SAFETY DATA SHEET

Section 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Trade name or designation of the mixture Cardolite NX-5445

Registration number N/A

Synonyms None.

Date of first issue 15-August-2011

Version number 02

Revision date 03-02-2012

Supersedes date -

Relevant identified uses of the substance or mixture and uses advised against

Identified uses Epoxy Curing Agent.

Uses advised against Not available.

Details of the supplier of the safety data sheet

CARDOLITE SPECIALITY CHEMICALS EUROPE N.V.
Wijmenstraat 21 K, Bus 2
9030 Mariakerke – Gent
Tel. : +32 9 265.88.20 (Belgium)
Fax. : +32 9 265.88.29 (Belgium)
regulatory@cardolite.com
msds@be.cardolite.com

Section 2: Hazards identification

Classification of the substance or mixture

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

Classification R10, Xn; R20, Xi; R36/38, R43

Hazard summary

Physical hazards Flammable.

Health hazards Harmful by inhalation. Irritating to eyes and skin. May cause sensitisation by skin contact. Occupational exposure to the substance or mixture may cause adverse health effects.

Environmental hazards Not classified for hazards to the environment.

Specific hazards Irritating to eyes and skin. Prolonged or repeated contact may dry skin and cause irritation. May cause damage to the liver and kidneys. Organic solvents may be absorbed into the body by inhalation and ingestion and cause permanent damage to the nervous system, including the brain.

Main symptoms Skin irritation. Severe eye irritation. Upper respiratory tract irritation. Sensitisation.

Label elements

Label according to Directive 67/548/EEC or 1999/45/EC as amended

Contains: m-Phenylenebis(methylamine)

Harmful

R-phrases R10 Flammable.
R20 Harmful by inhalation.
R36/38 Irritating to eyes and skin.
R43 May cause sensitisation by skin contact.
Section 3: Composition/information on ingredients

Mixture

General information

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>%</th>
<th>CAS-No. / EC No.</th>
<th>REACH Registration No.</th>
<th>INDEX No.</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkyl Phenol Polyamine</td>
<td>76.5</td>
<td>Trade Secret</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Classification:</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Propanol</td>
<td>10</td>
<td>67-63-0</td>
<td>200-661-7</td>
<td>603-117-00-0</td>
<td>#</td>
</tr>
<tr>
<td>Classification:</td>
<td>F;R11, X;R36, R67</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xylene</td>
<td>10</td>
<td>1330-20-7</td>
<td>01-2119488216-32-0039</td>
<td>601-022-00-9</td>
<td>#</td>
</tr>
<tr>
<td>Classification:</td>
<td>R10, Xn;R20/21, X;R38</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>m-Phenylenebis(methylamine)</td>
<td>3.5</td>
<td>1477-55-0</td>
<td>216-032-5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Classification:</td>
<td>T;R23, C;R34, Xn;R21-22, R43, R52/53</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#: This substance has workplace exposure limit(s).

Composition comments

The full text for all R-phrases is displayed in Section 16. All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Section 4: First aid measures

General information

Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital.

Description of first aid measures

Inhalation

Move injured person into fresh air and keep person calm under observation. Get medical attention if any discomfort occurs.

Skin contact

Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation persists after washing. In case of allergic reaction or other skin disorders: Seek medical attention and bring along these instructions.

Eye contact

Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation develops or persists. Remove contact lenses, if present and easy to do.

Ingestion

Rinse mouth thoroughly. Only induce vomiting at the instruction of medical personnel. Get medical attention if irritation develops and persists.

Most important symptoms and effects, both acute and delayed

Sensitisation. Skin irritation. Moderate eye irritation. Upper respiratory tract irritation.

Indication of any immediate medical attention and special treatment needed

Symptoms may be delayed. Treat symptomatically.

Section 5: Firefighting measures

General fire hazards

Not available.

Extinguishing media

Suitable extinguishing media

Foam. Carbon dioxide (CO2). Dry powder. Water fog.

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

Special hazards arising from the substance or mixture

During fire, gases hazardous to health may be formed.
Advice for firefighters

Special protective equipment for firefighters

Not available.

Special firefighting procedures

Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace.

Section 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Ensure adequate ventilation. Avoid inhalation of vapours/spray and contact with skin and eyes. Wear suitable protective clothing. See Section 8 for personal protective equipment.

For emergency responders

Not available.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

Methods and material for containment and cleaning up

Stop the flow of material, if this is without risk. Collect spillage. Dike the spilled material, where this is possible. Eliminate sources of ignition. Collect with absorbent, non-combustible material into suitable containers. Cover with inert, absorbent material and remove to disposal container. Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with inert, absorbent material and remove to disposal container. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.

Reference to other sections

Not available.

Section 7: Handling and storage

Precautions for safe handling

Use non-sparking tools and explosion-proof equipment. Handle and open container with care. Provide adequate ventilation. Avoid inhalation of vapors/mist and contact with skin and eyes. Wear appropriate personal protective equipment. Keep away from heat, spark, open flames and other sources of ignition. The product is flammable, and heating may generate vapours which may form explosive vapour/air mixtures. Ground container and transfer equipment to eliminate static electric sparks. Change contaminated clothing. Wash contaminated clothing before reuse. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Follow rules for flammable liquids. Keep container tightly closed and in a well-ventilated place. Store away from incompatible materials.

Specific end use(s)

Not available.

Section 8: Exposure controls/personal protection

Control parameters

UK. EH40 Workplace Exposure Limits (WELs)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Propanol (67-63-0)</td>
<td>STEL</td>
<td>1250 mg/m3</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>500 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>999 mg/m3</td>
</tr>
<tr>
<td>Xylene (1330-20-7)</td>
<td>STEL</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>441 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>220 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 ppm</td>
</tr>
</tbody>
</table>

Biological limit values

UK. EH40 Biological Monitoring Guidance Values (BMGVs)

<table>
<thead>
<tr>
<th>Components</th>
<th>Value</th>
<th>Determinant</th>
<th>Specimen</th>
<th>Sampling time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene (1330-20-7)</td>
<td>650</td>
<td>Methyl hippuric acid</td>
<td>Creatinine in urine</td>
<td>Sampling time: End of shift.</td>
</tr>
</tbody>
</table>

Recommended monitoring procedures

Not available.

DNEL

Not available.

PNEC

Not available.

Exposure controls

Appropriate engineering controls

Provide adequate ventilation. Observe Occupational Exposure Limits and minimise the risk of inhalation of vapours. An eye wash bottle must be available at the work site. Use explosion-proof ventilation equipment.
Individual protection measures, such as personal protective equipment

**General information**
Use personal protective equipment as required. Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

**Eye/face protection**
Wear approved safety glasses or goggles.

**Skin protection**

- **Hand protection**
  Wear protective gloves. Laminate (PE/EVOH) gloves are recommended. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

- **Other**
  Wear appropriate chemical resistant clothing to prevent any possibility of skin contact.

**Respiratory protection**
In case of inadequate ventilation: Use respiratory equipment with gas filter, type A2.

**Thermal hazards**
Not available.

**Hygiene measures**
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

**Environmental exposure controls**
Environmental manager must be informed of all major releases.

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### Section 9: Physical and chemical properties

#### Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Reddish brown viscous liquid; slight amine odor.</td>
</tr>
<tr>
<td><strong>Physical state</strong></td>
<td>Liquid.</td>
</tr>
<tr>
<td><strong>Form</strong></td>
<td>Viscous liquid.</td>
</tr>
<tr>
<td><strong>Colour</strong></td>
<td>Reddish-brown</td>
</tr>
<tr>
<td><strong>Odour</strong></td>
<td>Amine-like</td>
</tr>
<tr>
<td><strong>Odour threshold</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>10.5</td>
</tr>
<tr>
<td><strong>Melting point/freezing point</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Boiling point, initial boiling point, and boiling range</strong></td>
<td>&gt; 65.6 °C (&gt; 150 °F)</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>23.9 °C (75 °F) Pensky-Martens Closed Cup</td>
</tr>
<tr>
<td><strong>Auto-ignition temperature</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Flammability (solid, gas)</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Flammability limit - lower (%)</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Flammability limit - upper (%)</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Oxidising properties</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Explosive properties</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Explosive limit</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Vapour pressure</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Vapour density</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>0.98 approx.</td>
</tr>
<tr>
<td><strong>Solubility (water)</strong></td>
<td>Insoluble.</td>
</tr>
<tr>
<td><strong>Partition coefficient (n-octanol/water)</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Decomposition temperature</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Viscosity</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Percent volatile</strong></td>
<td>20 % (105°C/2h)</td>
</tr>
<tr>
<td><strong>Other information</strong></td>
<td>No relevant additional information available.</td>
</tr>
</tbody>
</table>

---

### Section 10: Stability and reactivity

**Reactivity**
Not available.

**Chemical stability**
Material is stable under normal conditions.

**Possibility of hazardous reactions**
Will not occur.
### Conditions to avoid
Contact with incompatible materials. Heat, sparks, flames, elevated temperatures.

### Incompatible materials
Strong oxidising agents. Strong acids. Reactive organometallic compounds.

### Hazardous decomposition products

## Section 11: Toxicological information

### General information
Not available.

### Information on likely routes of exposure

<table>
<thead>
<tr>
<th>Route</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion</td>
<td>Ingestion may cause irritation and malaise.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Harmful if inhaled.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>Causes severe skin burns and eye damage.</td>
</tr>
<tr>
<td>Eye contact</td>
<td>Causes serious eye damage.</td>
</tr>
</tbody>
</table>

### Symptoms
Not available.

### Information on toxicological effects

#### Acute toxicity
Harmful by inhalation. Ingestion may cause irritation and malaise.

<table>
<thead>
<tr>
<th>Components</th>
<th>Test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene (1330-20-7)</td>
<td>Acute Oral LD50 Rat: 3523 - 8600 mg/kg</td>
</tr>
<tr>
<td>m-Phenylenebis(methylamine) (1477-55-0)</td>
<td>Acute Dermal LD50 Rabbit: 2 g/kg</td>
</tr>
<tr>
<td>2-Propanol (67-63-0)</td>
<td>Acute Oral LD50 Rat: 930 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Acute Dermal LD50 Rabbit: 12800 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Acute Oral LD50 Rat: 4.7 g/kg</td>
</tr>
</tbody>
</table>

#### Skin corrosion/irritation
Not available.

#### Serious eye damage/eye irritation
Not available.

#### Respiratory sensitization
The product contains a small amount of sensitising substance which may provoke an allergic reaction among sensitive individuals.

#### Skin sensitization
May cause an allergic skin reaction.

#### Germ cell mutagenicity
No data available.

#### Carcinogenicity
Not classified.

**IARC Monographs. Overall Evaluation of Carcinogenicity**

| Xylene (CAS 1330-20-7) | 3 Not classifiable as to carcinogenicity to humans. |

#### Reproductive toxicity
No data available.

#### Specific target organ toxicity - single exposure
Causes damage to organs: Central nervous system. May cause damage to organs. Respiratory system

#### Specific target organ toxicity - repeated exposure
Liver. May cause damage to organs through prolonged or repeated exposure: Kidneys.

#### Aspiration hazard
None known.

#### Mixture versus substance information
Not available.

#### Other information
No other specific acute or chronic health impact noted.

## Section 12: Ecological information

### Toxicity

<table>
<thead>
<tr>
<th>Components</th>
<th>Test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene (1330-20-7)</td>
<td>LC50 Rainbow trout, donaldson trout (Oncorhynchus mykiss): 2.661 - 4.093 mg/l 96 hours</td>
</tr>
<tr>
<td>2-Propanol (67-63-0)</td>
<td>LC50 Bluegill (Lepomis macrochirus): &gt; 1400 mg/l 96 hours</td>
</tr>
</tbody>
</table>

#### Persistence and degradability
No data available.

#### Bioaccumulative potential
No data available.

#### Mobility
Not available.

#### Environmental fate - Partition coefficient
Not available.

#### Mobility in soil
Not available.

#### Results of PBT and vPvB assessment
Not available.
### Other adverse effects

The product contains volatile substances, which may spread in the atmosphere.

### Section 13: Disposal considerations

#### Waste treatment methods

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual waste</td>
<td>Dispose of in accordance with local regulations. Waste is suitable for incineration.</td>
</tr>
<tr>
<td>Contaminated packaging</td>
<td>Since emptied containers may retain product residue, follow label warnings even after container is emptied.</td>
</tr>
</tbody>
</table>

#### EU waste code

- **08 04 09***

#### Disposal methods/information

- This material and/or its container must be disposed of as hazardous waste. Avoid discharge into water courses or onto the ground. Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

### Section 14: Transport information

#### ADR

- **UN number**: UN1866
- **UN proper shipping name**: Resin solution
- **Transport hazard class(es)**: 3
- **Subsidiary class(es)**: -
- **Packing group**: III
- **Environmental hazards**: No
- **Labels required**: 3
- **Special precautions for user**: Not available.

#### RID

- **UN number**: UN1866
- **UN proper shipping name**: RESIN SOLUTION, flammable
- **Transport hazard class(es)**: 3
- **Subsidiary class(es)**: -
- **Packing group**: III
- **Environmental hazards**: No
- **Labels required**: 3
- **Special precautions for user**: Not available.

#### ADN

- **UN number**: UN1866
- **UN proper shipping name**: Resin solution
- **Transport hazard class(es)**: 3
- **Subsidiary class(es)**: -
- **Packing group**: III
- **Environmental hazards**: No
- **Labels required**: 3
- **Special precautions for user**: Not available.

#### IATA

- **UN number**: UN1866
- **UN proper shipping name**: Resin solution
- **Transport hazard class(es)**: 3
- **Subsidiary class(es)**: -
- **Packing group**: III
- **Environmental hazards**: No
- **Labels required**: 3
- **ERG Code**: 3L
- **Special precautions for user**: Not available.

#### IMDG

- **UN number**: UN1866
- **UN proper shipping name**: RESIN SOLUTION, MARINE POLLUTANT
- **Transport hazard class(es)**: 3
- **Subsidiary class(es)**: -
- **Packing group**: III
- **Marine pollutant**: No
- **Labels required**: 3
- **EmS No.**: F-E, S-E*
- **Special precautions for user**: Not available.
- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**: No information available.
Section 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulations

- Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex I
  Not listed.
- Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex II
  Not listed.
  Not listed.
- Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1
  Not listed.
- Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2
  Not listed.
- Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3
  Not listed.
- Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V
  Not listed.
- Directive 96/61/EC concerning integrated pollution prevention and control (IPPC): Article 15, European Pollution
  Emission Registry (EPER)
  Xylene (CAS 1330-20-7)
- Regulation (EC) No. 1907/2006, REACH Article 59(1). Candidate List
  Not listed.

Other regulations

This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006. Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work.

National regulations

Contains: Ethylenediamine. May produce an allergic reaction.

Chemical safety assessment

Not available.

Section 16: Other information

List of abbreviations

Not available.

References

Not available.

Information on evaluation method leading to the classification of mixture

The mixture is classified based on test data for physical hazards. The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available. For details, refer to Sections 9, 11 and 12.

Wording of the R-phrases in sections 2 and 3

R10 Flammable.
R11 Highly flammable.
R20 Harmful by inhalation.
R20/21 Harmful by inhalation and in contact with skin.
R21 Harmful in contact with skin.
R22 Harmful if swallowed.
R23 Toxic by inhalation.
R34 Causes burns.
R36 Irritating to eyes.
R36/38 Irritating to eyes and skin.
R38 Irritating to skin.
R43 May cause sensitisation by skin contact.
R45 May cause sensitisation by skin contact.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R67 Vapours may cause drowsiness and dizziness.

Training information

Not available.

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However no warranty, guarantee or representation is made as to its accuracy, reliability or completeness. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability to assure proper use, disposal, and safety of these materials.

Issue date

15-August-2011

Revision date

15-August-2011

Print date