SECTION 1: IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier
Trade name Emesto® Prime In-Furrow Fungicide
Product code (UVP) 80210922

1.2 Relevant identified uses of the substance or mixture and uses advised against
Use Fungicide, Seed treatment

1.3 Details of the supplier of the safety data sheet
Supplier Bayer Cropscience Pty Ltd
ABN 87 000 226 022
Level 1, 8 Redfern Road
3123 Hawthorn East
Victoria
Australia
Telephone (03) 9248 6888
Telefax (03) 9248 6800
Responsible Department 1800 804 479 Technical Information Service
Website www.crop.bayer.com.au

1.4 Emergency telephone no.
Emergency telephone no. 1800 033 111 IXOM Operations Pty Ltd

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification in accordance with Australian GHS Regulation
Carcinogenicity: Category 2
H351 Suspected of causing cancer.

Chronic aquatic toxicity: Category 2
H411 Toxic to aquatic life with long lasting effects.

2.2 Label elements
Hazard label for supply/use required.

Hazardous components which must be listed on the label:
Penflufen

Signal word: Warning

Hazard statements
H351 Suspected of causing cancer.

Precautionary statements
P202 Do not handle until all safety precautions have been read and understood.
P281 Use personal protective equipment as required.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local regulation.

2.3 Other hazards
No other hazards known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature
Penflu fen: 240 g/L active ingredient

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>Concentration [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penflu fen</td>
<td>494793-67-8</td>
<td>22.40</td>
</tr>
<tr>
<td>1,2-Propanediol</td>
<td>57-55-6</td>
<td>&lt;= 10.00</td>
</tr>
<tr>
<td>1,2-Benzisothiazol-3(2H)-one</td>
<td>2634-33-5</td>
<td>&gt;= 0.005 - &lt;= 0.05</td>
</tr>
<tr>
<td>Mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one</td>
<td>55965-84-9</td>
<td>&gt;= 0.0002 - &lt;= 0.0015</td>
</tr>
<tr>
<td>Other ingredients (non-hazardous) to 100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

If poisoning occurs, immediately contact a doctor or Poisons Information Centre (telephone 13 11 26), and follow the advice given. Show this Safety Data Sheet to the doctor.

4.1 Description of first aid measures

Inhalation Move the victim to fresh air and keep at rest. Call a physician or poison control center immediately. Oxygen or artificial respiration if needed.

Skin contact Take off contaminated clothing and shoes immediately. Wash off thoroughly with plenty of soap and water, if available with polyethyleneglycol 400, subsequently rinse with water. Call a physician or poison control center immediately.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician or poison control center immediately.

Ingestion Rinse out mouth and give water in small sips to drink. Do NOT induce vomiting. Call a physician or poison control center immediately.

4.2 Most important symptoms and effects, both acute and delayed
Symptoms To date no symptoms are known.

4.3 Indication of any immediate medical attention and special treatment needed
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. There is no specific antidote.
SECTION 5. FIRE FIGHTING MEASURES

5.1 Extinguishing media
Suitable Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Dangerous gases are evolved in the event of a fire.

5.3 Advice for firefighters
Special protective equipment for firefighters Wear self-contained breathing apparatus and protective suit.
Further information Evacuate personnel to safe areas. Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. Whenever possible, contain fire-fighting water by diking area with sand or earth.

Hazchem Code •3Z

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. Keep unauthorized people away. When dealing with a spillage do not eat, drink or smoke.

6.2 Environmental precautions
Do not allow to get into surface water, drains and ground water. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. If the product contaminates rivers and lakes or drains inform respective authorities.

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). Collect and transfer the product into a properly labelled and tightly closed container. Contaminated soil may have to be removed and disposed. Clean contaminated floors and objects thoroughly, observing environmental regulations.

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: Use only in area provided with appropriate exhaust ventilation.

Hygiene measures: Remove Personal Protective Equipment (PPE) immediately after handling this product. After each day's use, wash gloves, face shield or goggles and contaminated clothing. Before removing gloves clean them with soap and water. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers: Store in original container. Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Keep away from direct sunlight.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penflufen</td>
<td>494793-67-8</td>
<td>1.1 mg/m³ (TWA)</td>
<td></td>
<td>OES BCS*</td>
</tr>
<tr>
<td>1,2-Propanediol</td>
<td>57-55-6</td>
<td>474 mg/m³/150 ppm (TWA)</td>
<td>12 2011</td>
<td>AU NOEL</td>
</tr>
<tr>
<td>(Total vapour and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>particulates.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2-Propanediol</td>
<td>57-55-6</td>
<td>10 mg/m³ (TWA)</td>
<td>12 2011</td>
<td>AU NOEL</td>
</tr>
<tr>
<td>(Particulate.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

8.2 Exposure controls

Respiratory protection: 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.

General protective measures: In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the above mentioned
recommendations would apply.

Engineering Controls
Advice on safe handling Use only in area provided with appropriate exhaust ventilation.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Form suspension
Colour red
Odour characteristic
pH 6.5 - 8.0 at 100 % (23 °C)
Flash point No flash point - Determination conducted up to the boiling point.
Minimum ignition energy No data available
Upper explosion limit No data available
Lower explosion limit No data available
Vapour pressure No data available
Relative vapour density No data available
Density ca. 1.13 g/cm³ at 20 °C
Partition coefficient: n-octanol/water log Pow: 3.5 at pH 6.3
The value mentioned relates to the active ingredient.
Partition coefficient: n-octanol/water Penflufen: log Pow: 3.3 at 25 °C

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. Stable under normal conditions.

10.4 Conditions to avoid Extremes of temperature and direct sunlight.

10.5 Incompatible materials Strong oxidizing agents, Strong acids, Strong bases

10.6 Hazardous decomposition products Thermal decomposition can lead to release of: Toxic gases/vapours
SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

**Acute oral toxicity**  
LD50 (Rat) > 2,000 mg/kg

**Acute inhalation toxicity**  
LC50 (Rat) > 1.877 mg/l  
Exposure time: 4 h  
Determined in the form of liquid aerosol.  
Highest attainable concentration.

**Acute dermal toxicity**  
LD50 (Rat) > 2,000 mg/kg

**Skin irritation**  
No skin irritation (Rabbit)

**Eye irritation**  
No eye irritation (Rabbit)

**Sensitisation**  
Non-sensitizing. (Mouse)

**Assessment mutagenicity**  
Penflufen was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

**Assessment carcinogenicity**  
Penflufen caused at high dose levels an increased incidence of tumours in the following organ(s): hematopoietic system, brain, ovaries.

**Assessment toxicity to reproduction**  
Penflufen did not cause reproductive toxicity in a two-generation study in rats.

**Assessment developmental toxicity**  
Penflufen did not cause developmental toxicity in rats and rabbits.

**Assessment STOT Specific target organ toxicity – repeated exposure**  
Penflufen did not cause specific target organ toxicity in experimental animal studies.

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

**Information on likely routes of exposure**

May be harmful if inhaled.
May cause irritation.
May cause eye irritation.
May be harmful if swallowed.

**Early onset symptoms related to exposure**  
Refer to Section 4

**Delayed health effects from exposure**  
Refer to Section 11

**Exposure levels and health effects**  
Refer to Section 4

**Interactive effects**

Not known
When specific chemical data is not available
Not applicable

Mixture of chemicals
Refer to Section 2.1

Further information
No further toxicological information is available.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity
Toxicity to fish
LC50 (Cyprinus carpio (Carp)) 0.103 mg/l
Exposure time: 96 h
The value mentioned relates to the active ingredient penflufen.

LC50 (Cyprinus carpio (Carp)) 0.062 mg/l
Exposure time: 96 h

Toxicity to aquatic invertebrates
EC50 (Daphnia magna (Water flea)) > 4.7 mg/l
Exposure time: 48 h
The value mentioned relates to the active ingredient penflufen.
No acute toxicity was observed at its limit of water solubility.

EC50 (Daphnia magna (Water flea)) > 4.9 mg/l
Exposure time: 48 h

Toxicity to aquatic plants
EC50 (Raphidocelis subcapitata (freshwater green alga)) > 5.1 mg/l
Exposure time: 72 h
The value mentioned relates to the active ingredient penflufen.
No acute toxicity was observed at its limit of water solubility.

EC50 (Raphidocelis subcapitata (freshwater green alga)) > 24.8 mg/l
Exposure time: 72 h

Toxicity to other organisms
LC50 (Colinus virginianus (Bobwhite quail)) > 456 mg/kg

LC50 (Colinus virginianus (Bobwhite quail)) > 4,000 mg/kg
The value mentioned relates to the active ingredient penflufen.

LD50 (Apis mellifera (bees)) > 108.2 µg/bee
The value mentioned relates to the active ingredient penflufen.

LC50 (Eisenia fetida (earthworms)) > 1,000 mg/kg
Exposure time: 14 d
The value mentioned relates to the active ingredient penflufen.

12.2 Persistence and degradability
Biodegradability
Penflufen: Not rapidly biodegradable

Koc
Penflufen: Koc: 280

12.3 Bioaccumulative potential
Bioaccumulation
Penflufen: Bioconcentration factor (BCF) 142
Does not bioaccumulate.

12.4 Mobility in soil
Mobility in soil  Penflufen: Moderately mobile in soils

12.5 Other adverse effects
Additional ecological information  No other effects to be mentioned.

SECTION 13. DISPOSAL CONSIDERATIONS

Metal drums and plastic containers:
Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt. Do not reuse empty container for any other purpose.

SECTION 14. TRANSPORT INFORMATION

ADG
UN number  3082
Transport hazard class(es)  9
Subsidiary Risk  None
Packaging group  III
Description of the goods  ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PENFLUFEN SOLUTION)

IATA
UN number  3082
Transport hazard class(es)  9
Subsidiary Risk  None
Packaging group  III
Environm. Hazardous Mark  YES
Description of the goods

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(PENFLUFEN SOLUTION)

SECTION 15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Code Act 1994
Australian Pesticides and Veterinary Medicines Authority approval number: 80325

SUSMP classification (Poison Schedule)

Schedule 5 (Standard for the Uniform Scheduling of Medicines and Poisons)

SECTION 16. OTHER INFORMATION

Trademark information

Emesto® is a Registered Trademark of the Bayer Group.

This SDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this SDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.

Abbreviations and acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADN</td>
<td>European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways</td>
</tr>
<tr>
<td>ADR</td>
<td>European Agreement concerning the International Carriage of Dangerous Goods by Road</td>
</tr>
<tr>
<td>ATE</td>
<td>Acute toxicity estimate</td>
</tr>
<tr>
<td>AU OEL</td>
<td>Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment)</td>
</tr>
<tr>
<td>CAS-Nr.</td>
<td>Chemical Abstracts Service number</td>
</tr>
<tr>
<td>CEILING</td>
<td>Ceiling Limit Value</td>
</tr>
<tr>
<td>Conc.</td>
<td>Concentration</td>
</tr>
<tr>
<td>EC-No.</td>
<td>European community number</td>
</tr>
<tr>
<td>ECx</td>
<td>Effective concentration to x %</td>
</tr>
<tr>
<td>EINECS</td>
<td>European inventory of existing commercial substances</td>
</tr>
<tr>
<td>ELINCS</td>
<td>European list of notified chemical substances</td>
</tr>
<tr>
<td>EN</td>
<td>European Standard</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>IBC</td>
<td>International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code)</td>
</tr>
<tr>
<td>ICx</td>
<td>Inhibition concentration to x %</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods</td>
</tr>
<tr>
<td>LCx</td>
<td>Lethal concentration to x %</td>
</tr>
</tbody>
</table>
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
OES BCS  OES BCS: Internal Bayer CropScience "Occupational Exposure Standard"
PEAK  PEAK: Exposure Standard - Peak means a maximum or peak airborne concentration of a particular substance determined over the shortest analytically practicable period of time which does not exceed 15 minutes.
RID  Regulations concerning the International Carriage of Dangerous Goods by Rail
SK-SEN  Skin sensitiser
SKIN_DES  SKIN_DES: Skin notation: Absorption through the skin may be a significant source of exposure.
STEL  STEL: Exposure standard - short term exposure limit (STEL): A 15 minute TWA exposure which should not be exceeded at any time during a working day even if the eight-hour TWA average is within the TWA exposure standard. Exposures at the STEL should not be longer than 15 minutes and should not be repeated more than four times per day. There should be at least 60 minutes between successive exposures at the STEL.
TWA  TWA: Exposure standard - time-weighted average (TWA): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week.
TWA  Time weighted average
UN  United Nations
WHO  World health organisation

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

END OF SDS