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

1.1 Product identifier

Product name : DUAL GOLD
Design code : A9396G

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

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 (0) 1484 538444

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EU) 1272/2008

Skin Sensitisation Sub-category 1A  H317
Eye Irritation Category 2  H319
Acute aquatic toxicity Category 1  H400
Chronic aquatic toxicity Category 1  H410

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

<table>
<thead>
<tr>
<th>Hazard pictograms</th>
<th>Signal Word: Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard Statements</td>
<td>:H317 May cause an allergic skin reaction.</td>
</tr>
<tr>
<td>:H319 Causes serious eye irritation</td>
<td></td>
</tr>
<tr>
<td>:H410 Very toxic to aquatic life with long lasting effects</td>
<td></td>
</tr>
<tr>
<td>Precautions Statements</td>
<td>:P102 Keep out of reach of children</td>
</tr>
<tr>
<td>:P280 Wear protective gloves/protective clothing/eye protection/face protection.</td>
<td></td>
</tr>
<tr>
<td>:P302/P352 IF ON SKIN: Wash with plenty of soap and water</td>
<td></td>
</tr>
<tr>
<td>:P305/P351/P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses. If present and easy to do. Continue rinsing.</td>
<td></td>
</tr>
<tr>
<td>:P337/P313 If eye irritation persists: Get medical advice/attention.</td>
<td></td>
</tr>
<tr>
<td>:P363 Wash contaminated clothing before reuse.</td>
<td></td>
</tr>
<tr>
<td>:P391 Collect spillage</td>
<td></td>
</tr>
<tr>
<td>: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.</td>
<td></td>
</tr>
<tr>
<td>Supplemental Information</td>
<td>:EUH401 To avoid risks to human health and the environment comply with the instructions for use.</td>
</tr>
</tbody>
</table>

Hazardous components which must be listed on the label:

- S-metolachlor

### 2.3 Other hazards

None known.
SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Hazardous components

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>EC No.</th>
<th>Registration number</th>
<th>Classification (REGULATION (EC) No 1272/2008)</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-metolachlor</td>
<td>87392-12-9</td>
<td>922-153-0</td>
<td>01-2119451097-39-0002</td>
<td>Skin Sens.1B; H317 Aquatic Acute1; H400 Aquatic Chronic1; H410</td>
<td>86.5 % W/W</td>
</tr>
<tr>
<td>solvent naphtha (petroleum), highly arom.</td>
<td>64742-94-5</td>
<td>265-198-5</td>
<td>247-557-8</td>
<td>Asp. Tox.1; H304 Aquatic Chronic2; H411</td>
<td>1 - 5 % W/W</td>
</tr>
<tr>
<td>calcium dodecylbenzene sulphonate</td>
<td>28264-06-2</td>
<td>84989-14-0</td>
<td>284-903-7</td>
<td>Skin Irrit.2; H315 Eye Dam.1; H318</td>
<td>1 - 5 % W/W</td>
</tr>
<tr>
<td>poly(oxy-1,2-ethanediyl),-[2,4,6-tris(1-phenylethyl) phenyl]-hydroxy-</td>
<td>99734-09-5</td>
<td>70559-25-0</td>
<td></td>
<td>Aquatic Chronic3; H412</td>
<td>1 - 5 % W/W</td>
</tr>
<tr>
<td>2-methylpropan-1-ol</td>
<td>78-83-1</td>
<td>201-148-0</td>
<td>01-2119484609-23-0012</td>
<td>Flam. Liq.3; H226 STOT SE3; H335 Skin Irrit.2; H315 Eye Dam.1; H318 STOT SE3; H336</td>
<td>1 - 2 % 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 center 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: contains petroleum distillates and/or aromatic solvents.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Aspiration may cause pulmonary oedema and pneumonitis.
4.3 Indication of any immediate medical attention and special treatment needed

Medical advice: There is no specific antidote available. Treat symptomatically. Do not induce vomiting: contains petroleum distillates and/or aromatic solvents.

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).

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>
<tbody>
<tr>
<td>S-metolachlor</td>
<td>10 mg/m3</td>
<td>8 h TWA</td>
<td>SYNGENTA</td>
</tr>
<tr>
<td>2-methylpropan-1-ol</td>
<td>1,600 ppm</td>
<td>8 h TWA</td>
<td>NIOSH</td>
</tr>
<tr>
<td></td>
<td>50 ppm</td>
<td>8 h TWA</td>
<td>SUVA</td>
</tr>
<tr>
<td></td>
<td>100 ppm</td>
<td>15 min STEL</td>
<td>SUVA</td>
</tr>
<tr>
<td></td>
<td>50 ppm</td>
<td>8 h TWA</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td>100 ppm</td>
<td>8 h TWA</td>
<td>DFG</td>
</tr>
<tr>
<td></td>
<td>50 ppm, 231 mg/m3</td>
<td>8 h TWA</td>
<td>UK HSE</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 dust is 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 should be used. Gloves should be certified to an appropriate standard. Gloves should have a minimum breakthrough time that is appropriate to the duration of exposure. The breakthrough time of gloves varies according to the thickness, material and manufacturer. Gloves should be changed when breakthrough is suspected. Suitable material: nitrile rubber.

Eye protection: Eye protection is not usually required. Follow any site specific eye protection instructions.
Skin and body protection: Assess the exposure and select chemical resistant clothing based on the potential for contact and the permeation / penetration characteristics of the clothing material. Wash with soap and water after removing protective clothing. Decontaminate clothing before re-use, or use disposable equipment (suits, aprons, sleeves, boots, etc.). Wear as appropriate: impervious protective suit.

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>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>Light yellow to dark brown.</td>
</tr>
<tr>
<td>Odour</td>
<td>No data available</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>4 - 8 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>81 °C at 101.6 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>1.11 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></td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>425 °C</td>
</tr>
<tr>
<td>Thermal decomposition</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>128 mPa.s at 20 °C</td>
</tr>
<tr>
<td></td>
<td>36.6 mPa.s at 40 °C</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not explosive</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not oxidising</td>
</tr>
</tbody>
</table>

9.2 Other Information

Surface tension: 32.1 mN/m at 20 °C

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity: No information available

10.2 Chemical Stability: No information available

10.3 Possibility of hazardous reactions: None known. Hazardous polymerisation does not occur.

10.4 Conditions to avoid: No information available

10.5 Incompatible materials: No information available

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: 2,149 mg/kg
- LD50 male rat: 3,937 mg/l

The toxicological data has been taken from products of similar composition.

**Acute inhalational toxicity**
- LC50 male and female rat: > 5.09 mg/l, 4 h

The toxicological data has been taken from products of similar composition.

**Acute dermal toxicity**
- LD50 male and female rabbit: > 2,020 mg/kg

The toxicological data has been taken from products of similar composition.

**Skin corrosion/irritation**
- Rabbit: slightly irritating

The toxicological data has been taken from products of similar composition.

**Serious eye damage/eye irritation**
- Rabbit: moderately irritating

The toxicological data has been taken from products of similar composition.

**Respiratory or skin sensitisation**
- Maximisation Test guinea pig: a skin sensitiser in animal tests.

The toxicological data has been taken from products of similar composition.

**Germ cell mutagenicity**

- S-metalochlor
- Calcium dodecylbenzene sulphonate
- 2-methylpropan-1-ol

Did not show mutagenic effects in animal experiments.

**Carcinogenicity**

- S-metalochlor
- Calcium dodecylbenzene sulphonate
- 2-methylpropan-1-ol

Did not show carcinogenic effects in animal experiments.

**Teratogenicity**
- S-metalochlor

Did not show teratogenic effects in animal experiments.

**Reproductive toxicity**

- S-metalochlor
- Calcium dodecylbenzene sulphonate
- 2-methylpropan-1-ol

Did not show reproductive toxicity effects in animal experiments.

**STOT – single exposure**
- 2-methylpropan-1-ol

May cause drowsiness or dizziness.

**STOT – repeated exposure**

- S-metalochlor
- Calcium dodecylbenzene sulphonate
- 2-methylpropan-1-ol

No adverse effect has been observed in chronic toxicity tests.

**Aspiration toxicity**

- Solvent naphtha (petroleum), highly arom.

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.
SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish: LC50 Oncorhynchus mykiss (rainbow trout), 8.8 mg/l, 96 h
Toxicity to aquatic invertebrates: EC50 Daphnia magna (water flea), 28 mg/l, 48 h
Toxicity to aquatic plants: EC50 Pseudokirchneriella subcapitata (green algae), 0.09 mg/l, 96 h

12.2 Persistence and degradability

Biodegradability: S-metalochlor - Not readily biodegradable

12.3 Bioaccumulative potential

S-metalochlor - Does not bioaccumulate.

12.4 Mobility in soil

S-metalochlor - Medium mobility in soil.

12.5 Results of PBT and vPvB assessment

S-metalochlor - This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

12.6 Other adverse effects

None known.

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 to an approved waste handling site for recycling or 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>:</th>
<th>UN 3082</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.2 UN proper shipping name</td>
<td>:</td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (S-METALOCHLOR)</td>
</tr>
<tr>
<td>14.3 Transport hazard class(es)</td>
<td>:</td>
<td>9</td>
</tr>
<tr>
<td>14.4 Packing Group</td>
<td>:</td>
<td>III</td>
</tr>
<tr>
<td>Labels</td>
<td>:</td>
<td>9</td>
</tr>
<tr>
<td>14.5 Environmental hazards</td>
<td>:</td>
<td>Environmentally hazardous</td>
</tr>
</tbody>
</table>

### Sea transport (IMDG)

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

### Air transport (IATA-DGR)

<table>
<thead>
<tr>
<th>14.1 UN Number</th>
<th>:</th>
<th>UN 3082</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.2 UN proper shipping name</td>
<td>:</td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (S-METALOCHLOR)</td>
</tr>
<tr>
<td>14.3 Transport hazard class(es)</td>
<td>:</td>
<td>9</td>
</tr>
<tr>
<td>14.4 Packing Group</td>
<td>:</td>
<td>III</td>
</tr>
<tr>
<td>Labels</td>
<td>:</td>
<td>9</td>
</tr>
<tr>
<td>14.6 Special precautions for user</td>
<td>:</td>
<td>none</td>
</tr>
</tbody>
</table>

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

Signal Word: Warning

Hazard Statements:
- H317: May cause an allergic skin reaction.
- H319: Causes serious eye irritation
- H410: Very toxic to aquatic life with long lasting effects

Precautions Statements:
- P102: Keep out of reach of children
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P302/P352: IF ON SKIN: Wash with plenty of soap and water
- P305/P351/P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses. If present and easy to do. Continue rinsing.
- P337/P313: If eye irritation persists: Get medical advice/attention.
- P363: Wash contaminated clothing before reuse.
- 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 of as non-hazardous waste.

Supplemental Information:
- EUH401: To avoid risks to human health and the environment comply with the instructions for use.

Hazardous components which must be listed on the label:
- S-metolachlor

15.2 Chemical Safety Assessment

A Chemical Safety Assessment is not required for this substance.
SECTION 16. OTHER INFORMATION

Approval number, MAPP 14649; PCS No. 04192.

Use plant protection products safely. Always read the label and product information before use.

Based upon SDS release dated 02/04/2014, version 3 with local amendment.

Full text of H-Statements referred to under sections 2 and 3.

H226 Flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.
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 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 a 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.

This version replaces all previous versions. Product names are a trademark or registered trademark of a Syngenta Group Company.