Product Name: CYCLOTENE® 4022-35 Advanced Electronics  
Resin  
Issue Date: 11/02/2010  
Print Date: 28 Oct 2011

The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
CYCLOTENE® 4022-35 Advanced Electronics Resin

COMPANY IDENTIFICATION
The Dow Chemical Company
2030 Willard H. Dow Center
Midland, MI 48674
USA

Customer Information Number: 800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 989-636-4400
Local Emergency Contact: 989-636-4400

2. Hazards Identification

Emergency Overview
Color: Yellow
Physical State: Liquid.
Odor: Aromatic

Hazards of product:

WARNING! Combustible liquid and vapor. May cause allergic skin reaction. May cause eye irritation. May cause skin irritation. May be harmful if inhaled. May cause central nervous system effects; may cause respiratory tract irritation. Aspiration hazard. Can enter lungs and cause damage. Vapor explosion hazard. Vapors may travel a long distance; ignition and/or flash back may occur. Isolate area. Keep upwind of spill. Stay out of low areas. Elevated temperatures can cause hazardous polymerization. Eliminate ignition sources. Avoid temperatures above 40°C (104°F)

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
5. Fire Fighting Measures

Extinguishing Media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Use water spray to cool exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Do not use direct water stream. May spread fire. Eliminate ignition sources. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" section of this (M)SDS.

Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

Unusual Fire and Explosion Hazards: Container may vent and/or rupture due to fire. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Electrify ground and bond all equipment. Flammable mixtures of this product are readily ignited by static discharge. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Dense smoke is produced when product burns.

Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide. Combustion products may include trace amounts of: Aromatic hydrocarbons.

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible. Large spills: Pump with explosion-proof equipment. If available, use foam to smother or suppress. Use non-sparking tools in cleanup operations. Small spills: Absorb with materials such as: Sand. Sawdust. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

Personal Precautions: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Vapor explosion hazard. Keep out of sewers. Ventilate area of leak or spill. Keep upwind of spill. Keep personnel out of low areas. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. See Section 10 for more specific information. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental Precautions: Material may float on water and any runoff may create an explosion or fire hazard if ignited. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. Handling and Storage

Handling

General Handling: Keep away from heat, sparks and flame. No smoking, open flames or sources of ignition in handling and storage area. Electrically ground and bond all equipment. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation.

Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Wash thoroughly after
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td>Autoignition Temperature</td>
<td>Upper: 6.1 % (V) Literature</td>
</tr>
<tr>
<td></td>
<td>550 °C (1,022 °F) Literature</td>
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<tr>
<td>Vapor Pressure</td>
<td>3.3 hPa @ 25 °C Literature</td>
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<tr>
<td>Boiling Point (760 mmHg)</td>
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<tr>
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<tr>
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<td>Melting Point</td>
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<td>Solubility In water (by weight)</td>
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<tr>
<td>pH</td>
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<tr>
<td>Decomposition</td>
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<tr>
<td>Temperature</td>
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<tr>
<td>Partition coefficient, n-octanol/water (log Pow)</td>
<td>No data available for this product. See Section 12 for individual component data.</td>
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<tr>
<td>Evaporation Rate (Butyl Acetate = 1)</td>
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<tr>
<td>Kinematic Viscosity</td>
<td>192 mm²/s @ 25 °C Supplier</td>
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</table>

### 10. Stability and Reactivity

**Stability/Instability**
Stable under recommended storage conditions. See Storage, Section 7. Unstable at elevated temperatures.

**Conditions to Avoid:** Avoid temperatures above 40°C (104°F). Can react with itself at temperatures above 100°C (212°F). Active ingredient decomposes at elevated temperatures. Avoid static discharge. Avoid direct sunlight or ultraviolet sources.

**Incompatible Materials:** Avoid contact with: Strong oxidizers.

**Hazardous Polymerization**
Can occur. Can react with itself at temperatures above 100°C (212°F).

**Thermal Decomposition**
Decomposition products depend upon temperature, air supply and the presence of other materials.

### 11. Toxicological Information

**Acute Toxicity**
- **Ingestion**
  Single dose oral LD50 has not been determined.
- **Dermal**
  The dermal LD50 has not been determined.
- **Inhalation**
  The LC50 has not been determined.

**Eye damage/eye irritation**
May cause eye irritation. Vapor may cause eye irritation experienced as mild discomfort and redness.

**Skin corrosion/irritation**
Prolonged contact may cause skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. May cause drying and flaking of the skin. May cause more severe response on covered skin (under clothing, gloves).

**Sensitization**
Skin
Partition coefficient, soil organic carbon/water (Koc): 20,000 Estimated.

Persistence and Degradability
No relevant information found.

ECOTOXICITY
Data for Component: 1,3,5-Trimethylbenzene
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, Japanese medaka (Oryzias latipes), static, 48 h: 8.6 mg/l
Aquatic Invertebrate Acute Toxicity
LC50, water flea Daphnia magna, 24 h, immobilization: 50 mg/l
Aquatic Plant Toxicity
EcC50, alga Scenedesmus sp., biomass growth inhibition, 48 h: 25 mg/l
ErC50, alga Scenedesmus sp., Growth rate inhibition, 48 h: 53 mg/l

Data for Component: Quinoline, 1,2-dihydro-2,2,4-trimethyl-, polymers
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, bluegill (Lepomis macrochirus), 96 h: 54 mg/l
LC50, fathead minnow (Pimephales promelas), 96 h: 64 mg/l
LC50, rainbow trout (Oncorhynchus mykiss), 96 h: 50 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, water flea Daphnia magna, 24 h, immobilization: > 1,000 mg/l
Toxicity to Micro-organisms
EC50; bacteria, 3 h: > 10,000 mg/l

Data for Component: 2,6-Bis(4-azidophenyl)methylene)-4-ethylcyclohexanone
No relevant information found.

13. Disposal Considerations

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Incinerator or other thermal destruction device.

14. Transport Information

DOT Non-Bulk
NOT REGULATED

DOT Bulk
Proper Shipping Name: RESIN SOLUTION
US. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory
requirements under 40 CFR 720.30
CEPA - Domestic Substances List (DSL)
This product contains one or more substances which are not listed on the Canadian Domestic
Substances List (DSL). Contact your sales or technical service representative for more information.

16. Other Information

Recommended Uses and Restrictions
Photodefinable polymer dielectric in microelectronic applications.

Revision
Identification Number: 81427 / 1001 / Issue Date 11/02/2010 / Version: 5.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this
document.

Legend

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<td>HAZ DES</td>
<td>Hazard Designation</td>
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</table>
| Action Level | A value set by OSHA that is lower than the PEL which will trigger the need for
activities such as exposure monitoring and medical surveillance if exceeded. |

The Dow Chemical Company urges each customer or recipient of this (M)SDS to study it carefully and
consult appropriate expertise, as necessary or appropriate, to become aware of and understand the
data contained in this (M)SDS and any hazards associated with the product. The information herein is
provided in good faith and believed to be accurate as of the effective date shown above. However, no
warranty, express or implied, is given. Regulatory requirements are subject to change and may differ
between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with
all federal, state, provincial or local laws. The information presented here pertains only to the product
as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is
the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to
the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and
cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have
obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current,
please contact us for the most current version.