Material Safety Data Sheet (MSDS)


1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION


GENERAL USE: Resin for mechanical parts.

PRODUCT DESCRIPTION: Polyacetal resin.

MANUFACTURER:

Company Name: ASAHI CHEMICAL INDUSTRY CO. LTD.
Address: International Marketing Group High-performance Plastics Div
Hibiya-Mitsui Bldg. 1-2 Yurakucho 1-chome, Chiyoda-ku, Tokyo, 100, Japan
Tenac Technical Department
1-2-1, Yakoh, Kawasaki-ku, Kawasaki-city, Kanagawa, Japan.

EMERGENCY TELEPHONE NUMBER:

CHEMTREC: United States --- (800) 824-9300 24 hours Everyday
International-----+1-703-527-3887(Collect) 24 hours Everyday

Non-transportation
(AGENT)
Asahi Chemical Industry Co., Ltd, (Japan) International Marketing Group High-performance Plastics Division
TEL: +81-3-3507-2570, 2573 9 am – 6 pm Japan Time M-F
Asahi Chemical Industry Co., Ltd, (Japan) Tenac Technical Department
TEL: +81-44-271-2448 9 am – 6 pm Japan Time M-F

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPOSITION: Polyoxymethylene homopolymer (Polyacetal) >97%
Other Additives < 3%

(Light stabilizer, heat stabilizer, lubricant, colorant, etc. are added, if necessary.)

STRUCTURAL FORMULA: Polyoxymethylene homopolymer (Polyacetal)
CAS No: Polyoxymethylene homopolymer(Polyacetal)----9002-81-7
UN CLASSIFICATION & UN No: Not Applicable
3. **HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW:**
Skin contact of molten resin causes thermal burn.
Inhalation of formaldehyde gas from decomposed resin causes nausea.
Formaldehyde gas generated during drying and melting causes eye and skin irritation.
Formaldehyde is listed by IARC Group 2A as probably carcinogenic to humans.
Secondary operations, such as grinding, sanding, or sawing, can produce dust which may present an explosion or respiratory hazard.

**POTENTIAL HEALTH EFFECTS:**
**PRIMARY ROUTES EXPOSURE:**

<table>
<thead>
<tr>
<th>Route</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EYE</strong></td>
<td>Pellets may cause irritation or injury due to mechanical action.</td>
</tr>
<tr>
<td><strong>SKIN</strong></td>
<td>Pellets are not likely to cause skin irritation.</td>
</tr>
<tr>
<td><strong>INHALATION</strong></td>
<td>Pellets inhalation is unlikely due to physical form</td>
</tr>
<tr>
<td><strong>INGESTION</strong></td>
<td>Oral toxicity data is not established. However, swallowing large amounts may cause injury.</td>
</tr>
</tbody>
</table>

**CHRONIC/CARCINOGENICITY:** NTP---Not tested, OSHA---Not regulated, IARC---Not listed

**MELT PROCESSING HEALTH EFFECTS:** Contact with molten resin causes thermal burn.
Inhalation of formaldehyde gas from decomposed resin may cause irritation.

**MEDICAL RESTRICTIONS:** Certain sensitive individuals and individuals with respiratory impairments may be affected by exposure to components in the processing fumes.

**NOTE:** Additives containing certain heavy metal compounds may be present. These ingredients are encapsulated in the plastic matrix and are unlikely to contribute to workplace exposure under recommended processing conditions.

4. **FIRST-AID MEASURES**

**EYE CONTACT:** If the resin is in molten state, immediately cool and wash with clean water for at least 15 Minutes. Remove contact lenses immediately if worn, unless they have adhered to eyes, seek immediate medical attention.

**SKIN CONTACT:** If the resin is in molten state, cool with clean water immediately. Do not forcibly remove any solidified resin stuck to the skin, but continue cooling until it becomes readily removable. Get medical attention for thermal burn.

**INHALATION:** If inhalation of gas from molten resin causes nausea, remove the individual to fresh air and keep him at rest for recovery. If his condition does not improve, seek medical medical attention.

**INGESTION:** Induce vomiting only if the victim is conscious. In case of heavy ingestion, seek medical attention.

**MELTING PROCESSING:** If molten resin contacts skin, cool rapidly with water and immediately seek medical attention. **WARNING:** Do not attempt removal of resin without medical assistance, do not use solvent for removal.
If inhalation of processing fumes causes irritation, leave contaminated area and breathe fresh air. If coughing, difficult breathing or any other symptoms develop, seek medical attention at once, even if symptoms develop at a later time.
For skin contact with fume condensate, immediately wash affected area thoroughly with soap and water. If irritation develops, seek medical attention.
5. **FIRE FIGHTING INSTRUCTIONS**: wear full bunker gear including a positive pressure self-contained breathing apparatus in any closed space.

**EXTINGUISHING MEDIA:**
- CO₂, EXTINGUISING POWDER OR WATER: fight larger fires with water or alcohol-resistant foam.

**FLAMMABLE PROPERTIES:**
- Flash point: about 320 °C (about 608 °F)
- Explosive limit: Lower ---- None, Upper ---- None

**HAZARDOUS COMBUSTION PRODUCTS:**
May include intense heat, carbon monoxide, carbon dioxide, formaldehyde.

6. **ACCIDENTAL RELEASE MEASURES**
To prevent the danger of slips or falls from pellets, sweep or gather up resin and place in proper container for disposal or recovery. Immediately collect released resin to prevent environmental contamination.

7. **HANDLING AND STORAGE**
**HANDLING:** Should process this resin under the recommended temperature range.

(190 ~ 210 °C, 374 ~ 410 °F)
Do not inhale gas during processing of the resin. Provide for sufficient ventilation.
Do not hold the resin at high temperatures over an extended time. (See 10, STABILITY AND REACTIVITY)

**STORAGE:** Store in a dry place away from excessive heat and ignition sources.
Avoid direct sunlight.

8. **EXPOSURE CONTROL, PERSONAL PROTECTION**
**EXPOSURE GUIDELINES:**
- Polyoxymethylene homopolymer: Particulates not otherwise classified.
- OSHA PEL: 8 hr. TWA 15 mg/m³ (total dust), 8hr. TWA 5 mg/m³ (respirable fraction)
- ACHIG TLV-TWA (1995 - 1996): 10 mg/m³ (inhalable particulate), 3 mg/m³ (respirable particulate)

**ENGINEERING MEASURES:** In cases where possibilities of dust formation, gas generation, or vapor emission exists, provide local exhaust ventilation.

**PERSONAL PROTECTION:**
**EYE/FACE PROTECTION:** Wear safety glasses or chemical goggles while using or handling this product.

**SKIN PROTECTION:** When handling pellets, wear protective gloves. When melt processing product, wear long pants, long sleeves, well-insulated gloves and face shield when applicable. Use appropriate protective clothing, including chemical resistant gloves, to prevent any contact with processing fume condensates.

**RESPIRATORY PROTECTION:** When processing fumes are not adequately controlled, use MIOSH/MSHA-Approved respirator for protection from organic vapors and acid gases. When dust or powder from secondary operations (such as grinding, sanding, or sawing), is not adequately controlled, use NIOSH/MSHA – approved respirator for protection from dust.

9. **PHYSICAL AND CHEMICAL PROPERTIES.**

<table>
<thead>
<tr>
<th>APPEARANCE:</th>
<th>Pellets</th>
<th>ODOR:</th>
<th>Slight Odor</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLOR:</td>
<td>White</td>
<td>PHYSICAL STATE:</td>
<td>Solid</td>
</tr>
<tr>
<td>MELTING POINT:</td>
<td>167 ~ 177 °C (333 ~ 351 °F)</td>
<td>BOILING POINT:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>DENSITY: at 23°C (73 °F):</td>
<td>1.35– 1.60 g/cm³</td>
<td>PH:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>SOLUBILITY IN WATER at 23 °C (73 °F):</td>
<td>Negligible</td>
<td></td>
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</table>
10. STABILITY AND REACTIVITY

STABILITY: Stable under recommended conditions of storage.
REACTIVITY: Not reactive under recommended conditions of storage.

Decomposes when the molten resin contacts with strong acid, base and oxidizing agents.

CONDITIONS TO AVOID:

Avoid resin temperatures and cylinder residence times at which this resin begins to decompose. The following limits are a general guide: Temperature and residence time may be lower for specific operating conditions.

---Resin temperature

Optimum: 190 ~ 210 °C (374 ~ 410 °F)
Maximum: 230 °C (446 °F)

---Maximum cylinder residence time

For non-reinforced non-colored resins:
- 50 min (at 190 °C) (374 °F)
- 40 min (at 200 °C) (392 °F)
- 30 min (at 210 °C) (410 °F)

For colored or reinforced resins, consult Asahi Chemical Industry Co., Ltd. ("Asahi")

Do not mix this resin with pigments or additives other than those designated by Asahi, or with different resins or resin grades, as this may degrade the thermal stability of this resin and cause decomposition.

In order to avoid auto ignition/hazardous decomposition of hot thick masses of resin, purging should be collected in small, flat shapes or thin strands to allow for rapid cooling in water.

HAZARDOUS DECOMPOSITION PRODUCTS: Formaldehyde as decomposition gas.

When ignited, formaldehyde, carbon monoxide, carbon dioxide.

FLAMMABILITY: Flammable.
AUTOIGNITION TEMPERATURE: about 400 °C (about 752 °F)
REACTIVITY WITH WATER: None
OXIDIZING PROPERTY: None
SELF-REACTIVITY/POTENTIAL FOR EXPLOSION: None

11. TOXICOLOGICAL INFORMATION

EYE: This resin is not considered a primary eye irritant.
SKIN: This resin is not considered a primary skin irritant.
ACUTE TOXICITY: No data available.

Formaldehyde is a hazardous decomposition product. Chronic inhalation studies in animals indicated that formaldehyde causes nasal cancer.

Formaldehyde is listed by LARC, NTP, OSHA and ACGIH as carcinogens.

<table>
<thead>
<tr>
<th>Classification</th>
<th>(2A)</th>
<th>(Listed)</th>
<th>(Listed)</th>
<th>(A2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA PEL</td>
<td>8hr. TWA</td>
<td>0.75ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEL</td>
<td></td>
<td>2ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACGIH TLV-TWA</td>
<td>(1995 – 1996)</td>
<td>0.3ppm ceiling</td>
<td></td>
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</tbody>
</table>

12. ECOLOGICAL INFORMATION

GENERAL: Not expected to present any significant ecological problems.

Never dump or discharge this resin into ocean or any other body of water, to avoid ingestion by by marine life or birds.
13. DISPOSAL CONSIDERATIONS
Comply with all federal, state and local regulations.
Do not release into sewers, ground or a body of water.

14. TRANSPORT INFORMATION
NOTE: Avoid water and careless handling to prevent damage to the container.
D.O.T. Shipping Name Not regulated
Technical Shipping Name Not regulated
D.O.T. Hazard Class Not regulated

15. REGULATORY INFORMATION
US FEDERAL REGULATIONS
TSCA Status On TSCA Inventory
CERCLA 40CFR117, 302 None
SARA TITLE III SECTION 313 (TOXIC CHEMICALS) None
SARA TITLE III SECTION 302 (EXTREMELY HAZARDOUS SUBSTANCES) None
SARA TITLE III SECTION 311, 312 9HAZARD CATEGORY) Not Hazardous

16. Other Information
Refer to technical bulletin “ASAHI POLYACETAL “TENAC””
MSDS status: Revised section 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16

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