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

1.1 Product identifier
Product name : REVUS
Design code : A12946B

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

1.3 Details of the supplier of the safety data sheet
Company : Syngenta UK Limited
CPC4, Capital Park
Fulbourn
Cambridge
CB21 5XE
Telephone : (01223) 883400
Telefax : (01223) 882195
Website : www.syngenta.co.uk

1.4 Emergency telephone number
: +44 1484 538444

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EU) 1272/2008

Chronic aquatic toxicity Category 2 H411

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

2.2 Label elements
Labelling: Regulation (EC) No. 1272/2008

Hazard pictograms

Hazard Statements : H411 Toxic to aquatic life with long lasting effects
Precautions Statements : P273 Avoid release to the environment
: P391 Collect spillage
: P501 Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed for as non-hazardous waste.
Supplemental Information : EUH401 To avoid risks to human health and the environment comply with the instructions for use.
 version replaces all previous versions. Revision Date 14.04.2015

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

REVUS

<table>
<thead>
<tr>
<th>CAS No. EC No.</th>
<th>EC No. Registration Number</th>
<th>Classification (REGULATION (EC) No. 1272/2008)</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>mandipropamid</td>
<td>374726-62-2</td>
<td>Aquatic Acute1; H400 Aquatic Chronic1; H410</td>
<td>23.3% w/w</td>
</tr>
<tr>
<td>Naphthalenesulfonic acid, dimethyl-polymer with formaldehyde and methyl-naphthalenesulfonic acid, sodium salt</td>
<td>9008-63-3</td>
<td>Eye Irrit.2; H319 Skin Irrit.2; H315</td>
<td>1 – 5% w/w</td>
</tr>
<tr>
<td>Propane-1,2-diol</td>
<td>57-55-6 200-338-0</td>
<td>-</td>
<td>5 – 10% w/w</td>
</tr>
</tbody>
</table>

Substances for which there are Community workplace exposure limits. 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: Have the product container, label or Material Safety Data Sheet with you when calling the Syngenta emergency number, a poison control centre or physician, or going for treatment.

Inhalation: Move the victim to fresh air. If breathing is irregular or stopped, administer artificial respiration. Keep patient warm and at rest. Call a physician or Poison Control Centre immediately.

Skin Contact: Take off all contaminated clothing immediately. Wash off immediately with plenty of water. If skin irritation persists, call a physician. Wash contaminated clothing before re-use.

Eye Contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

Ingestion: If swallowed, seek medical advice immediately and show this container or label. DO NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms: No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Medical advice: There is no specific antidote available. Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Extinguishing media - small fires
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Extinguishing media - large fires
Use alcohol-resistant foam or water spray. Do not use a solid water stream as it may scatter and spread fire.

5.2 Special hazards arising from the substance or mixture
As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion (see section 10). Exposure to decomposition products may be a hazard to health.

5.3 Advice for fire-fighters:
Wear full protective clothing and self-contained breathing apparatus. Do not allow run-off from fire fighting to enter drains or water courses. Cool closed containers exposed to fire with water spray.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Refer to protective measures listed in sections 7 and 8.

6.2 Environmental precautions:
Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). If the product contaminates rivers and lakes or drains inform respective authorities.

6.4 Reference to other sections
Refer to protective measures listed in sections 7 and 8.
Refer to disposal considerations listed in section 13.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
No special protective measures against fire required. Avoid contact with skin and eyes. When using do not eat, drink or smoke. For personal protection see section 8.

7.2 Conditions for safe storage, including any incompatibilities
No special storage conditions required. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Keep away from food, drink and animal feedingstuffs.

7.3 Specific end use(s)
Registered Crop Protection products: For proper and safe use of this product, please refer to the approval conditions laid down on the product label.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>Exposure limit(s)</th>
<th>Type of exposure limit</th>
<th>Source</th>
</tr>
</thead>
</table>
### SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

**REVUS**
Version 5 - This version replaces all previous versions.
Revision Date 14.04.2015

<table>
<thead>
<tr>
<th>Substance</th>
<th>Exposure Limit (Particulates)</th>
<th>Exposure Limit (Total (vapour &amp; particulates))</th>
<th>Control Exposure</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>propane-1,2-diol</td>
<td>10 mg/m³</td>
<td>150 ppm, 470 mg/m³ (Total (vapour &amp; particulates))</td>
<td>8 h TWA</td>
<td>UK HSE</td>
</tr>
<tr>
<td>mandipropamid</td>
<td>10 mg/m³</td>
<td></td>
<td>8 h TWA</td>
<td>SYNGENTA</td>
</tr>
</tbody>
</table>

The following recommendations for exposure controls/personal protection are intended for the manufacture, formulation and packaging of the product.

#### 8.2 Exposure controls

**Engineering Measures**
- Containment and/or segregation is the most reliable technical protection measure if exposure cannot be eliminated. The extent of these protection measures depends on the actual risks in use. If airborne mist or vapours are generated, use local exhaust ventilation controls. Assess exposure and use any additional measures to keep airborne levels below any relevant exposure limit. Where necessary, seek additional occupational hygiene advice.

**Protective measures**
- The use of technical measures should always have priority over the use of personal protective equipment. When selecting personal protective equipment, seek appropriate professional advice. Personal protective equipment should be certified to appropriate standards.

**Respiratory protection**
- No personal respiratory protective equipment normally required. A particulate filter respirator may be necessary until effective technical measures are installed.

**Hand protection**
- Chemical resistant gloves are not usually required. Select gloves based on the physical job requirements.

**Eye Protection**
- Eye protection is not usually required. Follow any site specific eye protection policies.

**Skin and body protection**
- No special protective equipment required. Select skin and body protection based on the physical job requirements.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Form</td>
<td>Suspension</td>
</tr>
<tr>
<td>Colour</td>
<td>Off-white to brownish</td>
</tr>
<tr>
<td>Odour</td>
<td>Characteristic</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>5 – 9 at 1 % w/v</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt;101 °C at 100.3 kPa Pensky-Martens c.c.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>1.072 g/cm³</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>No data available</td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>No data available</td>
</tr>
<tr>
<td>n-octanol/water</td>
<td>No data available</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

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**Autoignition temperature**: >480 °C

**Thermal decomposition**: No data available

**Viscosity, dynamic**:
- 45.0 – 338 mPa.s at 40 °C
- 56.2 – 424 mPa.s at 20°C

**Viscosity, kinematic**: No data available

**Explosive properties**: Not explosive

**Oxidizing properties**: Not oxidising

**Miscibility**: Miscible

**Surface tension**: 36.4 mN/m at 20 °C

### SECTION 10. STABILITY AND REACTIVITY

#### 10.1 Reactivity
See Section 10.3 “Possibility of hazardous reactions”

#### 10.2 Chemical Stability
The product is stable when used in normal conditions

#### 10.3 Possibility of hazardous reactions
No hazardous reactions by normal handling and storage according to provisions.

#### 10.4 Conditions to avoid
No decomposition if used as directed.

#### 10.5 Incompatible materials
No substances are known which lead to the formation of hazardous substances or thermal reactions.

#### 10.6 Hazardous decomposition products
Combustion or thermal decomposition will evolve toxic and irritant vapours.

### SECTION 11. TOXICOLOGICAL INFORMATION

#### 11.1 Information on toxicological effects

- **Acute oral toxicity**: LD50 female rat, > 5,000 mg/kg
- **Acute inhalational toxicity**: LC50 male and female rat, > 4.89 mg/l, 4 h
- **Acute dermal toxicity**: LD50 male and female rat, > 5,000 mg/kg
- **Skin corrosion/irritation**: Rabbit: Slightly irritating
- **Serious eye damage/eye irritation**: Rabbit: Mildly irritating
- **Respiratory or skin sensitisation**: Buehler test guinea pig: Not a skin sensitiser in animals
- **Germ cell mutagenicity**: mandipropamid
  - Did not show mutagenic effects in animal experiments.
- **Carcinogenicity**: mandipropamid
  - Did not show carcinogenic effects in animal experiments.
- **Teratogenicity**: mandipropamid
  - Did not show teratogenic effects in animal experiments.
- **Reproductive toxicity**: mandipropamid
  - Did not show reproductive toxicity effects in animal experiments.
- **STOT – repeated exposure**: mandipropamid
  - No adverse effect has been observed in chronic toxicity tests.

### SECTION 12. ECOLOGICAL INFORMATION

#### 12.1 Toxicity

- **Toxicity to fish**: LC50 *Oncorhynchus mykiss* (rainbow trout), > 100 mg/l, 96 h
  - LC50 *Cyprinus carpio* (Carp), > 100 mg/l, 96 h
- **Toxicity to aquatic**: EC50 *Daphnia magna* (water flea), > 100 mg/l, 48 h
12.2 Persistence and degradability

- **Biodegradability**: Mandipropamid is not readily biodegradable
- **Stability in water**: Degradation half life: 4.5 - 26 d. Not persistent in water
- **Stability in soil**: Degradation half life: 26 - 178 d. Not persistent in soil

12.3 Bioaccumulative potential

- **Mandipropamid**: Low potential for bioaccumulation.

12.4 Mobility in soil

- **Mandipropamid**: Low mobility in soil.

12.5 Results of PBT and vPvB assessment

- **Mandipropamid**: Mandipropamid is not considered to be persistent, bioaccumulating nor toxic (PBT). Mandipropamid is not considered to be very persistent nor very bioaccumulating (vPvB).

12.6 Other adverse effects

- **Other information**: Classification of the product is based on the summation of the concentrations of classified components.

**SECTION 13. DISPOSAL CONSIDERATIONS**

13.1 Waste treatment methods

- **Product**: Do not contaminate ponds, waterways or ditches with chemical or used container. Do not dispose of waste into sewer. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations.

- **Contaminated packaging**: Empty remaining contents. Triple rinse containers. Empty containers should be taken for local recycling or waste disposal. Do not re-use empty containers.

**SECTION 14. TRANSPORT INFORMATION**

**Land transport (ADR/RID)**

<table>
<thead>
<tr>
<th>14.1 UN Number</th>
<th>: UN 3082</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.2 UN proper shipping name</td>
<td>: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (MANDIPROPAMID)</td>
</tr>
<tr>
<td>14.3 Transport hazard class(es)</td>
<td>: 9</td>
</tr>
<tr>
<td>14.4 Packing Group</td>
<td>: III</td>
</tr>
<tr>
<td>Labels</td>
<td>: 9</td>
</tr>
<tr>
<td>14.5 Environmental hazards Tunnel restriction code</td>
<td>: Environmentally hazardous E</td>
</tr>
</tbody>
</table>

**Sea transport (IMDG)**

<table>
<thead>
<tr>
<th>14.1 UN Number</th>
<th>: UN 3082</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.2 UN proper shipping name</td>
<td>: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (MANDIPROPAMID)</td>
</tr>
</tbody>
</table>
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| 14.3 | Transport hazard class(es) | : 9 |
| 14.4 | Packing Group | : III |
| Labels | : 9 |
| 14.5 | Environmental hazards | : Marine pollutant |

Air transport (IATA-DGR)

| 14.1 | UN Number | : UN 3082 |
| 14.2 | UN proper shipping name | : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (MANDIPROPAMID) |
| 14.3 | Transport hazard class(es) | : 9 |
| 14.4 | Packing Group | : III |
| Labels | : 9 |
| 14.6 | Special precautions for user | : none |

14.6 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code not applicable

SECTION 15. REGULATORY INFORMATION

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

GHS-Labelling

Hazard Pictograms

Hazard Statements : H411 Toxic to aquatic life with long lasting effects

Precautions Statements : P273 Avoid release to the environment
: P391 Collect spillage
: P501 Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed for as non-hazardous waste.

Supplemental Information : EUH401 To avoid risks to human health and the environment comply with the instructions for use.
: EUH208 Contains 1,2-benzisothiazol-3-one. May produce an allergic reaction.

15.2 Chemical Safety Assessment
A Chemical Safety Assessment is not required for this substance.

SECTION 16. OTHER INFORMATION

Further information
Approval number, MAPP 13484; PCS No. 02789.
Use plant protection products safely. Always read the label and product information before use.
Based upon SDS release dated 14/04/2015, version 5 with local amendment. Full text of R-phrases referred to under sections 2 and 3:

Full text of H-Statements referred to under sections 2 and 3.
REVUS
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H315 Causes skin irritation.
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.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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