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

1.1. Product identifier

- **Product name:** 4,4-DIMETHOXYBUTAN-2-ONE
- **CAS number:** 5436-21-5
- **EINECS number:** 226-605-1
- **Product code:** OR59432
- **Synonyms:** ACETYLACETALDEHYDE DIMETHYL ACETAL
  3-KETOBTYRALDEHYDE DIMETHYL ACETAL
  3-OXOBUTYRALDEHYDE DIMETHYL ACETAL

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

1.3. Details of the supplier of the safety data sheet

- **Company name:** Apollo Scientific Ltd
  Units 3 & 4
  Parkway
  Denton
  Manchester
  M34 3SG
  UK
- **Tel:** 0161 337 9971
- **Fax:** 0161 336 6932
- **Email:** david.tideswell@apolloscientific.co.uk

1.4. Emergency telephone number

Section 2: Hazards identification

2.1. Classification of the substance or mixture

- **Classification under CLP:** Flam. Liq. 3: H226
- **Most important adverse effects:** Flammable liquid and vapour.

2.2. Label elements

- **Label elements:**
  - **Hazard statements:** H226: Flammable liquid and vapour.
  - **Signal words:** Warning
  - **Hazard pictograms:** GHS02: Flame
**SAFETY DATA SHEET**

4,4-DIMETHOXYBUTAN-2-ONE

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**Precautionary statements:**

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

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### 2.3. Other hazards

**Other hazards:** In use, may form flammable / explosive vapour-air mixture.

**PBT:** This product is not identified as a PBT/vPvB substance.

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### Section 3: Composition/information on ingredients

#### 3.1. Substances

**Chemical identity:** 4,4-DIMETHOXYBUTAN-2-ONE

**CAS number:** 5436-21-5

**EINECS number:** 226-605-1

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### Section 4: First aid measures

#### 4.1. Description of first aid measures

**Skin contact:** Remove all contaminated clothes and footwear immediately unless stuck to skin. Wash immediately with plenty of soap and water.

**Eye contact:** Bathe the eye with running water for 15 minutes.

**Ingestion:** Wash out mouth with water.

**Inhalation:** Consult a doctor.

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

**Skin contact:** There may be mild irritation at the site of contact.

**Eye contact:** There may be irritation and redness.

**Ingestion:** There may be irritation of the throat.

**Inhalation:** There may be irritation of the throat with a feeling of tightness in the chest.

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### Section 5: Fire-fighting measures

#### 5.1. Extinguishing media

**Extinguishing media:** Carbon dioxide, dry chemical powder, foam. Suitable extinguishing media for the surrounding fire should be used.

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

**Exposure hazards:** Flammable. Forms explosive air-vapour mixture. In combustion emits toxic fumes of carbon dioxide / carbon monoxide.

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#### 5.3. Advice for fire-fighters

**Advice for fire-fighters:** Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

[cont...]
Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to section 8 of SDS for personal protection details. Notify the police and fire brigade immediately. Eliminate all sources of ignition. Turn leaking containers leak-side up to prevent the escape of liquid.

6.2. Environmental precautions

Environmental precautions: Do not discharge into drains or rivers. Contain the spillage using bunding.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Absorb into dry earth or sand. Transfer to a closable, labelled salvage container for disposal by an appropriate method. Do not use equipment in clean-up procedure which may produce sparks.

6.4. Reference to other sections

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Smoking is forbidden. Use non-sparking tools. Keep container tightly closed. Close container after use or when empty. Ensure there is sufficient ventilation of the area. Avoid the formation or spread of mists in the air. Only use in fume hood.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep container tightly closed. Keep away from sources of ignition. Prevent the build up of electrostatic charge in the immediate area. Ensure lighting and electrical equipment are not a source of ignition. Store under Argon.

Suitable packaging: Must only be kept in original packaging.

7.3. Specific end use(s)

Specific end use(s): No data available.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Workplace exposure limits: No data available.

DNEL/PNEC Values

DNEL / PNEC No data available.

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area. Ensure lighting and electrical equipment are not a source of ignition.

Respiratory protection: Respiratory protection not required.

Hand protection: Protective gloves.
SAFETY DATA SHEET
4,4-DIMETHOXYBUTAN-2-ONE

Eye protection: Safety glasses. Ensure eye bath is to hand.
Skin protection: Protective clothing.

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>State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>Colourless</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>Decomposes</td>
</tr>
<tr>
<td>Boiling point/range °C</td>
<td>170-172</td>
</tr>
<tr>
<td>Melting point/range °C</td>
<td>-83</td>
</tr>
<tr>
<td>Flash point °C</td>
<td>57</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.996</td>
</tr>
</tbody>
</table>

9.2. Other information

Other information: No data available.

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: Stable under normal conditions. Stable at room temperature.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions.

10.4. Conditions to avoid


10.5. Incompatible materials

Materials to avoid: Strong oxidising agents. Strong acids.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes of carbon dioxide / carbon monoxide.

Section 11: Toxicological information

11.1. Information on toxicological effects

Toxicity values: No data available.

Symptoms / routes of exposure

- Skin contact: There may be mild irritation at the site of contact.
- Eye contact: There may be irritation and redness.
- Ingestion: There may be irritation of the throat.
- Inhalation: There may be irritation of the throat with a feeling of tightness in the chest.

[cont...]
Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values: No data available.

12.2. Persistence and degradability

Persistence and degradability: No data available.

12.3. Bioaccumulative potential

Bioaccumulative potential: No data available.

12.4. Mobility in soil

Mobility: No data available.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: No data available.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Transfer to a suitable container and arrange for collection by specialised disposal company. MATERIAL SHOULD BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS

Disposal of packaging: Dispose of as special waste in compliance with local and national regulations Observe all federal, state and local environmental regulations.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

14.1. UN number

UN number: UN1224

14.2. UN proper shipping name

Shipping name: KETONES, LIQUID, N.O.S.

(4,4-Dimethoxybutan-2-one)

14.3. Transport hazard class(es)

Transport class: 3

14.4. Packing group

Packing group: III
## 14.5. Environmental hazards

<table>
<thead>
<tr>
<th>Environmentally hazardous:</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine pollutant:</td>
<td>No</td>
</tr>
</tbody>
</table>

## 14.6. Special precautions for user

- **Tunnel code:** D/E
- **Transport category:** 3

## Section 15: Regulatory information

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

A chemical safety assessment has not been carried out for the substance or the mixture by the supplier.

### 15.2. Chemical Safety Assessment

**Chemical safety assessment:**

A chemical safety assessment has not been carried out for the substance or the mixture by the supplier.

## Section 16: Other information

### Other information

- **Other information:** This safety data sheet is prepared in accordance with Commission Regulation (EU) No 453/2010.


### Phrases used in s.2 and s.3:

**H226:** Flammable liquid and vapour.

### Legal disclaimer:

The material is intended for research purposes only and should be handled exclusively by those who have been fully trained in safety, laboratory and chemical handling procedures. The above information is believed to be correct to the best of our knowledge. The above information is believed to be correct to the best of our knowledge at the date of its publication, but should not be considered to be all inclusive. It should be used only as a guide for safe handling, storage, transportation and disposal. We cannot guarantee that the hazards detailed in this document are the only hazards that exist for this product. This is not a warranty and Apollo Scientific Ltd shall not be held liable for any damage resulting from handling or from contact with the above product.