Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Identification
Product name: KHF-7AH
Generic Name: IR-Shielding Dispersion Liquid
Type of product: Mixture

Use of the substance or preparation
For painting or ink.

Company/Undertaking Identification
Sumitomo Metal Mining Co. Ltd., Material div.
11-3, 5-chome, Shimbashi, Minato-ku, Tokyo, 105 Japan
Tel.: +81-3-3436-7872  Fax: +81-3-3436-7827

Emergency telephone
+81-3-3436-7872

2. SUMMAY OF DANGER AND HAZARD

GHS Classification
Physical hazards
Explosives·not classified
Flammable gases·not classified
Flammable aerosols·not classified
Gases under pressure· not classified
Flammable liquids· 2
Flammable solids·not classified
Self·reactive substances and mixtures·not classified
Pyrophoric liquids·not classified
Pyrophoric solids·not classified
Self·heating substances and mixtures·not classified
Substances and mixtures, which in contact with water, emit flammable gases·not classified
Oxidizing liquids·not classified
Oxidizing solids·not classified
Organic peroxides·not classified
Corrosive to metals·not classified

Health hazards
Acute toxicity (oral)· 5
Acute toxicity (dermal)· not classified
Acute toxicity (inhalation, vapor)· 4
Skin corrosion/irritation· 2
Serious eye damage/eye irritation - 2A
Respiratory sensitizer - not classified
Skin sensitizer - not classified
Germ cell mutagenicity - not classified
Carcinogenicity - not classified
Toxic to reproduction - 1
STOT SE (Central nervous system) - 1
STOT SE (Lung) - 2
STOT SE (respiratory tract irritation, narcotic effects) - 3
STOT RE (general toxicity) - 1
Aspiration hazard - 1
Effects on or via lactation - not classified

Environmental hazards
Acute hazards to the aquatic environment - 2
Chronic hazards to the aquatic environment - not classified

Signal word: Danger
Symbol:

.Hazard Statement:
H225: Highly flammable liquid and vapour.
H319: Causes serious eye irritation.
H332: Harmful if inhaled.
H335: May cause respiratory irritation.
H336: May cause drowsiness or dizziness.
H371: May cause damage to organs.
H372: Causes damage to organs through prolonged or repeated exposure.

.Precautionary Statements:
P210: Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/light/…/equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P260: Do not breathe dust/fume/gas/mist/vapours/spray.
P271: Use only outdoors or in a well-ventilated area.
P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P280: Wear protective gloves (e.g. rubber gloves) /protective clothing (clothing made of antistatic synthetic fiber) /eye protection/face protection.

Response Precautionary Statements:
P378 : Use proper media for extinction (e.g. CO₂, chemical powder, sand. Do NOT use water jet.).
P303+361+353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P332+313 : If skin irritation occurs: Get medical advice/attention.
P304+340+309+310: IF INHALED : Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF exposed or you feel unwell: Immediately call a POISON CENTER or doctor/physician.
P305 + P351 + P338: IF IN EYES: Remove contact lenses if present and easy to do. continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.
P301+P310 : IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.

Storage precautionary statements:
P403+235: Store in a well ventilated place. Keep cool.
P404: Store in a closed container.
P405: Store locked up.

Disposal precautionary statements:
P501: Dispose of contents/container to relevant local and national regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Product description: substance (); preparation/mixture (√)

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS</th>
<th>EINECS</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>203-625-9</td>
<td>64.5%</td>
</tr>
<tr>
<td>2-Methyl-4-pentanal</td>
<td>108-10-1</td>
<td>203-550-1</td>
<td>20.0%</td>
</tr>
<tr>
<td>Zirconium dioxide</td>
<td>1314-23-4</td>
<td>215-227-2</td>
<td>5.0%</td>
</tr>
<tr>
<td>Lanthanum hexaboride</td>
<td>12008-21-8</td>
<td>234-531-6</td>
<td>3.3%</td>
</tr>
<tr>
<td>Butyl acetate</td>
<td>123-86-4</td>
<td>204-658-1</td>
<td>1.6%</td>
</tr>
<tr>
<td>2-Butanol</td>
<td>78-92-2</td>
<td>201-158-5</td>
<td>0.3%</td>
</tr>
<tr>
<td>Others</td>
<td>Trade secret</td>
<td>Trade secret</td>
<td>5.0</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Persons using this product should consult a physician or other medical professional if an accident involving this product in injury. Specific first-aid measures are as follows:

Eyes Contact: Immediately raise eyelids and flush with plenty of water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing. If irritation persists, seek medical care.

**Skin Contact:** Immediately water contaminated area with plenty of water and soap. If irritation persists, get medical attention.

**Inhalation:** Remove to fresh air. Call a POISON CENTER or doctor/physician if you feel unwell.

**Ingestion:** Do not induce vomiting without professional instruction. Get medical attention immediately.

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### 5. FIRE FIGHTING MEASURES

- **Flash point:** 8.5 °C (closed cup)
- **Flammable/Explosive Limits-Lower Vol %:** Not available
- **Flammable/Explosive Limits-Upper Vol %:** Not available
- **Extinguishing Media:** Use dry chemical or sand for small fire; foam or CO₂ for large fire. DO NOT use water jet. Seek advice from local fire-fighting authority.
- **Fire Fighting Equipments:** Firefighters must wear self-contained breathing apparatus and full protective equipment.
- **Unusual Fire and Explosion Hazards:** This product is highly flammable. Mixture of its vapor and air may be explosive which may ignite or explode when it is exposed to open flame or heat.
- **Hazardous Combustion Products:** Carbon oxides, nitrogen oxides and fumes may be released from heating or fire which is irritating to respiratory system.

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### 6. ACCIDENTAL RELEASE MEASURES

- **Personal precautions:** Use proper personal protective equipment as indicated in Section 8.

- **Measures for Cleaning/Collection:**
  - **Small Spill:**
    - Mop up or absorb with an inert dry material (e.g. sand, dry lime) and place in an appropriately labeled waste disposal container.
  - **Large Spill:**
    - Isolate contaminated area and set up a warning board. The persons handling emergency are recommended wearing protective clothing. Do NOT touch spilled material. Keep away from heat and sources of ignition. Build up dike or dig pit for collection. Spray fog water to cool down and dilute vapor. Dilute the spilled liquid till it is not combustible. Protect the working staff. Collect the spilled material with explosion-proof pump into an appropriate container and transport the waste to the disposal place.

- **Environmental Precautions:** Keep cleaning run-offs out of municipal sewers and open bodies of water. Comply with local and national laws and regulations.

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### 7. CAUTIONS OF HANDLING AND STORAGE

- **Handling:**
Do not breathe vapor that may be evolved during processing. Workers must wear proper protective equipments and must operate strictly according to relative rules. Workers are recommended wearing anti-poison respirators, safety goggles, anti-poison clothing and rubber gloves.

**Information about fire- and explosion protection:**
Keep ignition sources away—Do not smoke.

**Storage:**

- **Requirements to be met by storerooms:** Store it in a well-ventilated, cool and dry store room. Keep containers tightly sealed.
- **Additional Information:** The storeroom should be equipped with proper facilities for accidental leakage and fire.

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>ACGIH TLV-TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene (CAS: 108-88-3)</td>
<td>20ppm</td>
</tr>
<tr>
<td>2-Methyl-4-pentanal (CAS: 108-10-1)</td>
<td>20ppm</td>
</tr>
<tr>
<td>Lanthanum hexaboride (CAS: 12008-21-8)</td>
<td>Not available</td>
</tr>
<tr>
<td>Zirconium dioxide (CAS: 1314-23-4)</td>
<td>Not available</td>
</tr>
<tr>
<td>Butyl acetate (CAS: 123-86-4)</td>
<td>150ppm</td>
</tr>
<tr>
<td>2-Butanol (CAS: 78-92-2)</td>
<td>100ppm</td>
</tr>
</tbody>
</table>

**Engineering Controls:**
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate vapor, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protective Equipments:**

- **Protection of Hands:**
  Wear protective gloves. (e.g. impermeable rubber gloves)

- **Protection of Eyes:**
  No special requirements under normal conditions. Wear safety glasses when liquid may splash.

- **Respiratory Protection:**
  Use an approved respirator if exposure limits are exceeded or if irritation or other symptoms occur or not to aspirate dried product.

- **Protection of Body:**
  Recommend wearing uniforms.
General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Wash hands before breaks and at the end of work.
Avoid contact with eyes and skin.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>General Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Greenish black</td>
</tr>
<tr>
<td>Odor</td>
<td>Aromatic</td>
</tr>
<tr>
<td>Boiling Range</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting point/Melting range</td>
<td>Not available</td>
</tr>
<tr>
<td>Flash point</td>
<td>8.5°C (closed cup)</td>
</tr>
<tr>
<td>Self-igniting</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammable/Explosive Limits-Lower Vol %</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammable/Explosive Limits-Upper Vol %</td>
<td>Not available</td>
</tr>
<tr>
<td>Density (@20°C)</td>
<td>0.94g/ml</td>
</tr>
<tr>
<td>Relative Vapor density</td>
<td>Heavier than air</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>Not available</td>
</tr>
<tr>
<td>Solubility in/Miscibility with Water</td>
<td>Slightly soluble in water</td>
</tr>
<tr>
<td>PH-Value (Saturated solution)</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity (@25°C)</td>
<td>2.5 mPa·s</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Chemical Stability: Stable under normal temperatures and pressures.
Hazardous Decomposition Products: Carbon oxides, nitrogen oxides and fumes may be released from heating or fire which is irritating to respiratory system.
Materials to avoid: Ignition sources.
Hazardous Polymerizations: Will not occur.
Conditions to avoid: Heat and high temperature.

11. TOXICOLOGICAL INFORMATION

Product Toxicity Data: The toxicity data of this product has not been determined by testing or research, but to relevant literature and classification standard in Annex 2 of GHS, the toxicity of this product is classified as category 4. The toxicity data shown below is for reference only.
<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS</th>
<th>LD 50/ LC 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>Acute Oral LD50: 4,800mg/kg (rat)</td>
</tr>
<tr>
<td>2-Methyl-4-pentanal</td>
<td>108-10-1</td>
<td>Acute Oral LD50: 2,080mg/kg (rat)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute Oral LD50: 2,671mg/kg (mouse)</td>
</tr>
<tr>
<td>Lanthanum hexaboride</td>
<td>12008-21-8</td>
<td>No data available</td>
</tr>
<tr>
<td>Zirconium dioxide</td>
<td>1314-23-4</td>
<td>No data available</td>
</tr>
<tr>
<td>Butyl acetate</td>
<td>123-86-4</td>
<td>Acute Oral LD50: 10,768mg/kg (rat)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute Oral LD50: 7,076mg/kg (mouse)</td>
</tr>
<tr>
<td>2-Butanol</td>
<td>78-92-2</td>
<td>Acute Oral LD50: 6,480mg/kg (rat)</td>
</tr>
</tbody>
</table>

**Contact with Eyes**: It can cause serious irritation to eyes and symptoms may include redness, tear and ache.

**Contact with Skin**: No hazard for normal use. Repeated or long-time contact may cause mild irritation.

**Inhalation**: It may cause irritation to nose, throat and respiratory system if inhaling concentrated vapor of this liquid.

**Ingestion**: It can cause irritation to intestinal tract. Symptoms may include bellyache, nausea, vomiting, sickness and dizziness.

**Aspiration into lungs**: It has been concerned that aspiration of dried product may cause serious health effects.

**Effects of Overexposure – Chronic**: It causes damage to organs through prolonged or repeated exposure.

**Carcinogenicity**: Not listed by IARC, NTP, ACGIH and EPA.

**Sensitivity**: Not found.

**Teratogenicity**: Not found.

**Mutagenicity**: Not found.

**Irritation Data**:
- Toluene (CAS: 108-88-3)
  - Draize test, rabbit, skin, 500mg/24h: mild
  - Draize test, rabbit, eye, 500mg/24h: mild
- 2-Methyl-4-pentanal (CAS: 108-10-1)
  - Draize test, rabbit, skin, 500mg/24h: mild
  - Draize test, rabbit, eye, 500mg/24h: mild
- Butyl acetate (CAS: 123-86-4)
  - Draize test, rabbit, skin, 500mg/24h: moderate
  - Draize test, rabbit, eye, 500mg/24h: mild
- 2-Butanol (CAS: 78-92-2)
  - Draize test, rabbit, skin, 500mg/24h: mild
Draize test, rabbit, eye, 500mg/24h: moderate

12. ECOLOGICAL INFORMATION

. Ecotoxicity Data: Not available.
. Persistence and Degradability: This product is biodegradable.
. Bioaccumulative Potential: Not found.
. Mobility in Soil: It can move in soil due to its liquid nature.
. Notes:
  Do not allow product to reach ground water, water course or sewage system.

13. DISPOSAL INFORMATION

Do not allow product to reach sewage system.
Do not throw it into any open bodies of water.
Waste recycling must be operated strictly according to relevant regulations.

14. TRANSPORTATION INFORMATION

**DOT:**
. Proper Shipping Name: Coating solution
. Hazard Class: 3
. UN Code: UN1139
. Packing Group: II

**Air-Transportation** IATA/ICAO:
. Proper Shipping Name: Coating solution
. Hazard Class: 3
. UN Code: UN1139
. Packing Group: II

**Sea-Transportation** IMO/IMDG:
. Proper Shipping Name: Coating solution
. Hazard Class: 3
. UN Code: UN1139
. Packing Group: II
. Marine pollutant: No

*Note:*
Check whether the package is completed or sealed before transporting; make sure there are no damage and no falling down of packages during transporting; the transport vehicle should be equipped with fire-fighting equipments and emergency facilities for handling with release; do NOT transport this product together with incompatible substances.
15. REGULATORY INFORMATION

.US Laws and Regulations:

.Clean Water Act:
Toluene (CAS: 108-88-3), 2-Methyl-4-pentanal (CAS: 108-10-1) and Butyl acetate (CAS:123-86-4) are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
.SARA 313: This product doesn’t contain SARA 313 Toxic Release Chemicals.
.Section 355 (extremely hazardous substances): Not listed.
.Proposition 65: Not applicable
.Carcinogenicity categories: Not listed by EPA, IARC and NTP.
.Other laws and regulations:
.Candidate List of Substances of very high concern (SVHC) according to ECHA: Not listed.
.REACH Regulation Annex XVII Regulation List: Not listed.

16. OTHER INFORMATION

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References :
GHS Annex II
GHS SDS Instruction
ANSI Z400.1/Z129.1-2010
OSHA Hazard Communication Standard (HCS) 2012

Full description of some acronyms:
GHS-Globally Harmonized System of Classification and Labelling of Chemicals
CAS-Chemical Abstracts Service
EINECS-European Inventory of Existing Commercial Chemical Substances
IMO-International Maritime Organization
IMDG-International Maritime Dangerous Goods
IATA-International Air Transport Association
ICAO-International Civil Aviation Organization
TSCA-Toxic Substance Control Act
SNUR-Significant New Use Rule
OSHA-Occupational Safety and Health Administration
ACGIH-American Conference of Governmental Industrial Hygienists

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