**SECTION 1: Identification**

### 1.1. Product identifiers

- **Product Code**: Kumi2F31
- **Substance name**: Diethyl (bromodifluoromethyl)phosphonate
- **Synonym**: Bromodifluoromethylphosphonic acid diethyl ester
- **Trademark**: Fluora
- **CAS No.**: 65094-22-6
- **Formula**: C_{5}H_{10}BrF_{2}O_{3}P
- **Reach No.**: Exempted from registration

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

Identified Uses:
- Laboratory chemicals
- Manufacture of substances
- Scientific research and development

### 1.3. Details of the supplier of the safety data sheet

Kumidas SA
Avenue Louise 279,1050, Brussels, Belgium
T: +32(0) 2 699 82 36
F: +32(0) 2 699 82 36 40
E: info@kumidas.com
W: www.kumidas.com

### 1.4. Emergency telephone number

Emergency Phone #: +32(0)484 58 71 75

**SECTION 2: Hazard(s) identification**

### 2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008[EC-GHS/CLP]
Not a hazardous substance or mixture.

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Not a hazardous substance or mixture.

### 2.2. Label elements

This product does not need to be labelled in accordance with EC directives or respective national laws.

### 2.3. Other hazards

This substance/mixture contains no components considered to be either persistent, bio-accumulative and toxic (PBT), or very persistent and very bio-accumulative (vPvB) at levels of 0.1% or higher.

**SECTION 3: Composition/information on ingredients**

### 3.1. Substances

- **Substance type**: Mono-constituent
- **Formula**: C_{5}H_{10}BrF_{2}O_{3}P
- **Molecular weight**: 267.01 g/mol

No components need to be disclosed according to the applicable regulations.

<table>
<thead>
<tr>
<th>Component</th>
<th>Product identifier</th>
<th>Concentration</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethyl (bromodifluoromethyl)phosphonate (Main constituent)</td>
<td>(CAS No.) 65094-22-6</td>
<td>≤ 100%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Full text of H-statements: see section 16
Diethyl (bromodifluoromethyl)phosphonate
Safety Data Sheet

3.2. Mixture
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures
First-aid measures general advice: In case of accident or if you feel unwell, seek medical advice immediately (show this SDS to the doctor in attendance). Move the affected personnel away from the contaminated area.
First-aid measures if inhaled: Move person to fresh air and keep comfortable for breathing. If not breathing, give artificial respiration. Consult a physician.
First-aid measures in case of skin contact: Wash off with soap and plenty of water. Consult a physician.
First-aid measures in case of eye contact: Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Consult a physician.
First-aid measures if swallowed: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth out with water. Consult a physician.

4.2. Most important symptoms and effects, both acute and delayed
Symptoms/injuries: The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

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

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media: Use water spray, alcohol resistant foam, dry chemical or carbon dioxide.

5.2. Special hazards arising from the substance or mixture
No data available.

5.3. Advice for firefighters
Firefighting instructions: In case of fire: Evacuate area.
Protection during firefighting: Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
For personal protection see section 8.

6.2. Environmental precautions
Avoid release to the environment. Notify authorities if product enters drains or public waters.

6.3. Methods and material for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4. Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.
For precautions see section 2.2.

7.2. Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
Handle and store under inert gas.

7.3. Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.
# Diethyl (bromodifluoromethyl)phosphonate

## Safety Data Sheet

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters
Contains no substances with occupational exposure limit value.

#### 8.2. Exposure controls

**Appropriate engineering controls**
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**Personal protective equipment**

- **Eye/face protection**
  Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

- **Skin protection**
  Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

- **Body protection**
  Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

- **Respiratory protection**
  For nuisance exposures use type P95 (US) or type P2 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**
Don’t let product enter drains.

### 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>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>99-102°C (16 Torr)</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt;113 °C (closed cup)</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>Explosion limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor density</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.503g/ml at 25 °C</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>267.02 g/mol</td>
</tr>
<tr>
<td>Solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
</tbody>
</table>

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

---

18/04/2017  EN (English UK)  SDS ID: kumiaF31  3/5
Diethyl (bromodifluoromethyl)phosphonate

Safety Data Sheet

SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

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

10.3. Possibility of hazardous reactions
No additional information available

10.4. Conditions to avoid
No data available.

10.5. Incompatible materials
Strong oxidizing agents.

10.6. Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Oxides of phosphorus, Hydrogen bromide gas, Hydrogen fluoride.
Other decomposition products - No data available.
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Effect</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>No data available</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>No data available</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>No data available</td>
</tr>
<tr>
<td>Respiratory or skin sensitization</td>
<td>No data available</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>No data available</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>No data available</td>
</tr>
<tr>
<td>Specific target organ toxicity(single exposure)</td>
<td>May cause respiratory irritation.</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>No data available</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>No data available</td>
</tr>
<tr>
<td>Additional Information</td>
<td>RETCS: Not available.</td>
</tr>
</tbody>
</table>

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1. Toxicity
No additional information available

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available

12.5. Other adverse effects
No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.
Diethyl (bromodifluoromethyl)phosphonate
Safety Data Sheet

SECTION 14: Transport information

14.1. UN number
ADR/RID: -
IMDG: -
IATA: -

14.2. UN proper shipping name
ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Not dangerous goods

14.3. Transport hazard class (es)
ADR/RID: -
IMDG: -
IATA: -

14.4. Packaging group
ADR/RID: -
IMDG: -
IATA: -

14.5. Environmental hazards
ADR/RID: no
IMDG: Marine pollutant: no
IATA: no

14.6. Special precautions for user
No data available

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2. Chemical safety assessment
For this product, a chemical safety assessment was not carried out.

SECTION 16: Other information

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

| A hazardous substance or mixture | No |

16.2. Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It, therefore, does not represent any guarantee of the properties of the product. Kumidas shall not be held liable or any damage resulting from handling or from contact with the above product.