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

1.1 Product identifier

- Trade name: glutaral

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

No further relevant information available.

1.3 Details of the supplier of the safety data sheet

- Supplier:
  Agar Scientific Ltd
  Parsonage Lane
  Stansted CM24 8GF
  United Kingdom
  sales@agarscientific.com
  Tel: +44 (0) 1279 813 519

1.4 Emergency telephone number:

24 hours: +44 (0)1856 407333

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

<table>
<thead>
<tr>
<th>GHS06</th>
<th>skull and crossbones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Tox. 3</td>
<td>H301 Toxic if swallowed.</td>
</tr>
<tr>
<td>Acute Tox. 2</td>
<td>H330 Fatal if inhaled.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GHS08</th>
<th>health hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resp. Sens. 1</td>
<td>H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GHS05</th>
<th>corrosion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin Corr. 1B</td>
<td>H314 Causes severe skin burns and eye damage.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GHS09</th>
<th>environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic Acute 1</td>
<td>H400 Very toxic to aquatic life.</td>
</tr>
<tr>
<td>Aquatic Chronic 2</td>
<td>H411 Toxic to aquatic life with long lasting effects.</td>
</tr>
</tbody>
</table>

(Contd. on page 2)
Trade name: glutaral

(Contd. of page 1)

Skin Sens. 1A H317 May cause an allergic skin reaction.
STOT SE 3 H335 May cause respiratory irritation.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

T; Toxic
R23/25: Toxic by inhalation and if swallowed.

C; Corrosive
R34: Causes burns.

Xn; Sensitising
R42/43: May cause sensitisation by inhalation and skin contact.

N; Dangerous for the environment
R50: Very toxic to aquatic organisms.

Information concerning particular hazards for human and environment: Not applicable.

2.2 Label elements

2.3 Other hazards

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

(Contd. on page 3)
SECTION 3: Composition/information on ingredients

- 3.1 Chemical characterisation: Substances
  - CAS No. Description
    - 111-30-8 glutaral
  - Identification number(s)
    - EC number: 203-856-5
    - Index number: 605-022-00-X

SECTION 4: First aid measures

- 4.1 Description of first aid measures
  - General information:
    - Immediately remove any clothing soiled by the product.
    - Remove breathing equipment only after contaminated clothing have been completely removed.
    - In case of irregular breathing or respiratory arrest provide artificial respiration.
  - After inhalation:
    - Supply fresh air or oxygen; call for doctor.
    - No adverse effects are anticipated from inhalation.
  - After skin contact:
    - Wash with water and soap and rinse thoroughly.
  - After eye contact:
    - Rinse opened eye for several minutes under running water. Then consult a doctor.
  - After swallowing:
    - Do not induce vomiting; call for medical help immediately.
    - Drink plenty of water and provide fresh air. Call for a doctor immediately.

- 4.2 Most important symptoms and effects, both acute and delayed
  - No further relevant information available.

- 4.3 Indication of any immediate medical attention and special treatment needed
  - No further relevant information available.

SECTION 5: Firefighting measures

- 5.1 Extinguishing media
  - Suitable extinguishing agents: Water fog - dried resin only.
- 5.2 Special hazards arising from the substance or mixture
  - During heating or in case of fire poisonous gases are produced.
- 5.3 Advice for firefighters
  - Protective equipment: Positive pressure self-contained breathing apparatus.

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures
  - Wear gloves.
  - Wear protective gloves and glasses.
- 6.2 Environmental precautions:
  - Do not allow product to reach sewage system or any water course.
  - Inform respective authorities in case of seepage into water course or sewage system.
  - Dilute with plenty of water.
  - Do not allow to enter sewers/ surface or ground water.
- 6.3 Methods and material for containment and cleaning up:
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Use neutralising agent.
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.
Trade name: glutaral

6.4 Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.
Information about fire - and explosion protection:
Extinguishing media: Water fog - dried resin only.

7.2 Conditions for safe storage, including any incompatibilities
Storage:
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility: Not required.
Further information about storage conditions: Keep container tightly sealed.

7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>111-30-8 glutaral</th>
</tr>
</thead>
<tbody>
<tr>
<td>WEL</td>
</tr>
<tr>
<td>Sen</td>
</tr>
</tbody>
</table>

Additional information: The lists valid during the making were used as basis.

8.2 Exposure controls
Personal protective equipment:
General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.
Respiratory protection:
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

(Contd. on page 5)
SECTION 9: Physical and chemical properties

<table>
<thead>
<tr>
<th>9.1 Information on basic physical and chemical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>· General Information</td>
</tr>
<tr>
<td>· Appearance:</td>
</tr>
<tr>
<td>· Form: Fluid</td>
</tr>
<tr>
<td>· Colour: Colourless</td>
</tr>
<tr>
<td>· Odour: Unpleasant</td>
</tr>
<tr>
<td>· Odour threshold: Not determined.</td>
</tr>
<tr>
<td>· pH-value: Not determined.</td>
</tr>
<tr>
<td>· Change in condition</td>
</tr>
<tr>
<td>· Melting point/freezing point: -6 °C</td>
</tr>
<tr>
<td>· Initial boiling point and boiling range: 187-189 °C</td>
</tr>
<tr>
<td>· Flash point: 71 °C</td>
</tr>
<tr>
<td>· Flammability (solid, gas): Not applicable.</td>
</tr>
<tr>
<td>· Ignition temperature:</td>
</tr>
<tr>
<td>· Decomposition temperature: Not determined.</td>
</tr>
<tr>
<td>· Auto-ignition temperature: Not determined.</td>
</tr>
<tr>
<td>· Explosive properties:</td>
</tr>
<tr>
<td>· Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>· Explosion limits:</td>
</tr>
<tr>
<td>· Lower: Not determined.</td>
</tr>
<tr>
<td>· Upper: Not determined.</td>
</tr>
<tr>
<td>· Vapour pressure at 70 °C: 13 hPa</td>
</tr>
<tr>
<td>· Density at 20 °C: 1.05 g/cm³</td>
</tr>
<tr>
<td>· Relative density: Not determined.</td>
</tr>
<tr>
<td>· Vapour density: Not determined.</td>
</tr>
<tr>
<td>· Evaporation rate: Not determined.</td>
</tr>
<tr>
<td>· Solubility in / Miscibility with water: Fully miscible.</td>
</tr>
<tr>
<td>· Partition coefficient: n-octanol/water: Not determined.</td>
</tr>
<tr>
<td>· Viscosity:</td>
</tr>
<tr>
<td>· Dynamic: Not determined.</td>
</tr>
<tr>
<td>· Kinematic: Not determined.</td>
</tr>
</tbody>
</table>

(Contd. on page 6)
SECTION 10: Stability and reactivity

- 10.1 Reactivity No further relevant information available.
- 10.2 Chemical stability
  - Thermal decomposition / conditions to be avoided:
    No decomposition if used according to specifications.
- 10.3 Possibility of hazardous reactions No dangerous reactions known.
- 10.4 Conditions to avoid No further relevant information available.
- 10.5 Incompatible materials: No further relevant information available.
- 10.6 Hazardous decomposition products: No dangerous decomposition products known.

SECTION 11: Toxicological information

- 11.1 Information on toxicological effects
  - Acute toxicity
    Toxic if swallowed.
    Fatal if inhaled.
  - LD/LC50 values relevant for classification:
    | Oral   | LD50  | 134 mg/kg (rat) |
    | Dermal | LD50  | 2560 mg/kg (rabbit) |
  - Skin corrosion/irritation
    Causes severe skin burns and eye damage.
  - Serious eye damage/irritation
    Causes severe skin burns and eye damage.
  - Respiratory or skin sensitisation
    May cause allergy or asthma symptoms or breathing difficulties if inhaled.
    May cause an allergic skin reaction.
  - CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)
    - Germ cell mutagenicity Based on available data, the classification criteria are not met.
    - Carcinogenicity Based on available data, the classification criteria are not met.
    - Reproductive toxicity Based on available data, the classification criteria are not met.
  - STOT-single exposure
    May cause respiratory irritation.
  - STOT-repeated exposure Based on available data, the classification criteria are not met.
  - Aspiration hazard Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

- 12.1 Toxicity
  - Aquatic toxicity: No further relevant information available.
- 12.2 Persistence and degradability No further relevant information available.
- 12.3 Bioaccumulative potential No further relevant information available.
- 12.4 Mobility in soil No further relevant information available.
- Ecotoxicological effects:
  - Remark:
    Very toxic for fish
    Toxic for fish
- Additional ecological information:
  - General notes:
    Water hazard class 3 (German Regulation) (Assessment by list): extremely hazardous for water
    Do not allow product to reach ground water, water course or sewage system, even in small quantities.
    Must not reach sewage water or drainage ditch undiluted or unneutralised.
    Danger to drinking water if even extremely small quantities leak into the ground.
    Also poisonous for fish and plankton in water bodies.
Trade name: glutaral

- Very toxic for aquatic organisms
- Toxic for aquatic organisms

12.5 Results of PBT and vPvB assessment
- PBT: Not applicable.
- vPvB: Not applicable.
- Other adverse effects: No further relevant information available.

SECTION 13: Disposal considerations

- 13.1 Waste treatment methods
- Recommendation
  - Must not be disposed together with household garbage. Do not allow product to reach sewage system.
  - Recommendation: Disposal must be made according to official regulations.
- Recommended cleansing agents: Water, if necessary together with cleansing agents.

SECTION 14: Transport information

- 14.1 UN-Number
  - ADR, IMDG, IATA
    - UN2927
- 14.2 UN proper shipping name
  - ADR
    - 2927 TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (glutaral), ENVIRONMENTALLY HAZARDOUS
  - IMDG
    - TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (glutaral), MARINE POLLUTANT
  - IATA
    - TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (glutaral)

- 14.3 Transport hazard class(es)
  - ADR
    - Class 6.1 Toxic substances.
    - Label 6.1+8
  - IMDG
    - Class 6.1 Toxic substances.
    - Label 6.1/8
  - IATA
    - Class 6.1 Toxic substances.
    - Label 6.1 (8)
**Section 14: Transport and In-plant Transport**

- **14.4 Packing group**
  - ADR, IMDG, IATA

- **14.5 Environmental hazards:**
  - Environmental hazard: Environmentally hazardous substance, liquid; Marine Pollutant
  - Special marking (ADR): Symbol (fish and tree)

- **14.6 Special precautions for user**
  - Warning: Toxic substances.
  - Danger code (Kemler): 668
  - EMS Number: F-A,S-B
  - Stowage Category: B
  - Stowage Code: SW2 Clear of living quarters.

- **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**
  - Transport/Additional information:
    - ADR
    - Limited quantities (LQ): 0
    - Excepted quantities (EQ): Code: E5
      - Maximum net quantity per inner packaging: 1 ml
      - Maximum net quantity per outer packaging: 300 ml
    - Transport category: 1
    - Tunnel restriction code: C/E
    - IMDG
      - Limited quantities (LQ): 0
      - Excepted quantities (EQ): Code: E5
        - Maximum net quantity per inner packaging: 1 ml
        - Maximum net quantity per outer packaging: 300 ml
    - UN "Model Regulation": UN 2927 TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (GLUTARAL), 6.1 (8), I, ENVIRONMENTALLY HAZARDOUS

**Section 15: Regulatory information**

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - Directive 2012/18/EU
  - Named dangerous substances - ANNEX I: Substance is not listed.
  - Seveso category
    - H2 ACUTE TOXIC
    - E1 Hazardous to the Aquatic Environment
  - Qualifying quantity (tonnes) for the application of lower-tier requirements: 50 t
  - Qualifying quantity (tonnes) for the application of upper-tier requirements: 200 t
  - REGULATION (EC) No 1907/2006 ANNEX XVII: Conditions of restriction: 3

- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

**Section 16: Other information**

This information is based on our present knowledge and should assist the user with the safe handling of this material when properly applied. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing SDS:** Sales department
Contact:
sales@agarscientific.com
Tel: +44 (0) 1279 813 519

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Acute Tox. 3: Acute toxicity – Category 3
Acute Tox. 2: Acute toxicity – Category 2
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Resp. Sens. 1: Respiratory sensitisation – Category 1
Skin Sens. 1A: Skin sensitisation – Category 1A
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2