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

1.1. Product identifier
Product name: ILFORD NUCLEAR EMULSION IN GEL FORM K5D
Product No.: Reference 10580
Internal Id: 1531815
Container size: 100 ml Glass bottle

1.2. Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Photographic Silver Halide Emulsion

1.3. Details of the supplier of the safety data sheet
Supplier: HARMAN technology Ltd
Ilford Way
Mobberley
Knutsford
Cheshire WA16 7JL
http://www.harmantechnology.com
Tel: +44(0)1565 650000
Fax: +44(0)1565 872734
Contact Person: HS&E Advisor Dr Trevor Rhodes Tel: +44(0)1565 650000, email: trevor.rhodes@harmantechnology.com

1.4. Emergency telephone number
Australia: 1-800-557346
UK and elsewhere: +44(0) 207 858 1228

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture
Classification (EC 1272/2008)
- Physical and Chemical Hazards: Not classified.
- Human health: Not classified.
- Environment: Aquatic Acute 1 - H400; Aquatic Chronic 1 - H410

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

2.2. Label elements
Label In Accordance With (EC) No. 1272/2008

Signal Word: Warning
Hazard Statements
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements
P273 Avoid release to the environment.
P391 Collect spillage.
P501 Dispose of contents/container in accordance with local regulations.

2.3. Other hazards
No information available.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

<table>
<thead>
<tr>
<th>ETHANOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS-No.: 64-17-5</td>
</tr>
<tr>
<td>Classification (EC 1272/2008)</td>
</tr>
<tr>
<td>Flam. Liq. 2 - H225</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SILVER BROMIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS-No.: 7785-23-1</td>
</tr>
<tr>
<td>Classification (EC 1272/2008)</td>
</tr>
<tr>
<td>Aquatic Acute 1 - H400</td>
</tr>
<tr>
<td>Aquatic Chronic 1 - H410</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SILVER IODIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS-No.: 7783-97-3</td>
</tr>
<tr>
<td>Classification (EC 1272/2008)</td>
</tr>
<tr>
<td>Aquatic Acute 1 - H400</td>
</tr>
<tr>
<td>Aquatic Chronic 1 - H410</td>
</tr>
</tbody>
</table>

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation
Unlikely route of exposure as the product does not contain volatile substances.

Ingestion
Rinse mouth thoroughly. Get medical attention if any discomfort continues.

Skin contact
Wash skin thoroughly with soap and water. Get medical attention promptly if symptoms occur after washing.

Eye contact
Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyelids widely. If irritation persists: Seek medical attention and bring along these instructions.

4.2. Most important symptoms and effects, both acute and delayed
Inhalation
No specific symptoms noted.

Ingestion
No specific symptoms noted.

Skin contact
No specific symptoms noted.

Eye contact
May cause temporary eye irritation.

4.3. Indication of any immediate medical attention and special treatment needed
No specific first aid measures noted.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Extinguishing media
This product is not flammable. Use extinguishing media appropriate for surrounding fire.

5.2. Special hazards arising from the substance or mixture

Unusual Fire & Explosion Hazards
No unusual fire or explosion hazards noted.

5.3. Advice for firefighters

Special Fire Fighting Procedures
No specific fire fighting procedure given.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Follow precautions for safe handling described in this safety data sheet.

6.2. Environmental precautions

Prevent entry into drains.

6.3. Methods and material for containment and cleaning up

Wear necessary protective equipment. Do not contaminate water sources or sewer. Spillage should be collected for recycling.

6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Read and follow manufacturer's recommendations. Avoid contact with skin and eyes.

7.2. Conditions for safe storage, including any incompatibilities

Store in tightly closed original container in a dry, cool and well-ventilated place. Store at temperatures below 10°C Store above freezing. Only open in darkroom.

Storage Class
Chemical storage.

7.3. Specific end use(s)

The identified uses for this product are detailed in Section 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters
ILFORD NUCLEAR EMULSION IN GEL FORM K5D

<table>
<thead>
<tr>
<th>Name</th>
<th>STD</th>
<th>TWA - 8 Hrs</th>
<th>STEL - 15 Min</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETHANOL</td>
<td>WEL</td>
<td>1000 ppm</td>
<td>1920 mg/m3</td>
<td></td>
</tr>
</tbody>
</table>

WEL = Workplace Exposure Limit.

8.2. Exposure controls

Protective equipment

Engineering measures
Provide adequate ventilation.

Hand protection
Use suitable protective gloves if risk of skin contact.

Eye protection
Use eye protection.

Hygiene measures
Wash promptly with soap & water if skin becomes contaminated.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Solid or liquid (may vary). Jelly-like</td>
</tr>
<tr>
<td>Colour</td>
<td>Yellow</td>
</tr>
<tr>
<td>Odour</td>
<td>Odourless</td>
</tr>
<tr>
<td>Solubility</td>
<td>Miscible with water</td>
</tr>
<tr>
<td>Initial boiling point and boiling range (°C)</td>
<td>&gt;100</td>
</tr>
<tr>
<td>Melting point (°C)</td>
<td>&gt;30</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.3 20</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>- Not Known</td>
</tr>
<tr>
<td>pH-Value, Conc. Solution</td>
<td>5.5</td>
</tr>
</tbody>
</table>

9.2. Other information

Not available.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity
No specific reactivity hazards associated with this product.

10.2. Chemical stability
Stable under normal temperature conditions.

10.3. Possibility of hazardous reactions
Hazardous Polymerisation
Will not polymerise.

10.4. Conditions to avoid
Avoid excessive heat for prolonged periods of time.

10.5. Incompatible materials
Materials To Avoid
Avoid contact with other photographic solutions and/or cleaning compounds.

10.6. Hazardous decomposition products
No specific hazardous decomposition products noted.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Toxicological information
This chemical formulation has not been tested for health effects. Exposure effects listed are based on existing health data for the individual components that comprise the mixture.

Inhalation
Unlikely to be hazardous by inhalation because of the low vapour pressure of the substance at ambient temperature.

Skin contact
Liquid may irritate skin.

Eye contact
May cause temporary eye irritation.

Health Warnings
May cause discomfort if swallowed.

Route of entry
Ingestion. Skin and/or eye contact.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity
The product contains a substance which is very toxic to aquatic organisms and which may cause long term adverse effects in the aquatic environment.

12.2. Persistence and degradability
Degradability
No data available.

12.3. Bioaccumulative potential
Bioaccumulative potential
No data available on bioaccumulation.

12.4. Mobility in soil
Mobility:
The product contains substances which are insoluble in water and which sediment in water systems.

12.5. Results of PBT and vPvB assessment
This product does not contain any PBT or vPvB substances.

12.6. Other adverse effects
Not available.

SECTION 13: DISPOSAL CONSIDERATIONS

General information
Dispose of in accordance with local regulations.
13.1. Waste treatment methods
Recover and reclaim or recycle, if practical.

SECTION 14: TRANSPORT INFORMATION

General This product is classifiable as environmentally hazardous (UN 3077) but under the small quantity exemption of ADR SP 375, IATA SP A197, and IMDG 2.10.2.7 it is not required to be transported as Dangerous Goods.

14.1. UN number
Not relevant

14.2. UN proper shipping name
Not relevant

14.3. Transport hazard class(es)
Not relevant

14.4. Packing group
Not relevant

14.5. Environmental hazards
Environmentally Hazardous Substance/Marine Pollutant
Not relevant.

14.6. Special precautions for user
Not relevant

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable.

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Approved Code Of Practice
Classification and Labelling of Substances and Preparations Dangerous for Supply.
EU Legislation
National Regulations
The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 No 716

15.2. Chemical Safety Assessment
No chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

General information
HARMAN technology Ltd believe the information and recommendations contained herein are based on correct and factual data. However, no express or implied guarantee or warranty of any kind is made with respect to this information. Use this information only to supplement other information you have gathered and then make an independent determination about the completeness and suitability of all information to ensure the proper use and disposal of this product and the health and safety of employees and customers.
ILFORD NUCLEAR EMULSION IN GEL FORM K5D

Information Sources

Issued By
HS&E Advisor Dr Trevor Rhodes Tel: +44(0)1565 650000, email: trevor.rhodes@harmantechnology.com

Revision Date
05/02/2015

Revision
2

Supersedes date
15/09/2010

Risk Phrases In Full
R11 Highly flammable
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Hazard Statements In Full
H225 Highly flammable liquid and vapour.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.