Du Pont Electronics

T9039

Revised 08/29/94

T9039 PYRALIN THINNER

IDENTIFICATION

CHEM.FAMILY: Mixture.
FORMULA: Proprietary.

MANUFACTURER:
E.I. DuPont de Nemours & Co.
Electronics Department
Wilmington, DE 19898
Transportation (CHEMTREC): (800) 424-9300

INFORMATION & EMERGENCY TELEPHONE NOS:
INFORMATION: Product: (800) 441-7515
EMERGENCIES: Medical: (800) 441-3637
in Canada: (613) 348-3616

All Ingredients in This Product Are TSCA Listed/Reported.

PHYSICAL DATA

FORM: Liquid.
ODOR: Aromatic.

APPEARANCE: Colorless to Amber. SOLUBILITY IN WATER: Slight.

COMPONENTS

<table>
<thead>
<tr>
<th>Material(s):</th>
<th>CAS#</th>
<th>V.P. mm Hg @ 20C</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Methoxy-2-Propanol.</td>
<td>107-98-2</td>
<td>11.</td>
<td>30 - 60%</td>
</tr>
<tr>
<td>N-Methyl-2-Pyrollidone.</td>
<td>872-50-4</td>
<td>0.29</td>
<td>30 - 60%</td>
</tr>
</tbody>
</table>

T9039/A01
08/29/94

(Continued)
HAZARDOUS REACTIVITY

INSTABILITY:
The product is normally stable.

DECOMPOSITION:
Decomposition products at high temperature may include:
Carbon monoxide (CO); Carbon monoxide, carbon dioxide, water;
Nitrogen oxides.

POLYMERIZATION:
The product does not normally polymerize significantly.

FIRE & EXPLOSION DATA

FLASHPOINT:  130°F Calculated

FIRE & EXPLOSION HAZARDS:
KEEP AWAY FROM SPARKS AND OPEN FLAMES. Do not smoke in area
with open product;
If the product may be heated above its flashpoint during
processing, remove sources of ignition such as open sparks,
flames or static discharge to prevent vapor ignition.

EXTINGUISHING MEDIA:
Water spray, dry chemical or carbon dioxide.

SPECIAL FIREFIGHTING INFORMATION:
Toxic decomposition products may form under fire conditions.
(See Decomposition Section.);
Wear full protective clothing and a full facepiece, positive
pressure, self-contained breathing apparatus (SCBA);
Decontaminate contaminated clothing and equipment with soap
and water. Dispose of residues per federal, state, and local
regulation. (See Waste Disposal Section.).

HEALTH HAZARD INFORMATION

OVERVIEW: The most likely routes of overexposure to this
product are skin contact and inhalation. Skin irritation

T9039/A01

and/or other effects of skin contact are easily avoided by
using proper gloves (see section titled GLOVES) and washing
affected areas immediately if contact occurs. Volatile
solvents will start evaporating during room temperature
use of the product, such as thinning, pouring from jar to

(CONTINUED)
dispensing machine, and spin coating. Mist and solvent va-
por will evolve if spray application is used. During wafer
drying, 125 - 150 C, and final curing, 350 - 450 C, the re-
main ing solvent(s) will evaporate. Potential overexposure
to other chemicals used in the operation such as wafer etch-
ants and cleaners should also be considered. Well designed
area and personal air sampling and analysis can show if
exposures are within established limits. Properly designed
local ventilation and process enclosure are effective ways
ered
* Eye - avoiding contact by wearing chemical splash
goggles where there is splash potential
* Ingestion - avoiding by washing hands before eating,
drinking or smoking, and restricting these activities
to outside the work area.

PRINCIPAL HEALTH EFFECTS:

>>>1-Methoxy-2-Propanol

Toxic effects described in animals include: BY Sde:BY S

EYE CONTACT: Slight skin irritation; Eye irritation; Central
nervous system effects; BY INHALATION: Central nervous system
effects; Liver effects; Lung effects. Toxic effects of
repeated or prolonged animal exposures include: BY SKIN OR
EYE CONTACT: Kidney effects; Death; BY INHALATION: Central
nervous system effects; Lower weight gain; Liver effects;
Kidney effects; BY INGESTION: Central nervous system effects;

loss; Liver effects; Kidney effects; ***** Addi*** Addi

animal tests have shown: Developmental toxicity at dosage
levels showing maternal toxicity; No reproductive toxicity.

Human health effects of overexposure may inclu inclu

SKIN OR EYE CONTACT: Skin irritation with discomfort or rash;
Eye irritation with discomfort, tearing, or blurring of
vision; BY INHALATION: Irritation of the upper respiratory
passages with coughing and discomfort; BY INGESTION:
Temporary nervous system depression with anaesthetic effects,
e.g., dizziness, headache, confusion, incoordination, and
CONTACT: Skin permeation can occur in amounts capable of producing effects of systemic toxicity.

N-Methyl-2-Pyrrolidone

**Toxic effects described in animals include:** BY S

EYE CONTACT: Mild skin irritation; No skin sensitization; BY INHALATION: Respiratory effects. Toxic effects of repeated or prolonged animal exposures include: BY INHALATION: Respiratory effects; Bone marrow effects; Lymph system

**s; Testicular effects; Additional animal**

have shown: No carcinogenic activity; No genetic damage in bacterial or mammalian cell cultures; No reproductive

**ty; No developmental toxicity. Human**

effects of overexposure may include: By contact with liquid or vapor: Eye irritation with discomfort, tearing, or blurring of vision; BY SKIN OR EYE CONTACT: Eye irritation with discomfort, tearing, or blurring of vision; Skin irritation with itching, burning, redness, swelling or rash; BY INHALATION: Runny nose; Sneezing; Sore throat; Irritation of the nose and throat; Nonspecific discomfort, e.g., nausea,

**he or weakness. Human effects of higher**

acute, repeated or chronic overexposure may include: BY SKIN OR EYE CONTACT: Skin reddening; Dermatitis; Skin irritation overexposure to ingredient(s) of this product if they have pre-existing diseases of the: Central nervous system; Liver.

**ANIMAL DATA:**

1-Methoxy-2-Propanol
Inhalation 4 hour LC50: 15,000 ppm in rats
Skin absorption LD50: 14,000 mg/kg in rabbits
Oral LD50: 5,200 mg/kg in rats.

N-Methyl-2-Pyrrolidone
Inhalation 4 hour ALC: 1.7 mg/L in rats (Moderately toxic)
Skin absorption LD50: > 8,000 mg/kg in rabbits (Slightly toxic)
Oral LD50: 4,320 mg/kg (Slightly toxic).
he or weakness. ***** Human effects of higher(continued)

CARCINOGENICITY LISTING:

No ingredients of this product are designated by IARC, NTP, OSHA, ACGIH or DuPont as potential carcinogens.

EXPOSURE LIMITS:
Workplace exposures should be kept below the following limits:

<table>
<thead>
<tr>
<th></th>
<th>AIHA</th>
<th>ACGIH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-METHYL-2-PYRROLIDONE</td>
<td>8hr 15min</td>
<td>8hr 15min</td>
<td>8hr 15min</td>
</tr>
<tr>
<td>Units: ppm</td>
<td>10</td>
<td>100 150</td>
<td>100 150</td>
</tr>
<tr>
<td>PROPYLENE GLYCOL MONOMETHYL ETHER</td>
<td>ppm</td>
<td>ppm</td>
<td>ppm</td>
</tr>
</tbody>
</table>

Also, DuPont has established and observes the following limits:
Name/Units 12 hr 8hr 15min Ceiling
N-METHYL-2-PYRROLIDONE
Units: ppm 25

NOTES ON EXPOSURE LIMITS:
PELs - OSHA Permissible Exposure Limits - 29 CFR 1910.1000, Subpart Z, or specific substance standards;
TLVs - ACGIH Threshold Limit Values - published by American Conference of Governmental Industrial Hygienists, 6500 Glenway Avenue, Cincinnati, OH 45211;
WEELs - AIHA Workplace Environmental Exposure Limits - published by the American Industrial Hygiene Association, 2700 Prosperity Avenue, Suite 250, Fairfax, VA 22031;
AELs - DuPont Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits are lower than AEL in effect.

FIRST AID INSTRUCTIONS

Skin Contact: For skin contact, immediately wash skin with soap and water. Wash contaminated clothing before reuse.
Eye Contact: For eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is

Inhalation: difficulty, give oxygen. Call a physician.
Ingestion: If swallowed, do not induce vomiting. Immediately give two glasses of water. Never give anything by mouth to an unconscious person. Call a physician.

NOTES TO PHYSICIAN: Activated charcoal slurry may be administered. To prepare activated charcoal slurry, suspend 50 grams activated charcoal in 400ml water and mix thoroughly. Administer 5ml/kg, or 350ml for an average adult.
Respiratory Protection:
Selection of a suitable respirator will depend on the properties of the contaminant(s) and their actual or expected air concentration(s) versus applicable limits. Consult ANSI Standard Z88.2 for decision logic to select appropriate NIOSH/MSHA approved respirators; A NIOSH/MSHA/OSHA approved air purifying respirator with a dust/mist cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known or any other circumstances where air purifying respirators may not provide adequate protection;
Use a positive pressure air-supplied respirator if concentrations may exceed exposure limits. Air-purifying respirators are inadequate for this material;
If respirators are needed to meet applicable limits, a respiratory protection program up to the level of OSHA Standard 29 CFR 1910.134 is mandatory. This includes air monitoring, selection, medical approval, training, fit testing, inspection, maintenance, cleaning, storage, etc; An OSHA/NIOSH respirator for protection against Nuisance Dust is recommended.

Gloves:
Gloves should be used when the possibility of skin contact exists;
The suitability of a particular glove and glove material should be determined as part of an overall glove program.

Other Protection Practices:
Appropriate eye protection such as chemical splash goggles should be used if the possibility of eye contact exists;
Protective outer clothing should be used where the possibility of body contact exists. Contaminated work clothing should not be allowed out of the workplace;
Do not smoke, consume or store food or drinks in areas where the product is handled or stored. After handling the product, wash hands thoroughly before leaving the work area;
Additional engineering controls, work practices and training may be required depending on exposure levels. These are discussed in the OSHA Respiratory Protection Standard (29 CFR 1910.134) and OSHA Hazard Communication Standard (29 CFR 1910.1200);
Do not breath dust. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling.
DISPOSAL INFORMATION

Spill, Leak or Release:
FOR SMALL SPILLS, absorb on rags, sand or other absorbant material;
FOR LARGE SPILLS, get workers out of affected area. If flammable liquids or vapors may be present, turn off electrical devices or other sources of sparks or flames. WEAR PROTECTIVE EQUIPMENT. Use supplied-air respiratory protection if vapor concentrations are not known;
Contain spill at source by diking or absorbing with sand. Do not allow spill to spread to or intentionally flush to sewer or ground. Wash area thoroughly. Adequately ventilate area;
Spill residue, cleaning rags and absorbant may be considered hazardous. (See Waste Disposal Section.).

Waste Disposal:
Components of this product may be considered hazardous;
Consult applicable Federal, State, and local regulations for allowable disposal methods.

PRODUCT INFORMATION

Contaminated Items:
Empty product containers, contaminated clothing and cleaning materials, etc. should be considered hazardous until decontaminated or properly disposed of. (See Waste Disposal Section.).

T9039/A01

No ingredients of this product are subject to the reporting require-
ments of section 313 of Title III of the Superfund Amendment

This product is a physical mixture. The health effects information about this product is based on the individual ingredients;
The data in this Material Safety Data Sheet relates only to the specific product designated herein and does not relate to its use in combination with any other material or in any process.

Canadian WHMIS Classification:
Class B, Div 3; D2B.

Date of latest MSDS revision: 08/29/94

Person Responsible for MSDS:
Environmental Engineer - MSDS
Du Pont Electronics
14 Alexander Drive

(Continued)