1. PRODUCT AND COMPANY IDENTIFICATION

Product Code
CW2200

Product Type
Preparation

Trade Name
CIRCUITWORKS CONDUCTIVE PEN, CW2200MTP/STP

Product Numbers
CW2200MTP,CW2200STP

Manufacturer/Supplier
ITW-Chemtronics

Address
Rocol House
Swillington Leeds
LS26 8BS
United Kingd

Phone Number
+44 (0) 1132322625

Chemtrec Number
International Call collect 703-527-3887

MSDS data revised
22 February 2001

2. COMPOSITION/INFORMATION ON THE COMPONENTS

<table>
<thead>
<tr>
<th>Component Name</th>
<th>Codes</th>
<th>Concentration</th>
<th>R Phrases</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-METHOXY-1-METHYLETHYL</td>
<td>000108-65-6</td>
<td>2.00 -20.00%</td>
<td>R10, R36</td>
<td>Xi, f</td>
</tr>
<tr>
<td>ACETATE</td>
<td>203-603-9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUTYLGLYCOL ACETATE</td>
<td>000112-07-2</td>
<td>2.00 -20.00%</td>
<td>R20/21</td>
<td>Xn</td>
</tr>
<tr>
<td></td>
<td>203-933-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-BUTYL ACETATE</td>
<td>000123-86-4</td>
<td>5.00 -35.00%</td>
<td>R10</td>
<td>f</td>
</tr>
<tr>
<td></td>
<td>204-658-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R10</td>
<td></td>
<td></td>
<td></td>
<td>R10 Flammable.</td>
</tr>
<tr>
<td>R20/21</td>
<td></td>
<td></td>
<td></td>
<td>R20/21 Harmful by inhalation and in contact with skin.</td>
</tr>
<tr>
<td>R36</td>
<td></td>
<td></td>
<td></td>
<td>R36 Irritating to eyes.</td>
</tr>
<tr>
<td>Xi</td>
<td></td>
<td></td>
<td></td>
<td>Xi - Irritant</td>
</tr>
<tr>
<td>Xn</td>
<td></td>
<td></td>
<td></td>
<td>Xn - Harmful</td>
</tr>
<tr>
<td>f</td>
<td></td>
<td></td>
<td></td>
<td>Flammable</td>
</tr>
</tbody>
</table>

3. HAZARD IDENTIFICATION

Main Hazards
R10 Flammable. Irritating to eyes and skin.

Health Effects - Eyes
Liquid may cause slight transient irritation.

Health Effects - Skin
Repeated or prolonged contact may produce defatting of the skin leading to irritation and dermatitis.

Health Effects - Ingestion
Swallowing may have the following effects:
- dizziness - light headedness - drowsiness - nausea
3. HAZARD IDENTIFICATION

Health Effects - Inhalation
Exposure to vapor at high concentrations may have the following effects:
- drowsiness
- loss of consciousness

4. FIRST AID MEASURES

First Aid - Eyes
Immediately flood the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

First Aid - Skin
Wash skin with soap and water.

First Aid - Ingestion
Do not induce vomiting. Obtain medical attention.

First Aid - Inhalation
Remove from exposure. Seek medical attention if symptoms persist.

5. FIRE FIGHTING MEASURES

Extinguishing Media
Use foam, dry chemical or carbon dioxide.

Unusual Fire and Explosion Hazards
This product may give rise to hazardous fumes in a fire.

Protective Equipment for Fire-Fighting
Wear self contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Spill Procedures
Contain and absorb using earth, sand or other inert material. Transfer into suitable containers for recovery or disposal.

Personal Precautions
Wear appropriate protective clothing.

Environmental Precautions
Prevent the material from entering drains or water courses.

7. HANDLING AND STORAGE

Handling
Use in well ventilated area. Avoid contact with eyes, skin and clothing.

Storage
Store away from sources of heat or ignition.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Standards

2-METHOXY-1-METHYLETHYL ACETATE
FRG: MAK 50ppm (275mg/m3) 8h TWA.
Peak limitation category I
MAK Pregnancy group 0.

BUTYLGLYCOL ACETATE
FRG: MAK 20ppm (135mg/m3) 8h TWA.
Peak limitation category II,1
MAK Pregnancy group 0.
MAK Special effects group H (danger of cutaneous absorption).

N-BUTYL ACETATE
UK EH40: OES 150ppm (724mg/m3) 8h TWA.
UK EH40: OES 200ppm (966mg/m3) 10min TWA.
*** Revised *** FRG: MAK 100ppm (480mg/m3) 8h
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA.
MAK Pregnancy group 0.
Peak limitation category I
OSHA: PEL 150ppm (713mg/m3) 8h TWA.
OSHA: STEL 200ppm (950mg/m3) 15min TWA.
A4 - not classifiable as a human carcinogen.

Engineering Control Measures
Exposure to this material may be controlled in a number of ways. The measures appropriate for
a particular worksite depend on how the material is used and on the potential for exposure. Use
of the basic principles of Industrial Hygiene will enable this material to be used safely.

Respiratory Protection
Respiratory protection not normally required.

Hand Protection
Chemical resistant gloves

Body Protection
Normal work wear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State
Paste

Colour Silver
Odour Mild Hydrocarbon

Boiling Range/Point (°C/F)
126 to 192.

Flash Point (PMCC) (°C/F)
30 C

Density
1.8.

Solubility in Water
Insoluble

Vapour Density (Air=1) Heavier than air.

Evaporation Rate
>1

10. STABILITY AND REACTIVITY

Stability
Stable under normal conditions.

Materials to Avoid
- Strong oxidizing agents - Acids - Bases

Hazardous Decomposition Products
None known.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
Low order of acute toxicity.
12. ECOLOGICAL INFORMATION

13. DISPOSAL

Product Disposal
Dispose of in accordance with all applicable local and national regulations.

14. TRANSPORT INFORMATION

UN Class
3

UN Number
1263

UN Packaging Group
III

IATA - Proper Shipping Name
Paint.

IATA - Packaging Group
III

15. REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>Labelling Information</th>
<th>Irritant</th>
</tr>
</thead>
</table>

R Frases
R10 Flammable. R36/38 Irritating to eyes and skin.

S phrases
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S2 Keep out of reach of children.

16. OTHER INFORMATION

None