Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION
Product Name: Printight KF-G, KM-G, KA-G, KM-A Type
SUPPLIER
Name: TOYOBO Co., Ltd.
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Fax No.: +81-6-6348-3099

2. COMPOSITION, INFORMATION ON INGREDIENTS
Chemical Product: Preparation
Chemical Name: Laminated sheet containing water soluble photo-sensitive resin
Composition:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyamide</td>
<td>55%</td>
</tr>
<tr>
<td>Derivative of Acrylates and Methacrylates</td>
<td>40%</td>
</tr>
<tr>
<td>Plasticizer</td>
<td>3%</td>
</tr>
<tr>
<td>Photo-initiator and other additives</td>
<td>2%</td>
</tr>
</tbody>
</table>

Components Contributing to the Hazard

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Synonym</th>
<th>Concentration</th>
<th>CAS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-caprolactam</td>
<td>2-azacycloheptane</td>
<td>2.0% or less</td>
<td>105-60-2</td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>Methanol</td>
<td>3.0% or less</td>
<td>67-56-1</td>
</tr>
<tr>
<td>Methyl acrylate</td>
<td>Methyl 2-propenoate</td>
<td>4900ppm or less</td>
<td>96-33-3</td>
</tr>
<tr>
<td>Methyl methacrylate</td>
<td>Methyl 2-methyl-2-propenoate</td>
<td>2000ppm or less</td>
<td>80-62-6</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION
Most Important Hazards:
- Eye contact or skin contact with the material may cause some irritation.
- Dermatitis may occur in some serious cases.
- The material contains small amount of hazardous ingredients or the ingredients of insufficient investigation of hazards.
- Inflammable with the existence of ignition sources

Specific Hazards:
- Prolonged inhalation of fumes or gases generated from the material during the processing operations may cause headache, respiratory irritation.

Main Symptoms:
- Dizziness, Headache, Irritation to eyes and skin

4. FIRST-AID MEASURES
Inhalation:
- In case of irritation by inhaling fumes or gases generated from the material during the processing operations, remove victim to fresh air and await recovery.
- Seek immediate medical attention if irritation persists.

Skin Contact:
- If the material or wash-out solution contacts the skin, wash the affected area thoroughly with water and soap.
- Seek medical attention if necessary.

Eye Contact:
- If some irritation is felt in eyes or wash-out solution enters the eyes, immediately flush eyes with plenty of clean water for at least 15 minutes.
- Seek medical attention if irritation persists.

Ingestion:
- If the material or wash-out solution is swallowed, induce vomiting.
- Seek immediate medical attention if indisposition persists.
5  FIRE-FIGHTING MEASURES
Extinguishing Media  Carbon Dioxide, Water-Spray, Dry Chemical, Foam
Specific Hazards  When subjected to prolonged high temperature or burning, this product will emit harmful gas containing carbon monoxide, nitrogen oxides, chlorine compounds and sulfur oxides.
Specific Methods  Extinguish the fire from windward by water or carbon dioxide.
Protection of Firefighters  Wear self-contained breathing apparatus and protective clothing.

6  ACCIDENTAL RELEASE MEASURES
Personal Precautions  The unexposed and exposed plates are solid and considered low hazard material to human body. If the material contacts the body, wash the affected area thoroughly with water and soap. Wash-out solution remained on the skin may cause some irritation.
Environmental Precautions  The unexposed plate is soluble in water, that may pollute environment. The wash-out solution contains unreacted component and resin, that may pollute watercourse.
Methods for Cleaning up  Carefully pick up and collect the dropped plates. Wipe the area with a cloth containing soapy water to remove any adherent material. Remove all the spilt wash-out solution with absorbent.

7  HANDLING AND STORAGE
HANDLING
Technical Measures  Wash hands thoroughly after handling unexposed or exposed plates. Pay attention not to contact skin and eyes with the plate material. Wear protective equipment like impervious gloves, if necessary.
Precautions  Use with adequate ventilation or local exhaust system especially for washing-out and drying processes. Do not inhale fumes and gases while processing the material. Do not contact skin and eyes with the wash-out solution. Do not inhale nor contact with hazardous product pieces, liquid or gases which may remain in the used containers.
Safe Handling Advice  Pay attention not to get hurt to hands while cutting the plate. Handle with care not to get hurt to hands with outer case or edge of the plate.

STORAGE
Technical Measures  Put the packages vertical, and not pile up. Pay attention not to fall them down.
Incompatible Products  Oxidizers
Storage Conditions  Keep away from water and alcohol in which the material is soluble. Store plates in a cool (below 25°C), and dry location, away from sources of intense heat and ignition. Put and store all the unexposed plates into the particular masking bag.
Packaging Materials  Masking bag or corrugated board package
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8 EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING MEASURES
Use with adequate ventilation or local exhaust system especially for washing-out and drying processes. Ensure eyewash/safety shower stations are available near areas where the material is used.

Control Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Acute</th>
<th>Caprolactam</th>
<th>Methyl Alcohol</th>
<th>Methyl Acrylate</th>
<th>Methyl Methacrylate</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>5ppm</td>
<td>(23mg/m³)</td>
<td>200ppm</td>
<td>2ppm</td>
<td>50ppm</td>
</tr>
<tr>
<td>TLV-TWA</td>
<td>1998</td>
<td>(260mg/m³)</td>
<td>1998</td>
<td>1997</td>
<td>1999</td>
</tr>
<tr>
<td>(year)</td>
<td></td>
<td></td>
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</tbody>
</table>

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection
Wear a suitable gas mask, depending upon the task.

Hand Protection
Wear impervious rubber or plastic gloves.

Eye Protection
Wear safety glasses, goggles or face shield.

Skin and Body Protection
Wear impervious clothing to prevent skin from contacting the material.

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical State, Form, Color
Solid sheet, Colorless transparent, slightly sweet odor and Odor

pH
6.4 as washing-out solution

Melting Point
110°C

Decomposition Temperature
No data available

Flash Point
No data available

Autoignition Temperature
No data available

Explosion Properties
None

Density
1.2 g/cm³

Solubility
Soluble in water and alcohol.

10 STABILITY AND REACTIVITY

Stability
Stable under normal storage and handling.

Possible Hazardous Reactions
Inflammable with the existence of ignition sources

Conditions to Avoid
Avoid high temperature, flame and heat-sources and direct sunlight

Material to Avoid
Avoid strong oxidizers

Hazardous Decomposition Products
When subjected to prolonged high temperature or burning, this product will emit harmful gas containing carbon monoxide, nitrogen oxides, chloride compounds and sulfur oxides.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity
Oral-Rat LDLo ≥ 2000mg/kg

Local Effects (skin and eye)
Skin-Rabbit test: Printight KF-G, KM-G, KA-G, KM-A type has no irritation potential under the conditions of this study.

Eye effects-Rabbit test: Printight KF-G, KM-G, KA-G, KM-A type has reversible and mild irritation potential under the conditions of this study.

Mutagenicity
Ames test: Printight KF-G, KM-G, KA-G, KM-A type is not mutagenic under the test conditions employed.
12 ECOLOGICAL INFORMATION
Mobility

Unexposed plate and washed-out solution of exposed plate are soluble in water, and are possible to diffuse in watercourse.

13 DISPOSAL CONSIDERATIONS
Waste from Residues
Dispose of in accordance with all applicable local and national laws/regulations.
Contaminated Packaging
Dispose of as well as the waste material.

14 TRANSPORT INFORMATION
International Regulations
 UN Classification Number Not applicable
 Specific Precautionary When loading the package, pay attention not to fall it down nor drop it.
 Transport Measures and Conditions Keep it dry and handle with care.

15 REGULATORY INFORMATION
Follow all the laws and regulations in your country.

16 OTHER INFORMATION
Notice
The information in this MSDS, to the best of our knowledge, is accurate and correct. However, TOYOBO makes no warranty and assumes no liability whatsoever in connection with any use of this information. The MSDS is subject to revision as new information becomes available.