1. Product and Company Identification

Product Name: Makrolon® AR Polycarbonate Sheet  
Material Number: SH005369  
Chemical Family: Thermoplastic Polymer Sheet  
Chemical Name: Bisphenol A Polycarbonate

2. Hazards Identification

Emergency Overview

CAUTION! Color: tint  Form: solid sheets  Odor: slight.
Melted product is flammable and produces intense heat and dense smoke during burning. Irritating gases/fumes may be given off during burning or thermal decomposition. May cause mechanical irritation (abrasion). Contact with hot material will cause thermal burns.

Potential Health Effects

Primary Routes of Entry: Inhalation, Skin Contact, Eye Contact

Medical Conditions Aggravated by Exposure:

Respiratory disorders

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

Skin
Acute Skin
For Product: Makrolon® AR Polycarbonate Sheet
Contact with heated material can cause thermal burns.

Eye
Acute Eye
For Product: Makrolon® AR Polycarbonate Sheet
May cause mechanical irritation.

General Effects of Exposure
Acute Effects of Exposure
For Product: Makrolon® AR Polycarbonate Sheet
Gases and fumes evolved during the thermal processing or decomposition of this material may irritate the eyes, skin or respiratory tract.

Chronic Effects of Exposure
For Product: Makrolon® AR Polycarbonate Sheet
Not expected to cause any adverse chronic health effects.

Carcinogenicity:
No Carcinogenic substances as defined by IARC, NTP and/or OSHA
  Isopropanol  IARC - Overall evaluation: 1 Human carcinogen.
  IARC - Overall evaluation: 3 Classification not possible from current data.

3. Composition/Information on Ingredients

Hazardous Components
The following potentially hazardous ingredient(s) are used to formulate this product. As supplied, the ingredient(s) are bound in the polymer matrix. Because they are bound in the matrix, they are not expected to create any unusual hazards when handled and processed according to good manufacturing and industrial hygiene practices and the guidelines provided in this MSDS.

This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

<table>
<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 - 1%</td>
<td>Isopropanol</td>
<td>67-63-0</td>
</tr>
</tbody>
</table>

OTHER INGREDIENTS
Additional types of polycarbonate may be used as necessary to adjust the melt flow rate.

4. First Aid Measures

Eye Contact
In case of contact, flush eyes with plenty of lukewarm water.

Skin Contact
In case of skin contact, wash affected areas with soap and water. Get medical attention if thermal burn occurs.

Inhalation
If inhaled, remove to fresh air.

Ingestion
Get medical attention.

5. Fire-Fighting Measures
Suitable Extinguishing Media: water, foam, dry chemical, carbon dioxide (CO2)

Special Fire Fighting Procedures
Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes.

Unusual Fire/Explosion Hazards
Toxic and irritating gases/fumes may be given off during burning or thermal decomposition. Dust may form explosive mixtures with air.

6. Accidental release measures

Spill and Leak Procedures
If molten, allow material to cool and place into an appropriate marked container for disposal.

7. Handling and Storage

Storage Temperature:
maximum: 93 °C (199.4 °F)

Storage Period
Not Established

Handling/Storage Precautions
Handle in accordance with good industrial hygiene and safety practices. Wash thoroughly after handling. Avoid breathing dust.

Further Info on Storage Conditions
Protect equipment (e.g. storage bins, conveyors, dust collectors) with explosion vents.

8. Exposure Controls / Personal Protection

Country specific exposure limits have not been established or are not applicable

Isopropanol (67-63-0)
US. ACGIH Threshold Limit Values
Time Weighted Average (TWA): 200 ppm
US. ACGIH Threshold Limit Values
Short Term Exposure Limit (STEL): 400 ppm
US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
PEL: 400 ppm, 980 mg/m3
US. ACGIH Threshold Limit Values
Hazard Designation: Group A4 Not classifiable as a human carcinogen.

Industrial Hygiene/Ventilation Measures
General dilution and local exhaust as necessary to control airborne vapors, mists, dusts and thermal decomposition products below appropriate airborne concentration standards/guidelines, especially during cutting, grinding and high heat operations.

Respiratory Protection
Although no exposure limit has been established for this product, the OSHA PEL for Particulates Not Otherwise Regulated (PNOR) of 15 mg/m³ - total dust, 5 mg/m³ - respirable fraction is recommended. In addition, the ACGIH recommends 3 mg/m³ - respirable particles and 10 mg/m³ - inhalable particles for Particles (insoluble or poorly soluble) Not Otherwise Specified (PNOS).

**Hand Protection**
Wear heat resistant gloves when handling molten material.

**Eye Protection**
safety glasses with side-shields.

**Skin and body protection**
No special skin protection requirements during normal handling and use.

**Additional Protective Measures**
Employees should wash their hands and face before eating, drinking, or using tobacco products. Educate and train employees in the safe use and handling of this product. Purgings should be collected as small flat thin shapes or thin strands to allow for rapid cooling.

### 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form:</strong></td>
<td>solid</td>
</tr>
<tr>
<td><strong>Appearance:</strong></td>
<td>sheets</td>
</tr>
<tr>
<td><strong>Color:</strong></td>
<td>tint</td>
</tr>
<tr>
<td><strong>Odor:</strong></td>
<td>slight</td>
</tr>
<tr>
<td><strong>pH:</strong></td>
<td>not applicable</td>
</tr>
<tr>
<td><strong>Melting Point:</strong></td>
<td>220 - 230 °C (428 - 446 °F)</td>
</tr>
<tr>
<td><strong>Boiling Point/Range:</strong></td>
<td>not applicable</td>
</tr>
<tr>
<td><strong>Flash Point:</strong></td>
<td>&gt; 450 °C (&gt; 842 °F)</td>
</tr>
<tr>
<td><strong>Lower Explosion Limit:</strong></td>
<td>Not Established</td>
</tr>
<tr>
<td><strong>Upper Explosion Limit:</strong></td>
<td>Not Established</td>
</tr>
<tr>
<td><strong>Vapor Pressure:</strong></td>
<td>not applicable</td>
</tr>
<tr>
<td><strong>Specific Gravity:</strong></td>
<td>approximately 1.2</td>
</tr>
<tr>
<td><strong>Solubility in Water:</strong></td>
<td>Insoluble</td>
</tr>
<tr>
<td><strong>Autoignition Temperature:</strong></td>
<td>&gt; 450 °C (&gt; 842 °F)</td>
</tr>
<tr>
<td><strong>Decomposition Temperature:</strong></td>
<td>380 °C (716 °F)</td>
</tr>
<tr>
<td><strong>Softening Point:</strong></td>
<td>150 - 160 °C (302 - 320 °F)</td>
</tr>
<tr>
<td><strong>Bulk Density:</strong></td>
<td>38 - 42 lb/ft³</td>
</tr>
</tbody>
</table>

### 10. Stability and Reactivity

**Hazardous Reactions**
Hazardous polymerization does not occur.

**Stability**
Stable

**Materials to avoid**
None known.

**Conditions to avoid**
None known.

**Hazardous decomposition products**
11. Toxicological Information

**Toxicity Data for Isopropanol**

**Acute Oral Toxicity**
LD50: 4,396 - 5,500 mg/kg (Rat)

**Acute Inhalation Toxicity**
LC50: 72.6 mg/l, 4 hrs (Rat)

**Acute dermal toxicity**
LD50: 12,800 mg/kg (Rat)

**Skin Irritation**
rabbit, Non-irritating

**Eye Irritation**
rabbit, Draize, Moderately irritating

**Sensitization**
dermal: non-sensitizer (Guinea pig, Buehler)

**Repeated Dose Toxicity**
90 Days, inhalation: NOAEL: 1500 ppm, (Rat)

**Mutagenicity**
Genetic Toxicity in Vitro:
Ames: negative (Salmonella typhimurium, Metabolic Activation: with/without)
Genetic Toxicity in Vivo:
Micronucleus Assay: negative (mouse)

**Toxicity to Reproduction/Fertility**
Two generation study, oral, daily, (Rat) NOAEL (F1): 500 mg/kg, NOAEL (F2): 500 mg/kg,

**Developmental Toxicity/Teratogenicity**
Rat, inhalation, daily, NOAEL (teratogenicity): 8,575 mg/kg,

12. Ecological Information

**Ecological Data for Isopropanol**

**Acute and Prolonged Toxicity to Fish**
11,830 mg/l (Fathead minnow (Pimephales promelas), 1 h)
11,160 mg/l (Fathead minnow (Pimephales promelas), 24 h)

13. Disposal considerations
Waste Disposal Method
Waste disposal should be in accordance with existing federal, state and local environmental control laws.

14. Transportation information

Land transport (DOT)
Non-Regulated

Sea transport (IMDG)
Non-Regulated

Air transport (ICAO/IATA)
Non-Regulated

15. Regulatory Information

United States Federal Regulations

OSHA Hazcom Standard Rating: Non-Hazardous

US. Toxic Substances Control Act: Listed on the TSCA Inventory.

US. EPA CERCLA Hazardous Substances (40 CFR 302):
Components
None

SARA Section 311/312 Hazard Categories:
Non-hazardous under Section 311/312

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A):
Components
None

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required:
Components
None

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

State Right-To-Know Information
The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

The concentrations reported below in units of parts per million (ppm) or parts per billion (ppb) are maximum values.

**Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:**

<table>
<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;=1%</td>
<td>Bisphenol A Polycarbonate</td>
<td>25971-63-5</td>
</tr>
</tbody>
</table>

**New Jersey Environmental Hazardous Substances List and/or New Jersey RTK Special Hazardous Substances Lists:**

<table>
<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 - 1%</td>
<td>Propylene Glycol Methyl Ether</td>
<td>107-98-2</td>
</tr>
<tr>
<td>0.1 - 1%</td>
<td>Methanol</td>
<td>67-56-1</td>
</tr>
<tr>
<td>0.1 - 1%</td>
<td>Isopropanol</td>
<td>67-63-0</td>
</tr>
<tr>
<td>0.1 - 1%</td>
<td>1-Butanol</td>
<td>71-36-3</td>
</tr>
</tbody>
</table>

**MA Right to Know Extraordinarily Hazardous Substance List:**

<table>
<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ppm</td>
<td>Methylene Chloride</td>
<td>75-09-2</td>
</tr>
</tbody>
</table>

**California Prop. 65:**

Warning! This product contains chemical(s) known to the State of California to be Carcinogenic.

<table>
<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;3 ppm</td>
<td>Methylene Chloride</td>
<td>75-09-2</td>
</tr>
</tbody>
</table>

**16. Other Information**

**HMIS Rating**

<table>
<thead>
<tr>
<th></th>
<th>Health</th>
<th>Flammability</th>
<th>Physical Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMIS</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe  
* = Chronic Health Hazard

The method of hazard communication for Sheffield Plastics Inc. is comprised of Product Labels and Material Safety Data Sheets. HMIS and NFPA ratings are provided by Sheffield Plastics Inc. as a customer service.

Contact Person: Product Safety Department  
Telephone: (412) 777-2835  
MSDS Number: 000000005369  
Version Date: 09/01/2006  
Report Version: 1.3

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