SECTION 1 - CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: TPE-SW 010
PRODUCT USE: Ink Jet Ink
PRODUCT COLOR: Black
Not recommended for: Consumer Use

Manufacturer/Supplier:
PANNIER CORPORATION
207 SANDUSKY STREET
PITTSBURGH, PA 15212-5823 U.S.A.
24 Hr Emergency Telephone Number: Infotrac 1-800-535-5053

Further Information
Toxicological information center (Mainz/Germany)

You should contact a doctor or a toxicological information center if you suspect poisoning. The toxicological information center provides free medical advice in the event of poisoning or a suspicion of poisoning to everyone around the clock.

Important questions for EMERGENCY:

- Who: - age, weight, sex of the person concerned, telephone number for recall.
- What: - All you can say about the involved agents.
- How much: - Try to estimate the maximum possible intake.
- When: - Try to get the time elapsed since the incident time estimate.
- What else: - First observed symptoms? First Measures taken?

SECTION 2 - HAZARDS IDENTIFICATION

Hazard categories:
Flammable liquid: Flam. Liq. 2
Serious eye damage/eye irritation: Eye Irrit. 2A
Specific target organ toxicity - single exposure: STOT SE 3 Hazard

Statements:
Highly flammable liquid and vapor
Causes serious eye irritation
May cause drowsiness or dizziness

Label elements
Signal word: Danger
Pictograms: flame; exclamation mark
Hazard statements
Highly flammable liquid and vapor
Causes serious eye irritation
May cause drowsiness or dizziness

Precautionary statements
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Ground/bond container and receiving equipment.
Take precautionary measures against static discharge.
Wear protective gloves/protective clothing/eye protection/face protection.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Hazards not otherwise classified
In principle, all chemicals are particularly dangerous. Therefore, they are to be handled only by specially trained personnel with the necessary care. The disposal of this product requires the expertise resp. an annual instruction according to ChemVerbotsV.

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS
Mixtures
Chemical characterization
Mixture of organic solvents, colorants, binders and additives.

Hazardous components

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Components</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>78-93-3</td>
<td>butanone; ethyl methyl ketone</td>
<td>60 - 90%</td>
</tr>
<tr>
<td>107-98-2</td>
<td>1-methoxy-2-propanol; monopropylene glycol methyl ether</td>
<td>1 - 5%</td>
</tr>
</tbody>
</table>

SECTION 4 - FIRST AID MEASURES
Description of first aid measures
General information
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). Remove contaminated, saturated clothing immediately. If victim is at risk of losing consciousness, position and transport on their side.

After inhalation
Remove casually to fresh air and keep warm and at rest. If breathing is irregular or stopped, administer artificial respiration. Seek medical attention if problems persist.

After contact with skin
After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water and soap. Prolonged or repeated skin contact may cause removal of natural fat from the skin resulting in dermatitis (skin inflammation). Use protective skin cream before handling the product. In case of skin irritation, consult a physician.

After contact with eyes
If product gets into the eye, keep eyelid open and rinse immediately with large quantities of water, for at least 5 minutes. Subsequently consult an ophthalmologist. Remove contact lenses, if present and easy to do. Continue rinsing.

After ingestion
Keep at rest. Rinse mouth thoroughly with water. Let water be drunken in little sips (dilution effect). Do NOT induce vomiting. Aspiration hazard. Do not give fatty oils and milk. Do not allow a neutralisation agent to be drunk. Call a physician immediately.

**Most important symptoms and effects, both acute and delayed**

**SECTION 2: Hazards identification & SECTION 11: Toxicological information**

**Indication of any immediate medical attention and special treatment needed**

There are no data available on the mixture itself.

**SECTION 5 - FIRE FIGHTING MEASURES**

**Extinguishing media**

**Suitable extinguishing media**
In case of fire, use sand, extinguishing powder or alcohol resistant foam. Water fog. Atomized water.

**Unsuitable extinguishing media**
High power water jet.

**Specific hazards arising from the chemical**
Carbon monoxide. CO Carbon dioxide (CO2). Vapors may form explosive mixtures with air. Reignition possible over considerable distance.

**Special protective equipment and precautions for fire-fighters**
Wear a self-contained breathing apparatus and chemical resistant suit.

**Additional information**
Use water spray jet to protect personnel and to cool endangered containers. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

**SECTION 6 - ACCIDENTAL RELEASE MEASURES**

**Personal precautions, protective equipment and emergency procedures**
Provide fresh air. Avoid contact with skin and eyes. Wear suitable protective clothing and eye/face protection. If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn. The filter class must be suitable for the maximum contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, closed-circuit breathing apparatus must be used!

**Environmental precautions**
Do not allow to enter into surface water or drains. Due to danger of explosion, prevent leakage of vapors into cellars, flues and ditches.

**Methods and material for containment and cleaning up**
Provide adequate ventilation. Absorb with liquid-binding material (e.g., sand, diatomaceous earth, acid- or universal binding agents). Clean contaminated objects and areas thoroughly observing environmental regulations. Collect in closed and suitable containers for disposal. Treat the recovered material as prescribed in the section on waste disposal.

**Reference to other sections**
Safe handling: see section 7
Personal protection equipment: see section 8
Disposal: see section 13

**SECTION 7 - HANDLING AND STORAGE**

**Precautions for safe handling**

**Advice on safe handling**
Provide adequate ventilation as well as local exhaustion at critical locations. Vapors/aerosols should be extracted by suction directly at point of origin. Effective exhaust ventilation system according to 2001/59/EG (Annex 7A). See information supplied by the manufacturer. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes. Open and handle container with care. Keep container tightly closed.

**Advice on protection against fire and explosion**
The vapors are heavier than air and can accumulate in high concentrations on the ground, in cavities, channels and cellars. In case of insufficient ventilation and/or through use, explosive/highly flammable mixtures may develop. Vapors can travel considerable distances to a source of ignition where they can ignite, flash back, or explode. Keep away from sources of ignition. - No smoking. Take precautionary measures against static discharge.

**Conditions for safe storage, including any incompatibilities**

**Requirements for storage rooms and vessels**
Ensure adequate ventilation of the storage area. Keep only in the original container in a cool, well-ventilated place. Store small packages in a suitable, robust cabinet. Keep container tightly closed. Remove all sources of ignition.

Recommended storage temperature: (+15°C) - (+25°C)

**Advice on storage compatibility**

**Further information on storage conditions**
Protect against direct sunlight. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
No smoking. The product is chemically stable under recommended conditions of storage, use and temperature. In case of exceeding the storage time: Product/Packaging disposal. Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.

**SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Control parameters**

**Exposure limits**

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Substance</th>
<th>ppm</th>
<th>mg/m³</th>
<th>f/cc</th>
<th>Category</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>78-93-3</td>
<td>2-Butanone (Methyl ethyl ketone)</td>
<td>200</td>
<td>590</td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>78-93-3</td>
<td>2-Butanone</td>
<td>200</td>
<td>590</td>
<td></td>
<td>TWA (8 h)</td>
<td>REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300</td>
<td>885</td>
<td></td>
<td>STEL (15 min)</td>
<td>REL</td>
</tr>
<tr>
<td>107-98-2</td>
<td>Propylene glycol monomethyl ether</td>
<td>100</td>
<td>360</td>
<td></td>
<td>TWA (8 h)</td>
<td>REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150</td>
<td>540</td>
<td></td>
<td>STEL (15 min)</td>
<td>REL</td>
</tr>
</tbody>
</table>

**Biological Exposure Indices (BEI-ACGIH)**

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Substance</th>
<th>Determinant</th>
<th>Value</th>
<th>Test material</th>
<th>Sampling time</th>
</tr>
</thead>
<tbody>
<tr>
<td>78-93-3</td>
<td>METHYL ETHYL KETONE</td>
<td>Methyl ethyl ketone</td>
<td>2 mg/L</td>
<td>urine</td>
<td>End of shift</td>
</tr>
</tbody>
</table>

**Additional advice on limit values**
Technical measures and the application of suitable work processes have priority over personal protection equipment.
Exposure controls
Protective and hygiene measures
Keep away from food, drink and animal feeding stuffs. Remove contaminated, saturated clothing immediately. Do not breathe gas/fumes/vapor/spray. Avoid contact with skin and eyes. Protect skin by using skin protective cream. Draw up and observe skin protection program. Wash hands before breaks and after work. When using do not eat, drink or smoke.

Eye/face protection
Tightly sealed safety glasses. DIN EN 166

Hand protection
Wear protective gloves. Recommended material: Butyl caoutchouc (butyl rubber) Thickness of the glove material >= 0,5 mm. DIN EN 374. NR (natural rubber, natural latex) limited resistance using a maximum of 10 minutes. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Skin protection
Wear suitable protective clothing.

Respiratory protection
Extended inhalation at levels above the workplace limit value can cause irreversible damage to the lungs. If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn. Observe the wear time limits according GefStoffV in combination with the rules for using respiratory protection apparatus (BGR 190).

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES
Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Physical state:</th>
<th>liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>black</td>
</tr>
<tr>
<td>Odor:</td>
<td>like: Solvent</td>
</tr>
</tbody>
</table>

pH-Value (at 20°C): not determined

Changes in the physical state

<table>
<thead>
<tr>
<th>Initial boiling point and boiling range:</th>
<th>79 - 110°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point:</td>
<td>-5°C</td>
</tr>
</tbody>
</table>

Explosive properties not Explosive. Vapours may form explosive mixtures with air.

<table>
<thead>
<tr>
<th>Lower explosion limits:</th>
<th>1,8 vol. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper explosion limits:</td>
<td>11,5 vol. %</td>
</tr>
<tr>
<td>Ignition temperature:</td>
<td>514 °C</td>
</tr>
<tr>
<td>Vapor pressure:</td>
<td>105 hPa</td>
</tr>
<tr>
<td>(at 20°C)</td>
<td></td>
</tr>
<tr>
<td>Density (at 20°C):</td>
<td>0,827 - 0,831 g/cm³</td>
</tr>
</tbody>
</table>

Solubility in other solvents
mixable with most organic solvent cleaners
SECTION 10 - STABILITY AND REACTIVITY

**Chemical stability**
Stability: Stable
The mixture is chemically stable under recommended conditions of storage, use and temperature.

**Possibility of hazardous reactions**
May form explosive peroxides. In use may form flammable/explosive vapor-air mixture. Vapors of flammable solvents can accumulate in the gas phase of closed container, especially during heat treatment. Therefore keep away from fire and sources of ignition.

**Conditions to avoid**
Protect from sunlight. Store at temperatures not exceeding 35°C/95°F.

**Incompatible materials**
Keep away from strong acids, leachates, heavy metal salts and reducing materials.

**Hazardous decomposition products**
Carbon monoxide (CO), Carbon dioxide (CO2). Peroxide

SECTION 11 - TOXICOLOGICAL INFORMATION

**Information on toxicological effects**

**Acute toxicity**

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Components</th>
<th>Exposure routes</th>
<th>Method</th>
<th>Dose</th>
<th>Species</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>78-93-3</td>
<td>butanone; ethyl methyl ketone</td>
<td>oral</td>
<td>LD50</td>
<td>3300 mg/kg</td>
<td>rat</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>dermal</td>
<td>LD50</td>
<td>5000 mg/kg</td>
<td>rabbit</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>inhalative (4 h) vapour</td>
<td>LC50</td>
<td>10000 mg/l</td>
<td>rat</td>
<td></td>
</tr>
<tr>
<td>107-98-2</td>
<td>1-methoxy-2-propanol; monopropyl ene glycolyl ether</td>
<td>oral</td>
<td>LD50</td>
<td>&gt; 5000 mg/kg</td>
<td>Rat</td>
<td>IUCLID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dermal</td>
<td>LD50</td>
<td>11000 mg/kg</td>
<td>Rabbit</td>
<td></td>
</tr>
</tbody>
</table>

Carcinogenicity (NTP): none
Carcinogenicity (IARC): none
Carcinogenicity (OSHA): none

**Further information**
Prolonged/repetitive skin contact may cause skin defattening or dermatitis. Danger of cutaneous absorption. Inhalation causes narcotic effects/intoxication. Causes eye irritation. No case of eye contact. May cause damage to liver through prolonged or repeated exposure if inhaled. Ingestion causes nausea, weakness and central nervous system effects. Observe risk of aspiration if vomiting occurs.
SECTION 12 - ECOLOGICAL INFORMATION

Persistence and degradability
Product is partially biodegradable. Significant residues remain.

Bioaccumulative potential
No data available

Mobility in soil
No data available

Other adverse effects
No data available

Further information
The ecotoxicological properties of this mixture are determined by the ecotoxicological properties of the single components (see chapter 3).

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste treatment methods
Advice on disposal
Dispose of waste according to applicable legislation. Do not empty into drains; dispose of this material and its container in a safe way. Consult the appropriate local waste disposal expert about waste disposal. The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

SECTION 14 - TRANSPORT INFORMATION

US DOT 49 CFR 172.101
UN/ID number: UN1263
Proper shipping name: Paint including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler and liquid lacquer base or paint related material including paint thinning, drying, removing, or reducing compound
Transport hazard class(es): 3
Packing group: II
Hazard label: 3

Marine transport (IMDG)
UN number: UN 1263
UN proper shipping name: PAINT (including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler and liquid lacquer base)
Transport hazard class(es): 3
Packing group: II
Hazard label: 3

Limited quantity: 5 L
EmS: F-E, S-E

Other applicable information
E2
Air transport (ICAO)
UN number: UN 1263
UN proper shipping name: PAINT (including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler and liquid lacquer base)

Transport hazard class(es): 3
Packing group: II
Hazard label: 3

Limited quantity Passenger: 1 L
IATA-packing instructions - Passenger: 353
IATA-max. quantity - Passenger: 5 L
IATA-packing instructions - Cargo: 364
IATA-max. quantity - Cargo: 60 L

Other applicable information
E2
Passenger-LQ: Y341

SECTION 15 - REGULATORY INFORMATION

U.S. Regulations
National regulatory information
SARA Section 304 CERCLA:
Methyl ethyl ketone (78-93-3): Reportable quantity = 5,000 (2270) lbs. (kg)
SARA Section 311/312 Hazards:
Methyl ethyl ketone (78-93-3): Fire hazard, Immediate (acute) health hazard
1-Methoxy-2-propanol; Monopropyleneglycolmethylether (107-98-2): Fire hazard, Immediate (acute) health hazard Clean Air Act Section 112(b):
Methyl ethyl ketone (78-93-3)

SARA
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302. This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

State Regulations
Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65, State of California)
This product contains no chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Additional information
For use in industrial installations or professional treatment only.

SECTION 16 - OTHER INFORMATION

Hazardous Materials Information Label (HMIS)
Health: 1
Flammability: 3
Physical Hazard: 0
Personal Protection: B

NFPA Hazard Ratings
Health: 1

Flammability: 3

Reactivity: 0

Unique Hazard: not applicable
Revision date: 05.05.2015
Revision No: 9,00,1

**Abbreviations and acronyms**
Drop-on-Demand Printer Drop-on-Demand Printer

**Other data**
The information is based on present level of our knowledge. It does not, however, give assurances of product properties and establishes no contract legal rights.
The receiver of our product is singularly responsible for adhering to existing laws and regulations.
The product should only be handled by persons over the age of 18, who were informed sufficiently about the dangerous nature or the product and about the necessary safety precautions.

(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)