MATERIAL SAFETY DATA SHEET

PROPYLENE CARBONATE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>PRODUCT NAME</th>
<th>PROPYLENE CARBONATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATALOG NUMBER</td>
<td>AC131560025, AC131560250, AC131565000, O4331-4</td>
</tr>
<tr>
<td>SYNONYMS</td>
<td>1,2-Propanediol cyclic carbonate; PC; 4-Methyl-1,3-dioxolan-2-one; Cyclic 1,2-propylene carbonate; Cyclic methylene carbonate; Carbonic acid cyclic propylene ester</td>
</tr>
<tr>
<td>COMPANY INFORMATION</td>
<td>STAR ASIA (FAR EAST) CO., LTD. 6th FLOOR ASOKE TOWERS, SUKHUMVIT 21 KLONGTOEY NUA, WATTANA, BANGKOK 10110 THAILAND.</td>
</tr>
<tr>
<td>TEL. NO.</td>
<td>+66 2 664 2690-5</td>
</tr>
<tr>
<td>FAX NO.</td>
<td>+66 2 664 2696-97</td>
</tr>
<tr>
<td>EMAIL ADDRESS</td>
<td><a href="mailto:starasia@bkk3.loxinfo.co.th">starasia@bkk3.loxinfo.co.th</a></td>
</tr>
<tr>
<td>WEBSITE</td>
<td><a href="http://www.starasiafareast.com">www.starasiafareast.com</a></td>
</tr>
<tr>
<td>CODE</td>
<td>PROPYLENE CARBONATE-CHI-ZSC</td>
</tr>
</tbody>
</table>

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS#</th>
<th>CHEMICAL NAME</th>
<th>PERCENT</th>
<th>EINECS/ELINCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>108-32-7</td>
<td>PROPYLENE CARBONATE</td>
<td>&gt;99.0</td>
<td>203-572-1</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

APPEARANCE : CLEAR, COLORLESS LIQUID.

WARNING! CAUSES EYE AND SKIN IRRITATION. HYGROSCOPIC (ABSORBS MOISTURE FROM THE AIR).

TARGET ORGANS : EYES, SKIN.

POTENTIAL HEALTH EFFECTS

EYE : CAUSES EYE IRRITATION.

SKIN : CAUSES SKIN IRRITATION. A SINGLE PROLONGED SKIN EXPOSURE IS NOT LIKELY TO RESULT IN THE MATERIAL BEING ABSORBED IN HARMFUL AMOUNTS.

INGESTION : NO HAZARD EXPECTED IN NORMAL INDUSTRIAL USE.

INHALATION : LOW HAZARD FOR USUAL INDUSTRIAL HANDLING. MATERIAL HAS A VERY LOW VAPOR PRESSURE AND INHALATION EXPOSURES ARE NOT EXPECTED UNLESS MATERIAL IS HEATED OR MISTED.

CHRONIC : NO INFORMATION FOUND.

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4. **FIRST AID MEASURES**

**EYES**: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

**SKIN**: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.

**INGESTION**: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**INHALATION**: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**NOTES TO PHYSICIAN**: Treat symptomatically and supportively.

5. **FIRE FIGHTING MEASURES**

**GENERAL INFORMATION**: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool.

**EXTINGUISHING MEDIA**: Use water spray, dry chemical, carbon dioxide, or chemical foam.

**FLASH POINT**: 123 Deg C (253.40 Deg F)

**AUTOIGNITION TEMPERATURE**: 430 Deg C (806.00 Deg F)

**EXPLOSION LIMITS, LOWER**: 4.7% @ 200 Deg C

**UPPER**: 21% @ 200 Deg C

**NFPA RATING**: (Estimated) Health: 1; Flammability: 1; Instability: 0

6. **ACCIDENTAL RELEASE MEASURES**

**GENERAL INFORMATION**: Use proper personal protective equipment as indicated in section 8.

**SPILLS/LEAKS**: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Provide ventilation.

7. **HANDLING AND STORAGE**

**HANDLING**: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed.

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8. **EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS**

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

**EXPOSURE LIMITS**

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - FINAL PELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROPYLENE CARBONATE</td>
<td>NONE LISTED</td>
<td>NONE LISTED</td>
<td>NONE LISTED</td>
</tr>
</tbody>
</table>

**OSHA VACATED PELS**

Propylene carbonate: No OSHA vacated PELs are listed for this chemical.

**PERSONAL PROTECTIVE EQUIPMENT**

**EYES**

Wear chemical splash goggles.

**SKIN**

Wear appropriate protective gloves to prevent skin exposure.

**CLOTHING**

Wear appropriate protective clothing to prevent skin exposure.

**RESPIRATORS**

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

9. **PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYSICAL STATE</td>
<td>LIQUID</td>
</tr>
<tr>
<td>APPEARANCE</td>
<td>CLEAR, COLORESS</td>
</tr>
<tr>
<td>ODOR</td>
<td>ODORLESS</td>
</tr>
<tr>
<td>PH</td>
<td>8.8 (AQ SOLN)</td>
</tr>
<tr>
<td>VAPOR PRESSURE</td>
<td>0.00223 MM HG @ 25 DEG C</td>
</tr>
<tr>
<td>VAPOR DENSITY</td>
<td>3.52 (AIR=1)</td>
</tr>
<tr>
<td>EVAPORATION RATE</td>
<td>NOT AVAILABLE</td>
</tr>
<tr>
<td>VISCOSITY</td>
<td>NOT AVAILABLE</td>
</tr>
<tr>
<td>BOILING POINT</td>
<td>242 DEG C</td>
</tr>
<tr>
<td>FREEZING/MELTING POINT</td>
<td>-48.8 DEG C</td>
</tr>
<tr>
<td>DECOMPOSITION TEMPERATURE</td>
<td>NOT AVAILABLE</td>
</tr>
<tr>
<td>SOLUBILITY</td>
<td>MODERATELY SOLUBLE</td>
</tr>
<tr>
<td>SPECIFIC GRAVITY/DENSITY</td>
<td>1.206 @ 20 DEG C</td>
</tr>
<tr>
<td>MOLECULAR FORMULAR</td>
<td>C4H6O3</td>
</tr>
<tr>
<td>MOLECULAR WEIGHT</td>
<td>102.09</td>
</tr>
</tbody>
</table>
10. Stability and Reactivity

**Chemical Stability**: Stable under normal temperatures and pressures.

**Conditions to Avoid**: Moisture

**Incompatibilities with Other Materials**: Strong oxidizing agents

**Hazardous Decomposition Products**: Carbon monoxide, carbon dioxide

**Hazardous Polymerization**: Will not occur.

11. Toxicological Information

**RTECS#**: 

**CAS #**: 108-32-7 : FF9650000

**LD50/LC50**

<table>
<thead>
<tr>
<th>Route</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAIZE TEST, RABBIT, EYE</td>
<td>60 MG MODERATE</td>
</tr>
<tr>
<td>DRAIZE TEST, RABBIT, SKIN</td>
<td>500 MG MODERATE</td>
</tr>
<tr>
<td>INHALATION, RAT</td>
<td>LC50 &gt;5 GM/M3</td>
</tr>
<tr>
<td>ORAL, MOUSE</td>
<td>LD50=20700 MG/KG</td>
</tr>
<tr>
<td>ORAL, RAT</td>
<td>LD50=29100 UL/KG</td>
</tr>
<tr>
<td>SKIN, RABBIT</td>
<td>LD50=&gt;20 ML/KG</td>
</tr>
</tbody>
</table>

**Carcinogenicity**: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology**: No information found

**Teratogenicity**: No information found

**Reproductive Effects**: No information found

**Mutagenicity**: No information found

**Neurotoxicity**: No information found

**Other Studies**: 

12. Ecological Information

No information available.

13. Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Part 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series**: None listed

**RCRA U-Series**: None listed

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14. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>US DOT</th>
<th>CANADA TDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHIPPING NAME:</td>
<td>NOT REGULATED</td>
</tr>
<tr>
<td>HAZARD CLASS:</td>
<td>NOT REGULATED</td>
</tr>
<tr>
<td>UN NUMBER:</td>
<td></td>
</tr>
<tr>
<td>PACKING GROUP:</td>
<td></td>
</tr>
</tbody>
</table>

15. REGULATORY INFORMATION

US FEDERAL

TSCA
CAS# 108-32-7 IS LISTED ON THE TSCA INVENTORY.

HEALTH & SAFETY REPORTING LIST
NONE OF THE CHEMICALS ARE ON THE HEALTH & SAFETY REPORTING LIST.

CHEMICAL TEST RULES
NONE OF THE CHEMICALS IN THIS PRODUCT ARE UNDER A CHEMICAL TEST RULE.

SECTION 12B
NONE OF THE CHEMICALS ARE LISTED UNDER TSCA SECTION 12B.

TSCA SIGNIFICANT NEW USE RULE
NONE OF THE CHEMICALS IN THIS MATERIAL HAVE A SNUR UNDER TSCA.

CERCLA HAZARDOUS SUBSTANCES AND CORRESPONDING RQS
NONE OF THE CHEMICALS IN THIS MATERIAL HAVE AN RQ.

SARA SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES
NONE OF THE CHEMICALS IN THIS PRODUCT HAVE A TPQ.

SARA CODES
CAS # 108-32-7: IMMEDIATE.

SECTION 313 NO CHEMICALS ARE REPORTABLE UNDER SECTION 313.

CLEAN AIR ACT:
THIS MATERIAL DOES NOT CONTAIN ANY HAZARDOUS AIR POLLUTANTS.
THIS MATERIAL DOES NOT CONTAIN ANY CLASS 1 OZONE DEPLETORS.
THIS MATERIAL DOES NOT CONTAIN ANY CLASS 2 OZONE DEPLETORS.

CLEAN WATER ACT:
NONE OF THE CHEMICALS IN THIS PRODUCT 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.

OSHA:
NONE OF THE CHEMICALS IN THIS PRODUCT ARE CONSIDERED HIGHLY HAZARDOUS BY OSHA.

STATE
CAS# 108-32-7 IS NOT PRESENT ON STATE LISTS FORM CA, PA, MN, MA, FL, OR NJ.
CALIFORNIA PROP 65
CALIFORNIA NO SIGNIFICANT RISK LEVEL : NONE OF THE CHEMICALS IN THIS PRODUCT ARE LISTED.

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EUROPEAN / INTERNATIONAL REGULATIONS
EUROPENA LABELING IN ACCORDANCE WITH EC DIRECTIVES
HAZARD SYMBOLS : XI
RISK PHRASES : R 36 IRRITATING TO EYES
SAFETY PHRASES :
WGK (WATER DANGER / PROTECTION : CAS# 108-32-7 IS LISTED ON CANADA’S DSL LIST.

CANADA-WHMIS
THIS PRODUCT HAS WHMIS CLASSIFICATION OF D2B
THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE
CONTROLLED PRODUCTS REGULATIONS AND THE MSDS CONTAINS ALL OF THE INFORMATION
REQUIRED BY THOSE REGULATIONS.
CANADINA INGREDIENT DISCLOSURE LIST
CAS# 108-32-7 IS LISTED ON THE CANADIAN INGREDIENT DISCLOSURE LIST.

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