SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
- Product form: Mixture
- Product name: Firestorm
- Product code: LC 117-118 C0245
- Type of formulation: Suspension concentrate (SC)
- Active Ingredient: Flufenacet + Diflufenican

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses
- Main use category: Plant protection product for professional use. Agriculture.
- Use of the substance/mixture: Herbicide.

1.2.2. Uses advised against
No additional information available.

1.3. Details of the supplier of the safety data sheet

Supplier:
Life Scientific Ltd,
Nova UCD,
Belfield Innovation Park
Dublin 4, Ireland.

Distributor:
CERTIS UK
Suite 5, 3 Riverside
Granta Park
Great Abington
Cambridgeshire CB21 6AD
United Kingdom
Tel: +44 (0)845 373 0305
Fax: +44 (0)1223 891210
Email: infocertisuk@certiseurope.com
Website: www.certiseurope.co.uk

1.4. Emergency telephone number
- Emergency number: Certis Carechem24 multilingual 24 hours emergency number: +44 (0) 870 190 6777.
  For advice on medical emergencies, fires, spillages or chemical hazards only – phone: 0870 190 6777.
  For further advice for medical professionals - The National Poisons Information Service:
    Tel: 0870 600 6266 (UK only) or Dublin Tel: 0035 3 137 99 64/379966.
  For further advice for veterinary surgeons: 020 7635 9195.
SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute Tox. 4 (Oral) H302
STOT RE 2 H373
Aquatic Acute 1 H400
Aquatic Chronic 1 H410

Full text of hazard classes and H-statements: see section 16.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms:

- GHS07
- GHS08
- GHS09

Signal word: Warning

Contains: Flufenacet, Diflufenican

Hazard statements:

H302 - Harmful if swallowed.
H373 - May cause damage to organs (nervous system) through prolonged or repeated exposure if swallowed.
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements:

P280 - Wear protective eye protection/face protection.
P308+P311 - IF exposed or concerned: Call a POISON CENTER or doctor.
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.

EUH-statements:

EUH401 - To avoid risks to human health and the environment, comply with the instructions for use.
EUH208 - Contains Flufenacet(142459-58-3). May produce an allergic reaction.

2.3. Other hazards

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).
This mixture contains no substance considered to be very persistent and very bioaccumulative (vPvB).

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable.
### 3.2. Mixture

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flufenacet</td>
<td>(CAS No) 142459-58-3 (EC No) 604-290-5</td>
<td>33.6</td>
<td>Acute Tox. 4 (Oral), H302 Skin Sens. 1, H317 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410</td>
</tr>
<tr>
<td>Diflufenican</td>
<td>(CAS No) 83164-33-4 (EC no) 617-446-2</td>
<td>8.4</td>
<td>Aquatic Chronic 3, H412</td>
</tr>
<tr>
<td>Glycerin</td>
<td>(CAS No) 56-81-5  (EC no) 200-289-5</td>
<td>&gt; 1.0</td>
<td>Not classified.</td>
</tr>
</tbody>
</table>

Full text of H-statements: see section 16.

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

**First-aid measures general**: In the event of any complaints or symptoms, avoid further exposure.

**First-aid measures after inhalation**: IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. If symptoms persist call a doctor.

**First-aid measures after skin contact**: IF ON SKIN: Wash with plenty of soap and water, if available with polyethylene glycol 400. Remove contaminated clothing and shoes.
If skin irritation or rash occurs: Get medical advice/attention.

**First-aid measures after eye contact**: IF IN EYES: Rinse cautiously with water for at least 15 minutes, also under eyelides. Remove contact lenses, if present and easy to do. Continue rinsing. Consult an eye specialist.

**First-aid measures after ingestion**: IF SWALLOWED: Immediately call a POISON CENTER or doctor. Never give anything by mouth to an unconscious person.
Induce vomiting only, if:
1. Patient is fully conscious,
2. Medical aid is not readily available,
3. A significant amount (more than a mouthful) has been ingested,
4. Time since ingestion is less than 1 hour.
Vomit should not get into the respiratory tract.

#### 4.2. Most important symptoms and effects, both acute and delayed

The absorption of this product into the body may lead to the formation of methaemoglobin that, in sufficient concentration, causes cyanosis.

#### 4.3. Indication of any immediate medical attention and special treatment needed

The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.
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. In case of methaemoglobinemia, oxygen and specific antidotes (methylene blue/ toluidine blue) should be given.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

Suitable extinguishing media: Water spray
Dry chemical powder
Alcohol resistant foam
Carbon dioxide (CO₂).
**Unsuitable extinguishing media**

A solid water stream as it may cause the fire to scatter or spread.

**5.2. Special hazards arising from the substance or mixture**

**Fire hazard**

Combustion or thermal decomposition may generate toxic vapours: Hydrogen cyanide (hydrocyanic acid), Hydrogen fluoride, Carbon monoxide (CO), Nitrogen oxides (NOx), Sulphur oxides.

**5.3. Advice for firefighters**

**Firefighting instructions**

Exercise caution when fighting any chemical fire.

Fight fire from safe distance and protected location.

Do not breathe fumes

Cool closed containers exposed to fire with water spray

If possible, take the containers out of dangerous zone.

Contain fire-fighting water with dikes or absorbents to prevent migration and entry into sewers, streams or groundwater.

**Protection during firefighting**

Wear suitable protective clothing, gloves, eye/face protection and respiratory protection

Wear a self-contained breathing apparatus.

**SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

**Protective equipment**

Wear suitable protective clothing, gloves and eye/ face protection.

**Emergency procedures**

Evacuate area.

Ensure adequate ventilation.

Avoid direct contact with the substance.

Contain any spills with dikes or absorbents to prevent migration and entry into sewers, streams or groundwater.

**6.2. Environmental precautions**

Prevent entry to sewers and public waters.

Notify the authorities if product enters sewers or public waters.

**6.3. Methods and material for containment and cleaning up**

**Methods for cleaning up**

Clean up any spills as soon as possible, using an absorbent material to collect it.

Once absorbed collect spilled material with shovels, buckets and place in closed containers and label properly.

Remove as chemical waste, according to national or local legislation.

In the event of major spillage: contact an expert.

**6.4. Reference to other sections**

See Section 7 for information on handling and storage. See Section 8 for information on PPE. See section 13 on information regarding waste disposal.
SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling: Read label before use.

Avoid contact with eyes, skin, nose and mouth.

Wear suitable protective clothing, gloves and eye/face protection.

Opened containers must be carefully closed and kept upright to avoid leakage.

Hygiene measures: Always wash your hands immediately after handling this product, and once again before leaving the workplace.

Contaminated work clothing should not be allowed out of the workplace.

Do not eat, drink or smoke when using this product.

Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures: Provide adequate ventilation.

Storage conditions: Prevent unauthorised access.

Keep locked up and out of the reach of children.

Keep in original containers, tightly closed.

Keep away from food, drink and animal feedingstuffs.

Protect against frost.

Keep away from heat and direct sunlight.

Packaging materials: HDPE containers.

7.3. Specific end use(s)

Herbicide for agricultural use. Refer to the label.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Value Type</th>
<th>Exposure Limit</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA (Flufenacet)</td>
<td>0.47 mg/m³</td>
<td>Supplier</td>
</tr>
<tr>
<td>TWA (Diflufenican)</td>
<td>5.5 mg/m³</td>
<td>Supplier</td>
</tr>
<tr>
<td>TWA (Glycerin)</td>
<td>10 mg/m³</td>
<td>UKEH440 Workplace exposure limit</td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Appropriate engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection: Wear impervious gloves resistant to chemical. Nitrile rubber. (minimum thickness of 0.4 mm)

Eye protection: Safety goggles or a face shield. (conforming to EN166, Field of Use = 5 or equivalent)

Skin and body protection: Wear standard coveralls and Category 3 Type 4 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 there is a risk of significant exposure, consider a higher protective type suit.
### Respiratory protection
Respiratory protection is not required under anticipated circumstances of exposure. 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.

### Hygiene measures
- Remove and wash contaminated clothing before re-use.
- Do not eat, drink or smoke while handling the product.
- Clean gloves with soap and water before removing.
- Wash hands and face with soap and water before eating, drinking smoking and immediately after handling product.
- Clean equipment, premises and work clothes regularly.
- Work clothing should remain on the work area and stored separately from street clothes.

### Environmental exposure controls
Discharge into the environment must be avoided. Do not contaminate surface and groundwater.

---

#### 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><strong>Physical state</strong></td>
<td>Liquid</td>
</tr>
<tr>
<td><strong>Appearance</strong></td>
<td>Suspension</td>
</tr>
<tr>
<td><strong>Colour</strong></td>
<td>White to Beige</td>
</tr>
<tr>
<td><strong>Odour</strong></td>
<td>Weak, characteristic</td>
</tr>
<tr>
<td><strong>Odour threshold</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>pH (at 100%, 23°C)</strong></td>
<td>4.0 – 6.5</td>
</tr>
<tr>
<td><strong>Relative evaporation rate (butylacetate=1)</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Melting point</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Freezing point</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Boiling point</strong></td>
<td>&gt; 100 °C</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>No flash point</td>
</tr>
<tr>
<td><strong>Auto-ignition temperature</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Decomposition temperature</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Flammability (solid, gas)</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Vapour pressure</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Relative vapour density at 20 °C</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>1,19 g/cm³ at 20°C</td>
</tr>
<tr>
<td><strong>Solubility in water</strong></td>
<td>Dispersible</td>
</tr>
<tr>
<td><strong>Log P octanol/water at 20°C</strong></td>
<td>Flufenacet log Pow: 3.2</td>
</tr>
<tr>
<td></td>
<td>Diflufenican: log Pow: 4.2</td>
</tr>
<tr>
<td><strong>Log Kow</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Viscosity, kinematic</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Viscosity, dynamic</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Explosive properties</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Oxidising properties</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Explosive limits</strong></td>
<td>No data available</td>
</tr>
</tbody>
</table>

##### 9.2. Other information
No additional information available

---

#### SECTION 10: Stability and reactivity
10.1. Reactivity
The product is stable at normal handling and storage conditions.

10.2. Chemical stability
The product is stable at normal handling and storage conditions.

10.3. Possibility of hazardous reactions
Hazardous polymerization does not occur.
Is not explosive and does not exhibit oxidant properties.

10.4. Conditions to avoid
No additional information available

10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
Combustion or thermal decomposition may generate toxic vapours.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Oral: Harmful if swallowed.

<table>
<thead>
<tr>
<th>Firestorm (similar formulation)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>500 - 2000 mg/kg</td>
</tr>
<tr>
<td>LD50 dermal rat</td>
<td>&gt; 4000 mg/kg</td>
</tr>
<tr>
<td>LC50 inhalation rat</td>
<td>&gt; 2,078 mg/l/4h</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation: Not classified
Serious eye damage/irritation: Not classified
Respiratory or skin sensitisation: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
Development toxicity: Flufenacet caused developmental toxicity only at dose levels toxic to the dams (related to maternal toxicity)
Specific target organ toxicity (single exposure): Not classified
Specific target organ toxicity (repeated exposure): May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard: Not classified

SECTION 12: Ecological information

12.1. Toxicity

<table>
<thead>
<tr>
<th>Firestorm</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 Fishes (Cyprinus carpio)</td>
<td>54.9 mg/l (96h)</td>
</tr>
<tr>
<td>EC50 Daphnia</td>
<td>68.2 mg/l (48h)</td>
</tr>
<tr>
<td>EC50 (Pseudokirchneriella subcapitata)</td>
<td>0.00885 mg/l</td>
</tr>
</tbody>
</table>
### 12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Compound</th>
<th>Degradability</th>
<th>Persistence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flufenacet</td>
<td>Not readily biodegradable.</td>
<td>Not persistence in soil</td>
</tr>
<tr>
<td>Diflufenican</td>
<td>Not readily biodegradable.</td>
<td>Moderate to highly persistence in soil</td>
</tr>
</tbody>
</table>

### 12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Compound</th>
<th>BCF</th>
<th>Bioaccumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flufenacet</td>
<td>71 =&gt;</td>
<td>Does not bioaccumulate.</td>
</tr>
<tr>
<td>Diflufenican</td>
<td>1,596 =&gt;</td>
<td>Does not bioaccumulate.</td>
</tr>
</tbody>
</table>

### 12.4. Mobility in soil

Flufenacet: Moderately mobile in soils (Koc: 202)
Diflufenican: Slightly mobile in soils (Koc: 3417)

### 12.5. Results of PBT and vPvB assessment

No additional information available

### 12.6. Other adverse effects

No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Dispose according to local regulations.

### SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

#### 14.1. UN number

<table>
<thead>
<tr>
<th>UN-No.</th>
<th>: 3082</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN-No.(IATA)</td>
<td>: 3082</td>
</tr>
</tbody>
</table>

#### 14.2. UN proper shipping name

| Proper Shipping Name | : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Flufenacet + Diflufenican) |
| Transport document description | : UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Flufenacet + Diflufenican), 9, III, (E) |

#### 14.3. Transport hazard class(es)

| Class (UN) | : 9 |
| Class (IATA) | : 9 - Miscellaneous dangerous goods. |
| Hazard labels (UN) | : 9 |

#### 14.4. Packing group

| Packing group (UN) | : III |
14.5. Environmental hazards

Dangerous for the environment
Marine pollutant

Other information : No supplementary information available.

14.6. Special precautions for user

14.6.1. Overland transport

Hazard identification number (Kemler No.) : 90
Classification code (UN) : M6
Orange plates : 90
3082

14.6.2. Transport by sea

EmS-No. (1) : F-A
EmS-No. (2) : S-F

14.6.3. Air transport

No additional information available

14.7. 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

15.1.1. EU-Regulations

Contains no REACH substances with Annex XVII restrictions
Contains no substance on the REACH candidate list
Contains no REACH Annex XIV substances

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information


Full text of H- and EUH-statements:

<table>
<thead>
<tr>
<th>Acute Tox. 4 (Oral)</th>
<th>Acute toxicity (oral), Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic Acute 1</td>
<td>Hazardous to the aquatic environment — Acute Hazard, Category 1</td>
</tr>
<tr>
<td>Aquatic Chronic 1</td>
<td>Hazardous to the aquatic environment — Chronic Hazard, Category 1</td>
</tr>
<tr>
<td>Aquatic Chronic 3</td>
<td>Hazardous to the aquatic environment — Chronic Hazard, Category 3</td>
</tr>
<tr>
<td>Skin Sens. 1</td>
<td>Sensitisation — Skin, Category 1</td>
</tr>
<tr>
<td>STOT RE 2</td>
<td>Specific target organ toxicity — Repeated exposure, Category 2</td>
</tr>
<tr>
<td>H302</td>
<td>Harmful if swallowed</td>
</tr>
<tr>
<td>H317</td>
<td>May cause an allergic skin reaction</td>
</tr>
<tr>
<td>H373</td>
<td>May cause damage to organs (nervous system) through prolonged or repeated exposure if swallowed.</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>H400</td>
<td>Very toxic to aquatic life</td>
</tr>
<tr>
<td>H410</td>
<td>Very toxic to aquatic life with long lasting effects</td>
</tr>
<tr>
<td>H412</td>
<td>Harmful to aquatic life with long lasting effects</td>
</tr>
<tr>
<td>EUH208</td>
<td>Contains . May produce an allergic reaction</td>
</tr>
<tr>
<td>EUH401</td>
<td>To avoid risks to human health and the environment, comply with the instructions for use</td>
</tr>
</tbody>
</table>