1. PRODUCT IDENTIFICATION

PRODUCT NAME: Black MT Ink Roll
PRODUCT USE: Ink for marking on non-porous surfaces
PANNIER P/N: P2645-HPNP-MT1P
CHEMICAL FAMILY: Mixture

Manufacturer/Supplier:
PANNIER CORPORATION
207 SANDUSKY STREET
PITTSBURGH, PA 15212-5823 U.S.A.

Emergency Telephone Number:
INFOTRAC: 1-800-535-5053

2. HAZARDS IDENTIFICATION

Classification:
- Flammable Liquids Category 2
- Serious Eye Damage Category 1
- Skin Irritation Category 2
- Skin Sensitization Category 1
- Aspiration hazard Category 1
- Acute toxicity, Oral Category 5
- Acute toxicity, Dermal Category 5
- Acute aquatic toxicity Category 1
- Chronic aquatic toxicity Category 1
- Specific target organ toxicity – single exposure – respiratory system Category 3
- Specific target organ toxicity – single exposure – central nervous system Category 3

Labeling: Symbols:

Signal Word: Danger
Hazard statements:
- H225 Highly flammable liquid and vapor
- H304 May be fatal if swallowed and enters airways
- H315 Causes skin irritation
- H317 May cause an allergic skin reaction
- H318 Causes serious eye damage
- H319 Causes serious eye irritation
- H332 Harmful if inhaled
- H335 May cause respiratory irritation
- H336 May cause drowsiness or dizziness
- H410 Very toxic to aquatic life with long lasting effects

Precautionary statements:
- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P261 Avoid breathing dust/fume/gas/mist/vapors/spray
- P273 Avoid release to the environment
- P280 Wear protective gloves/protective clothing/eye protection/face protection
- P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
- P305+351+338 IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do and continue rinsing.
- P333 + P313 If skin irritation or rash occurs: Get medical advice/attention
- P337 + P313 If eye irritation persists: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents/container to an approved waste disposal plant.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS #</th>
<th>Wt. %</th>
<th>GHS Classification</th>
<th>Hazard Statements</th>
<th>Pictograms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Propanol</td>
<td>71-23-8</td>
<td>12 - 16</td>
<td>Flammable liquids (Cat. 2)</td>
<td>H225</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Serious eye damage (Cat. 1)</td>
<td>H318</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Specific target organ toxicity – single exposure – Central nervous system (Cat. 3)</td>
<td>H336</td>
<td></td>
</tr>
<tr>
<td>2-Ethylhexanol</td>
<td>104-76-7</td>
<td>10 - 30</td>
<td>Flammable liquids (Cat. 4)</td>
<td>H227</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute toxicity, Oral (Cat. 5)</td>
<td>H303 + H313</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute toxicity, Inhalation (Cat. 4)</td>
<td>H315</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute toxicity, Dermal (Cat. 5)</td>
<td>H319</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin irritation (Cat. 2)</td>
<td>H332</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye irritation (Cat. 2A)</td>
<td>H335</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Specific target organ toxicity – single exposure – Respiratory system (Cat.3)</td>
<td>H402</td>
<td></td>
</tr>
<tr>
<td>Isobutanol</td>
<td>78-83-1</td>
<td>10 - 20</td>
<td>Flammable Liquids (Cat 3)</td>
<td>H226</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin irritation (Cat. 2)</td>
<td>H315</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Serious eye damage (Cat. 1)</td>
<td>H318</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Aquatic Toxicity (Cat. 2)</td>
<td>H335</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Specific target organ toxicity – single exposure – Central nervous system, Respiratory system (Cat. 3)</td>
<td>H411</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chronic Aquatic Toxicity (Cat. 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d-Limonene</td>
<td>5989-27-5</td>
<td>30 - 60</td>
<td>Flammable liquids (Cat. 3)</td>
<td>H226</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin irritation (Cat. 2)</td>
<td>H304</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin sensitization (Cat. 1)</td>
<td>H315</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Aspiration hazard (Cat. 1)</td>
<td>H317</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute aquatic toxicity (Cat. 1)</td>
<td>H410</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chronic aquatic toxicity (Cat. 1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

**Inhalation:** Immediately remove person to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Seek immediate medical attention/advice.

**Skin contact:** Immediately flush with plenty of water, while removing contaminated clothing. When symptoms persist or in all cases of doubt, seek medical advice.

**Eye contact:** Flush eyes with water for at least 15 minutes while holding eyelids open. When symptoms persist or in all cases of doubt, seek medical advice.

**Ingestion:** Seek immediate medical attention/advice. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep victim’s head lowered (forward) to reduce the risk of aspiration.

**Notes for physician:** Treat symptomatically.

5. FIREFIGHTING MEASURES

**Suitable extinguishing media:** Dry chemical, foam, carbon dioxide and water fog

**Fire hazards/conditions of flammability:** Flammable liquid and vapor. This material will ignite when exposed to heat, sparks, flames, or other sources of ignition (e.g. static electricity, pilot lights, or mechanical / electrical equipment). Vapors may be heavier than air and may
collect in confined and low-lying areas. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure.

Explosion data:
Sensitivity to mechanical impact / static discharge:
May be sensitive to static discharge. Not expected to be sensitive to mechanical impact.

Special fire-fighting procedures/equipment:
Firefighters should wear protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Move containers from fire area if safe to do so. Water spray may be useful in cooling equipment exposed to heat and flame. Hazardous combustion products: Oxides of carbon and nitrogen, irritating fumes and smoke.

NFPA Rating:
Health: 2  Flammability: 3  Instability: 1  Special Hazards: 0

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Keep all other personnel upwind and away from the spill/release. Restrict access to area until completion of clean-up. Do not eat, drink or smoke while participating in clean up.

Environmental precautions: Ensure spilled product does not enter drains, sewers, waterways or confined spaces. For large spills, dike the area to prevent spreading.

Spill response/cleanup: Ventilate area of release. Remove all sources of ignition. Use only non-sparking tools and equipment in the cleanup process. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand), then place absorbent material into a container for later disposal (see Section 13). Use proper bonding and grounding techniques when transferring liquid. Notify the appropriate authorities as required.

Prohibited materials: Do not use combustible absorbents, such as sawdust.

Special spill response procedures:
In case of a transportation accident, in the United States contact CHEMTREC at 1-800-424-9300 or International at 1-703-527-3887. If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national US CERCLA Reportable Quantity (RQ): 5,000 lbs Isobutanol

7. HANDLING AND STORAGE

Precautions for safe handling: Use in a well-ventilated area. Wear suitable protective equipment during handling. Do not ingest. Avoid breathing vapor or mist. Avoid contact with skin, eyes and clothing. Keep away from heat, sparks, and open flames. Use proper bonding and grounding techniques when transferring liquid. Avoid contact with incompatible materials. Wash thoroughly after handling.

Conditions for safe storage: Store in a cool, dry, well-ventilated area. Store away from incompatibles and out of direct sunlight. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. No smoking in the area.

Incompatible materials: Strong oxidizing agents; strong reducing agents; acids

Special packaging materials: Always keep in containers made of the same materials as the supply container.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Components with workplace control parameters:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>Control Parameters</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Propanol</td>
<td>71-23-3</td>
<td>100 ppm</td>
<td>USA ACGIH TLV Upper respiratory tract irritation Eye irritation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>200 ppm 500 mg/m3</td>
<td>USA OSHA TWA Table Z-1 Limits for Air Contaminants 1910-1000</td>
</tr>
</tbody>
</table>
**Ventilation and engineering measures:** Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits.

**Respiratory protection:** If the TLV is exceeded, a NIOSH/MSHA-approved respirator is advised. Confirmation of which type of respirator is most suitable for the intended application should be obtained from respiratory protection suppliers.

**Skin protection:** Impervious gloves must be worn when using this product. Advice should be sought from glove suppliers.

**Eye / face protection:** Chemical splash goggles should be worn when handling this product.

**Other protective equipment:** Wear resistant clothing and impervious footwear. Other equipment may be required depending on workplace standards. An eyewash station and safety shower should be made available in the immediate working area.

**General hygiene considerations:** Avoid breathing vapor or mist. Avoid contact with skin, eyes and clothing. Do not eat, drink, smoke or use cosmetics while working with this product. Upon completion of work, wash hands before eating, drinking, smoking or use of toilet facilities. Remove and wash contaminated clothing before re-use. Do not take contaminated clothing out of the workplace.

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Rigid porous foam saturated with black ink</td>
</tr>
<tr>
<td>Odor</td>
<td>Solvent/alcohol</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>N/Av</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.9</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point</td>
<td>93° – 202°C / 199° – 395°F</td>
</tr>
<tr>
<td>Melting/Freezing point</td>
<td>Not available</td>
</tr>
<tr>
<td>Coefficient of water/oil distribution</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor pressure (mm Hg @ 20°C / 68°F)</td>
<td>10.5</td>
</tr>
<tr>
<td>Vapor density (Air = 1)</td>
<td>Heavier than air</td>
</tr>
<tr>
<td>Evaporation rate (n-Butyl acetate = 1)</td>
<td>Slower than n-Butyl acetate</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>Somewhat</td>
</tr>
<tr>
<td>% Volatiles (by weight)</td>
<td>72%</td>
</tr>
<tr>
<td>Flash Point 32°C</td>
<td>89°F</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not available</td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

Chemical stability: Stable under the recommended storage and handling conditions prescribed.
Possibility of hazardous reactions: None are known.
Conditions to avoid: Avoid heat and open flame. Ensure adequate ventilation, especially in confined areas.
Materials to avoid and incompatibility: See Section 7 (Handling and Storage) for further details.
Hazardous decomposition products: None known; refer to hazardous combustion products in Section 5.

11. TOXICOLOGICAL INFORMATION

Target organs: Eyes, skin, respiratory system, digestive system, central nervous system.
Routes of exposure: Inhalation: YES, Skin absorption: YES, Skin & Eyes: YES, Ingestion: YES.
Toxicological data: There is no available data for the mixture itself, only for the ingredients. See below for individual ingredient acute toxicity data.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>LD50 Oral, rat (mg/kg)</th>
<th>LD50 Rabbit, dermal (mg/kg)</th>
<th>Skin corrosion/irritation</th>
<th>Serious eye damage/eye irritation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Propanol</td>
<td>8,038</td>
<td>4,000</td>
<td>No skin irritation</td>
<td>Severe eye irritation</td>
</tr>
<tr>
<td>2-Ethyl-1-hexanol</td>
<td>3,730</td>
<td>&gt;3,000</td>
<td>Skin irritation – 24 h</td>
<td>Moderate eye irritation – 24 h</td>
</tr>
<tr>
<td>Isobutanol</td>
<td>2,460</td>
<td>3,400</td>
<td>Mild skin irritation</td>
<td>Moderate eye irritation – 24 h</td>
</tr>
<tr>
<td>d-Limonene</td>
<td>4,400</td>
<td>&gt;5,000</td>
<td>No data available</td>
<td>No eye irritation</td>
</tr>
</tbody>
</table>

Carcinogenicity: Carcinogenicity Rat Oral, Subcutaneous Mouse Oral
IARC: Group 3: Not classifiable as to its carcinogenicity to humans (d-Limonene).
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Teratogenicity: Developmental toxicity Rat Oral
Germ cell mutagenicity: Not expected to be mutagenic in humans.
Epidemiology: Not available.
Reproductive toxicity: Reproductive toxicity Mouse Oral
Specific target organ toxicity – single exposure: May cause drowsiness or dizziness.
May cause respiratory irritation
Conditions aggravated by overexposure: Pre-existing skin, eye, liver, kidney, respiratory and central nervous system disorders.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Toxicity to fish</th>
<th>Toxicity to invertebrates</th>
<th>Toxicity to algae</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LC50 r (96 h)</td>
<td>EC50 48 h</td>
<td>EC50 48 h</td>
</tr>
<tr>
<td>1-Propanol</td>
<td>Pimephales promelas 4,555 mg/l</td>
<td>Daphnia magna 3,642 mg/l</td>
<td>Pseudokirchneriella subcapitata 9,170 mg/l</td>
</tr>
<tr>
<td>2-Ethyl-1-hexanol</td>
<td>Leuciscus idus 17.1 mg/l</td>
<td>Daphnia magna 39 mg/l</td>
<td>Chlorella emersonii 10 – 50 mg/l</td>
</tr>
</tbody>
</table>
Isobutanol: Pimephales promelas 1.22 mg/l

No data is available on the mixture itself.

d-Limonene: Pimephales promelas 0.72 mg/l

No data is available on the mixture itself.

Pimephales promelas 1.22 mg/l

Daphnia magna 0.36 mg/l

No data is available on the mixture itself.

Isobutanol

Mobility: No data is available on the mixture itself.

d-Limonene:

Some studies have shown that certain bacteria and fungi have the ability to degrade terpenes, decreasing their toxicity to fish. When spilled, this product may act as an oil, causing a film, sheen, emulsion or sludge at or beneath the surface of a body of water.

Citrus terpenes volatize rapidly

Bioaccumulation potential: No data is available on the mixture itself.

Other adverse environmental effects: The ecological characteristics of this product have not been fully investigated. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters. 2-Ethyl Hexanol and d-Limonene are harmful to aquatic life.

13. DISPOSAL CONSIDERATIONS

Handling for disposal: Handle waste according to recommendations in Section 7. Empty containers retain residue (liquid and/or vapor) and can be dangerous. Do not cut, weld, drill or grind on or near this container.

Methods of disposal: Dispose of in accordance with federal, provincial and local hazardous waste regulations.

RCRA: If this product, as supplied, becomes as waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.

SECTION 14 – TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Regulatory Information</th>
<th>UN Number</th>
<th>Shipping Name</th>
<th>Class</th>
<th>Packing Group</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>49 CFR / DOT</td>
<td>UN3175</td>
<td>Solids containing flammable liquid, n.o.s. (n-propanol, isobutanol)</td>
<td>4.1</td>
<td>II</td>
<td></td>
</tr>
<tr>
<td>ICAO /</td>
<td>UN3175</td>
<td>IATA Solids containing flammable liquid, n.o.s. (n-propanol, isobutanol)</td>
<td>4.1</td>
<td>II</td>
<td></td>
</tr>
<tr>
<td>IMDG</td>
<td>UN3175</td>
<td>Solids containing flammable liquid, n.o.s. (n-propanol, isobutanol)</td>
<td>4.1</td>
<td>II</td>
<td></td>
</tr>
</tbody>
</table>

Marine Pollutant: No

SECTION 15 – REGULATORY INFORMATION

Inventory Status: All listed ingredients appear on the Toxic Substances Control Act (TSCA) Inventory, EINECS/ELINCS, AICS, and DSL. This material is classified as hazardous under OSHA regulations (29CFR 19410.1200). See Section 2.

SARA TITLE III: Sec. 302, Extremely Hazardous Substances, 40 CFR 355: No Extremely Hazardous Substances are present in this mixture.
SARA TITLE III: Sec. 311, 312: Fire Hazard, Acute Health Hazard, Chronic Health Hazard.
SARA TITLE III: Sec. 313, Toxic Chemicals Notification, 40 CFR 372: This material is not subject to SARA notification requirements since it does not contain any Toxic Chemical constituents above de minimus concentrations.
CERCLA: Reportable Quantities (RQ) Isobutanol 5,000 lbs
Any release equal to or exceeding the RQ must be reported to the National Response Center (800-424-8802) and appropriate state and local regulatory agencies and described in 40 CFR 302.6 and 40 CFR 355.40 respectively. Failure to report may result in substantial civil and criminal penalties. State and local regulations may be more restrictive than federal regulations.
RCRA CODE: U140 Isobutanol
Hazardous Air Pollutants (HAPS): None
US State “Right to Know” Laws:
California Proposition 65: To the best of our knowledge, this mixture does not contain any chemicals known to the State of California to cause cancer or reproductive harm.
Other US State “Right To Know” Lists:
The following chemicals are specifically listed by individual states:
1. Propanol (MA, MN, NJ, CA, PA, RI)
2. Ethyl hexanol (MA, NJ, PA)
3. Isobutanol (MA, NJ, PA)
4. d-Limonene (NJ, PA)

International Information:
Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).
This product is a WHMIS Controlled Product. It meets one or more of the criteria for a controlled product provided in Part IV of the Canadian Controlled Products Regulations (CPR). See Section 2.
This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

SECTION 16 – OTHER INFORMATION

HMIS RATING:
Health: 2*
Flammability: 3
Reactivity: 1

Legend:
ACGIH American Conference of Governmental Industrial Hygienists
CAS Chemical Abstract Services
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR Code of Federal Regulations
DOT Department of Transportation
EPA Environmental Protection Agency
HMIS Hazardous Material Identifications System
HSDB Hazardous Substances Data Bank
IARC International Agency for Research on Cancer
Inh Inhalation
MSHA Mine Safety and Health Administration
NFPA National Fire Protection Association
NIOSH National Institute of Occupational Safety and Health
NTP National Toxicology Program
OSHA Occupational Safety and Health Administration
PEL Permissible exposure limit
RCRA Resource Conservation and Recovery Act
RTECS Registry and Toxic Effects of Chemical Substances
SARA Superfund Amendments and Reauthorization Act
STEL Short Term Exposure Limit
TDG Canadian Transportation of Dangerous Goods Act and Regulations
TLV Threshold Limit Values
TPQ Threshold Planning Quantity
TSCA Toxic Substances Control Act
TWA Time Weighted Average
WHMIS Workplace Hazardous Materials Identification System

References:
1. ACGIH, Threshold Limit Values and Biological Exposure Indices
2. International Agency for Research on Cancer Monographs
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases (Chempendium, HSDB and RTECs)
4. Material Safety Data Sheets for manufacturers
5. US EPA Title III List of Lists
6. California Proposition 65 List

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.