sub>), Foam, Sand**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), Oxides of phosphorus, Nitrogen oxides (NO<sub>x</sub>)**5.3 Advice for firefighters****Special protective equipment for fire-fighters** 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.

**BETANAL TURBO**Version 2 / GB  
102000000595

4/11

Revision Date: 09.05.2014

Print Date: 09.05.2014

**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. If spillage enters drains leading to sewage works inform local water company immediately. If spillage enters rivers or watercourses, inform the Environment Agency (emergency telephone number 0800 807060).

**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.

**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.

**Hygiene measures** Avoid contact with skin, eyes and clothing. Keep working clothes separately. Wash hands before breaks and immediately after handling the product. Remove soiled clothing immediately and clean thoroughly before using again. Garments that cannot be cleaned must be destroyed (burnt).

**7.2 Conditions for safe storage, including any incompatibilities**

**Requirements for storage areas and containers** Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place. Store in a place accessible by authorized persons only. Protect from frost. Keep away from direct sunlight.

**Advice on common storage** Keep away from food, drink and animal feedingstuffs.

**Suitable materials** Coextruded containers with a barrier layer made of ethylene vinyl alcohol copolymer (EVOH) between two layers of high density polyethylene

**7.3 Specific end uses** Refer to the label and/or leaflet.

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION****8.1 Control parameters**

Components	CAS-No.	Control parameters	Update	Basis
Phenmedipham	13684-63-4	3.8 mg/m <sup>3</sup>		OES BCS*

**BETANAL TURBO**Version 2 / GB  
102000000595

5/11

Revision Date: 09.05.2014

Print Date: 09.05.2014

		(TWA)		
Desmedipham	13684-56-5	1.2 mg/m <sup>3</sup> (TWA)		OES BCS*

\*OES BCS: Internal Bayer CropScience "Occupational Exposure Standard"

**8.2 Exposure controls**

Refer to COSHH assessment (Control of Substances Hazardous to Health (Amendment) Regulations 2004). Engineering controls should be used in preference to personal protective equipment wherever practicable. Refer also to COSHH Essentials.

**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**

If product is handled while not enclosed, and if contact may occur: Wear respirator with an organic vapours and gas filter mask (protection factor 10) conforming to EN140 type A or equivalent. 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**

Wear CE Marked (or equivalent) nitrile rubber gloves (minimum thickness of 0,4 mm). Wash when contaminated and 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.

**Eye protection**

Wear goggles (conforming to EN166, Field of Use = 5 or equivalent).

**Skin and body protection**

Wear standard coveralls and Category 3 Type 6 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.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES****9.1 Information on basic physical and chemical properties**

<b>Form</b>	Liquid, clear to slightly turbid
<b>Colour</b>	tan
<b>Odour</b>	aromatic
<b>pH</b>	1.8 - 3.0 at 10 % (23 °C) (deionized water)
<b>Flash point</b>	>100 °C
<b>Density</b>	ca. 1.03 g/cm <sup>3</sup> at 20 °C

**BETANAL TURBO**Version 2 / GB  
102000000595

6/11

Revision Date: 09.05.2014

Print Date: 09.05.2014

---

<b>Water solubility</b>	emulsifiable
<b>Partition coefficient: n-octanol/water</b>	Phenmedipham: log Pow: 3.59 Desmedipham: log Pow: 3.39
<b>Viscosity, kinematic</b>	122 mm <sup>2</sup> /s at 40 °C Shear rate of 20/sec
<b>Surface tension</b>	32.6 mN/m at 25 °C Determined in the undiluted form.
<b>Explosivity</b>	Not explosive
<b>9.2 Other information</b>	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** 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) > 2,000 mg/kg**Acute inhalation toxicity** LC50 (rat) > 2.14 mg/l  
Exposure time: 4 h  
Determined in the form of a respirable aerosol.  
Highest attainable concentration.**Acute dermal toxicity** LD50 (rat) > 5,000 mg/kg**Skin irritation** Slight irritant effect - does not require labelling. (rabbit)**Eye irritation** Slight irritant effect - does not require labelling. (rabbit)**Sensitisation** Non-sensitizing. (guinea pig)  
OECD Test Guideline 406, Buehler test**Assessment repeated dose toxicity**

Phenmedipham caused haemolytic anaemia, methaemoglobinaemia in animal studies. The observed effects do not appear to be relevant for humans.

Desmedipham caused methaemoglobinaemia, haemolytic anaemia in animal studies. The observed effects do not appear to be relevant for humans.

**Assessment Mutagenicity**

Phenmedipham was not mutagenic or genotoxic based on the overall weight of evidence in a battery of

**BETANAL TURBO**Version 2 / GB  
102000000595

7/11

Revision Date: 09.05.2014

Print Date: 09.05.2014

in vitro and in vivo tests.

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

**Assessment Carcinogenicity**

Phenmedipham was not carcinogenic in lifetime feeding studies in rats and mice.

Desmedipham was not carcinogenic in lifetime feeding studies in rats and mice.

**Assessment toxicity to reproduction**

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.

Desmedipham caused a reduced litter size and a reduced pup weight. The reproduction toxicity seen with Desmedipham is related to parental toxicity.

**Assessment developmental toxicity**

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.

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.

**SECTION 12: ECOLOGICAL INFORMATION****12.1 Toxicity**

**Toxicity to fish** LC50 (Rainbow trout (*Oncorhynchus mykiss*)) 8.6 mg/l  
static test; Exposure time: 96 h

**Toxicity to aquatic invertebrates** EC50 (Water flea (*Daphnia magna*)) 3.67 mg/l  
static test; Exposure time: 48 h

**Chronic toxicity to aquatic invertebrates** NOEC (*Daphnia*): 0.01 mg/l  
Exposure time: 21 d  
The value mentioned relates to the active ingredient desmedipham.

**Toxicity to aquatic plants** IC50 (*Pseudokirchneriella subcapitata*) 8.79 mg/l  
Growth rate; Exposure time: 72 h

IC50 (*Lemna gibba* (duckweed)) 13.2 mg/l  
Growth rate; Exposure time: 7 d

**12.2 Persistence and degradability**

**Biodegradability** Phenmedipham:  
not rapidly biodegradable  
Desmedipham:  
not rapidly biodegradable

**Koc** Phenmedipham: Koc: 888  
Desmedipham: Koc: > 5000

**12.3 Bioaccumulative potential**

**Bioaccumulation** Phenmedipham: Bioconcentration factor (BCF) 165  
Does not bioaccumulate.  
Desmedipham: Bioconcentration factor (BCF) 157

**BETANAL TURBO**Version 2 / GB  
102000000595

8/11

Revision Date: 09.05.2014  
Print Date: 09.05.2014

Does not bioaccumulate.

**12.4 Mobility in soil****Mobility in soil**Phenmedipham: Slightly mobile in soils  
Desmedipham: Immobile in soil**12.5 Results of PBT and vPvB assessment****PBT and vPvB assessment**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).  
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).**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. Advice may be obtained from the local waste regulation authority (part of the Environment Agency in the UK).

**Contaminated packaging**Small containers (< 10 l or < 10 kg) should be rinsed thoroughly using an integrated pressure rinsing device, or, by manually rinsing three times.  
Add washings to sprayer at time of filling.  
Dispose of empty and cleaned packaging safely.  
Large containers (> 25 l or > 25 kg) should not be rinsed or re-used for any other purpose.  
Return large containers to supplier.  
Follow advice on product label and/or leaflet.**Waste key for the unused product****020108** agrochemical waste containing dangerous substances**SECTION 14: TRANSPORT INFORMATION****ADR/RID/ADN**

14.1 UN number	<b>3082</b>
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PHENMEDIPHAM, DESMEDIPHAM SOLUTION)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environm. Hazardous Mark	YES
Hazard no.	90
Tunnel Code	E

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

**BETANAL TURBO**Version 2 / GB  
102000000595

9/11

Revision Date: 09.05.2014  
Print Date: 09.05.2014**IMDG**

14.1 UN number	<b>3082</b>
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PHENMEDIPHAM, DESMEDIPHAM SOLUTION)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Marine pollutant	YES
Segregation group according to 5.4.1.5.11.1	IMDG SEGREGATION GROUP 1 - ACIDS

**IATA**

14.1 UN number	<b>3082</b>
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PHENMEDIPHAM, DESMEDIPHAM SOLUTION )
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environm. Hazardous Mark	YES

**UK 'Carriage' Regulations**

14.1 UN number	<b>3082</b>
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PHENMEDIPHAM, DESMEDIPHAM SOLUTION)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environm. Hazardous Mark	YES
Emergency action code	3Z

**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 73/78 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****UK and Northern Ireland Regulatory References**

This material may be subject to some or all of the following regulations (and any subsequent amendments). Users must ensure that any uses and restrictions as indicated on the label and/or leaflet are followed.

**Transport**

Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 No 1348)

Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997 (SI 1997 No 2367)

Air Navigation Dangerous Goods Regulations 2002 (SI 2002 No 2786)

**Supply and Use**

Chemical (Hazard Information and Packaging for Supply) Regulations 2009 (SI 2009 No 716)

Chemical (Hazard Information and Packaging for Supply) (Northern Ireland) Regulations 2009



## BETANAL TURBO

Version 2 / GB  
102000000595

10/11

Revision Date: 09.05.2014  
Print Date: 09.05.2014

Control of Substances Hazardous to Health Regulations 2002 (SI 2002 No 2677)  
EH40 Occupational Exposure Limits - Table 1 List of approved workplace exposure limits  
Control of Pesticide Regulations 1986  
Dangerous Substances and Explosive Atmospheres Regulations 2002

### Waste Treatment

Environmental Protection Act 1990, Part II  
Environmental Protection (Duty of Care) Regulations 1991  
The Waste Management Licensing Regulations 1994 (as amended)  
Hazardous Waste Regulations 2005 (Replacing Special Waste Regulations 1996 as amended)  
Landfill Directive  
Regulation on Substances That Deplete the Ozone Layer 1994 (EEC/3093/94)  
Water Resources Act 1991  
Anti-Pollution Works Regulations 1999

### 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 R-phrases mentioned in Section 3

R36/38	Irritating to eyes and skin.
R38	Irritating to skin.
R41	Risk of serious damage to eyes.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

### Text of the hazard statements mentioned in Section 3

H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
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.

The above information is intended to give general health and safety guidance on the storage and transport of the product.

It is not intended to apply to the use of the product for which purposes the product label and any appropriate technical usage literature available should be consulted and any relevant licenses, consents or approvals complied with.

The requirements or recommendations of any relevant site or working procedure, system or policy in force or arising from any risk assessment involving the substance or product should take precedence over any of the guidance contained in this safety data sheet where there is a difference in the information given.

The information provided in this safety data sheet is accurate at the date of publication and will be updated as and when appropriate.

No liability will be accepted for any injury, loss or damage resulting from any failure to take account of information or advice contained in this safety data sheet.



## BETANAL TURBO

Version 2 / GB  
102000000595

11/11

Revision Date: 09.05.2014

Print Date: 09.05.2014

**Reason for Revision:** Section 12. Ecological information. Safety Data Sheet according to Regulation (EU) No. 453/2010.

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