



## BETANAL EXPERT EC274 4X5L BOT UA

Version 1 /  
102000035730

1/11  
Revision Date: 17.10.2017  
Print Date: 14.11.2017

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

#### 1.1 Product identifier

**Trade name** BETANAL EXPERT EC274 4X5L BOT UA  
**Product code (UVP)** 85837605

#### 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.**

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:**

- Ethofumesate
- Phenmedipham
- Desmedipham



**Signal word:** Warning

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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 in accordance with local regulation.

**2.3 Other hazards**

No other hazards known.

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

Emulsifiable concentrate (EC)  
 Ethofumesate/Phenmedipham/Desmedipham 112:91:71 g/l

**Hazardous components**

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

| Name  | CAS-No. /<br>EC-No. /<br>REACH Reg. No. | Classification   | Conc. [%]          |
|---|---|--|--------------------|
|   |   | REGULATION (EC) No<br>1272/2008                                      |                    |
| Ethofumesate                                  | 26225-79-6<br>247-525-3                 | Aquatic Chronic 2, H411  | 10,3               |
| Phenmedipham                                  | 13684-63-4<br>237-199-0                 | Aquatic Acute 1, H400<br>Aquatic Chronic 1, H410                     | 8,35               |
| Desmedipham                                   | 13684-56-5<br>237-198-5                 | Aquatic Acute 1, H400<br>Aquatic Chronic 1, H410                     | 6,51               |
| Tributyl phenol polyglycol ether              | 9046-09-7                               | Skin Irrit. 2, H315<br>Eye Irrit. 2, H319<br>Aquatic Chronic 2, H411 | > 10,0 – <<br>25,0 |
| Phenol ethoxylate phosphate ester             | 39464-70-5                              | Eye Dam. 1, H318<br>Skin Irrit. 2, H315                              | > 1,0 – < 5,0      |
| iso-Tridecyl alcohol, ethoxylated, phosphated | 73038-25-2                              | Skin Irrit. 2, H315<br>Eye Dam. 1, H318<br>Aquatic Chronic 3, H412   | > 1,0 – < 3,0      |

**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 H-Statements mentioned in this Section, see Section 16.



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**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**

|                 |  |
|-----------------|--|
| <b>Symptoms</b> | If large amounts are ingested, the following symptoms may occur:<br>Drowsiness, Headache, Lethargy, Tremors, Ataxia<br>Symptoms and hazards refer to effects observed after intake of significant amounts of the active ingredient(s). |
|-----------------|--|

**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. |

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**SECTION 5: FIREFIGHTING MEASURES**

**5.1 Extinguishing media**

|                   |  |
|-------------------|--|
| <b>Suitable</b>   | Water spray, Carbon dioxide (CO <sub>2</sub> ), Foam, Sand |
| <b>Unsuitable</b> | High volume water jet                                      |

|  |   |
|--|---|
| <b>5.2 Special hazards arising from the substance or mixture</b> | In the event of fire the following may be released: Hydrogen cyanide (hydrocyanic acid), Carbon monoxide (CO), Oxides of phosphorus, Sulphur oxides, Nitrogen oxides (NO <sub>x</sub> ) |
|--|---|

**5.3 Advice for firefighters**

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



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**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.

**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.

**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** 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    |
|--------------|------------|----------------------|--------|----------|
| Ethofumesate | 26225-79-6 | 10 mg/m <sup>3</sup> |        | OES BCS* |

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|              |            |                    |  |          |
|--------------|------------|--------------------|--|----------|
|              |            | (TWA)              |  |          |
| Phenmedipham | 13684-63-4 | 1,5 mg/m3<br>(TWA) |  | OES BCS* |
| Desmedipham  | 13684-56-5 | 1,2 mg/m3<br>(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**

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**

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 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**

**Form** clear to slightly turbid, Liquid  
**Colour** yellow to brown

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|   |   |
|---|---|
| <b>Odour</b>                                  | characteristic  |
| <b>pH</b>                                     | 1,8 - 3,0 at 10 % (23 °C) (deionized water)   |
| <b>Flash point</b>                            | 143 °C  |
| <b>Ignition temperature</b>                   | 420 °C  |
| <b>Density</b>                                | ca. 1,09 g/cm <sup>3</sup> at 20 °C   |
| <b>Water solubility</b>                       | emulsifiable  |
| <b>Partition coefficient: n-octanol/water</b> | Ethofumesate: log Pow: 2,7 at 25 °C<br><br>Phenmedipham: log Pow: 3,59<br>Desmedipham: log Pow: 3,39<br>Ethoxylated alcohols: log Pow: 1,97 |
| <b>Viscosity, kinematic</b>                   | ca. 137 mm <sup>2</sup> /s at 40 °C   |
| <b>Impact sensitivity</b>                     | Not impact sensitive.   |
| <b>Oxidizing properties</b>                   | No oxidizing properties   |
| <b>Explosivity</b>                            | Not explosive<br>92/69/EEC, A.14 / OECD 113   |
| <b>9.2 Other information</b>                  | Further safety related physical-chemical data are not known.  |

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**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.

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**SECTION 11: TOXICOLOGICAL INFORMATION****11.1 Information on toxicological effects****Acute oral toxicity** LD50 (Rat) 3.255 mg/kg**Acute inhalation toxicity** During intended and foreseen applications, no respirable aerosol is formed.**Acute dermal toxicity** LD50 (Rat) > 5.000 mg/kg



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|                        |  |
|------------------------|--|
| <b>Skin irritation</b> | Slight irritant effect - does not require labelling. (Rabbit)          |
| <b>Eye irritation</b>  | Slight irritant effect - does not require labelling. (Rabbit)          |
| <b>Sensitisation</b>   | Non-sensitizing. (Guinea pig)<br>OECD Test Guideline 406, Buehler test |

**Assessment STOT Specific target organ toxicity – single exposure**

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

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

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

**Assessment STOT Specific target organ toxicity – repeated exposure**

Ethofumesate 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.

Desmedipham caused methaemoglobinaemia, haemolytic anaemia 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**

Ethofumesate 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.

Desmedipham 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**

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

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

Desmedipham 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**

Ethofumesate 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.

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

Ethoxylated alcohols did not cause reproductive toxicity in a two-generation study in rats.

**Assessment developmental toxicity**

Ethofumesate 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.

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.

Ethoxylated alcohols did not cause developmental toxicity in rats and rabbits.

**Aspiration hazard**



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

**SECTION 12: ECOLOGICAL INFORMATION**

**12.1 Toxicity**

|  |  |
|--|--|
| <b>Toxicity to fish</b>                          | LC50 (Oncorhynchus mykiss (rainbow trout)) 13,4 mg/l<br>static test; Exposure time: 96 h   |
| <b>Toxicity to aquatic invertebrates</b>         | EC50 (Daphnia magna (Water flea)) 2,8 mg/l<br>static test;<br>Exposure time: 48 h  |
| <b>Chronic toxicity to aquatic invertebrates</b> | NOEC (Daphnia (water flea)): 0,01 mg/l<br>Exposure time: 21 d<br>The value mentioned relates to the active ingredient desmedipham. |
| <b>Toxicity to aquatic plants</b>                | IC50 (Raphidocelis subcapitata (freshwater green alga)) 8,54 mg/l<br>Exposure time: 72 h   |

**12.2 Persistence and degradability**

|                         |   |
|-------------------------|---|
| <b>Biodegradability</b> | Ethofumesate:<br>Not rapidly biodegradable<br>Phenmedipham:<br>Not rapidly biodegradable<br>Desmedipham:<br>Not rapidly biodegradable<br>Ethoxylated alcohols:<br>Not rapidly biodegradable |
| <b>Koc</b>              | Ethofumesate: Koc: 147<br>Phenmedipham: Koc: 888<br>Desmedipham: Koc: > 5000<br>Ethoxylated alcohols: Koc: 8913   |

**12.3 Bioaccumulative potential**

|                        |  |
|------------------------|--|
| <b>Bioaccumulation</b> | Ethofumesate: Bioconcentration factor (BCF) 144<br>Does not bioaccumulate.<br>Phenmedipham: Bioconcentration factor (BCF) 165<br>Does not bioaccumulate.<br>Desmedipham: Bioconcentration factor (BCF) 157<br>Does not bioaccumulate.<br>Ethoxylated alcohols: Bioconcentration factor (BCF) 12,7<br>Does not bioaccumulate. |
|------------------------|--|

**12.4 Mobility in soil**

|                         |   |
|-------------------------|---|
| <b>Mobility in soil</b> | Ethofumesate: Moderately mobile in soils<br>Phenmedipham: Slightly mobile in soils<br>Desmedipham: Immobile in soil<br>Ethoxylated alcohols: Immobile in soil |
|-------------------------|---|

**12.5 Results of PBT and vPvB assessment**

|                                |  |
|--------------------------------|--|
| <b>PBT and vPvB assessment</b> | Ethofumesate: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be |
|--------------------------------|--|





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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).  
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).  
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                  | <b>3082</b>  |
| 14.2 Proper shipping name       | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PHENMEDIPHAM, DESMEDIPHAM, ETHOFUMESATE 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                  | <b>3082</b>  |
| 14.2 Proper shipping name       | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PHENMEDIPHAM, DESMEDIPHAM, ETHOFUMESATE SOLUTION) |
| 14.3 Transport hazard class(es) | 9  |



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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. (PHENMEDIPHAM, DESMEDIPHAM, ETHOFUMESATE 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.

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**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.

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**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.  
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

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| 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.

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