

Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Product Name: Perma-ink
Synonyms: Alcoholic Ink with plant fiber
Product Use: Ink Reservoir System

Supplier/ Manufacturer: **Permawick Company**
255 E. Brown street, Suite 100
Birmingham, Michigan 48009
Tel(248) 433-3500 Fax:(248) 433-1824

Emergency Phone Numbers:

Monday - Friday, 8 am - 5 p.m. (EST) (812) 376-0703
Chemtrec 24 hr. : (800) 424-9300 (US and Canada)

Information Contacts:

For technical information, contact your sales representative.

Section 2. Composition / Information on Ingredients

Criteria for Listing Components in the Composition Section:

Carcinogens are listed at 0.1% or greater.

Components considered hazardous by OSHA are listed at 1.0 % or greater.

Non-hazardous components are listed at 3.0 % or greater.

This is not intended to be a complete compositional disclosure.

Hazardous classification:

	<u>CASRN</u>	<u>Percent</u> <u>(by wt.)</u>
1. Permawick Fiber	Proprietary	20%
2. N-Propyl Alcohol	71-23-8	38%
3. Ethyl Alcohol	64-17-5	38%
4. Propyl cellosolve	2807-30-9	4%

See section 8 for Exposure Guidelines

Emergency Overview

WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. MAY AFFECT CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate
Flammability Rating: 2 - Moderate
Reactivity Rating: 2 - Moderate
Contact Rating: 3 - Severe (Life)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:

Vapors have a mild narcotic effect and act as an upper respiratory tract irritant. Symptoms may include irritation of the eyes, nose, and throat, drowsiness, headache, and incoordination. Excessive exposures may lead to narcosis and central nervous system depression.

Ingestion:

May cause nausea, vomiting, drowsiness, gastrointestinal pain, cramps and diarrhea. Large doses may cause death.

Skin Contact:

Defatting agent. May cause skin irritation. Skin absorption may occur with symptoms paralleling those from inhalation exposure.

Eye Contact:

Vapors are irritating to the eyes. Splashes may cause severe irritation, with stinging, tearing, redness and pain.

Chronic Exposure:

Prolonged or repeated skin contact may cause dermatitis. No systemic chronic effects have been reported in humans.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin problems or impaired respiratory function may be more susceptible to the effects of this substance.

Section 4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:

Treat CNS depression supportively. Rule out other causes. Treat ingestion with gastric lavage and saline catharsis. Metabolite acetone may be detected in urine.

Section 5. Fire Fighting Measures

Fire:

Flash point: 23C (73F) CC

Autoignition temperature: 412C (774F)

Flammable limits in air % by volume:

lcl: 2.3; ucl: 13.7

Flammable Liquid and Vapor!

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition source and flash back. Ignites on contact with potassium tertbutoxide.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide. Water spray may be used to keep fire exposed containers cool.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures.

Can burn in a fire and form carbon dioxide and some carbon monoxide. **Extinguishing Media:** Water spray or fog, foam, dry chemical or CO₂. **Fire Fighting Precautions and Procedure:**

Firefighters should wear self - contained breathing apparatus (MSHA / NIOSHA approved or equivalent) in the positive - pressure mode with full protective gear especially when there is the possibility of exposure to smoke, fumes or hazardous decomposition of products. Frothing may occur and may be quite violent. Water spray carefully applied has frequently been used with success in extinguishing such fires by causing the frothing to occur only on the surface and this foaming action blankets and extinguishes the fire (NFPA 325M - 1984). Containers can build up pressure if exposed to heat (fire). Cool with water spray.

Section 6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! Water can be used to dilute to raise flashpoint and to flush away from possible sources of ignition..

MSDS Perma-ink
REV. # 1
REV. DATE: January 11, 2006

Section 7. Handling and Storage -

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8. Exposure Controls / Personal Protection

Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL):
200 ppm (TWA), 250 ppm (STEL)

-ACGIH Threshold Limit Value (TLV):
200 ppm (TWA), 400 ppm (STEL), A3 - Confirmed animal carcinogen with unknown relevance to humans

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with organic vapor cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres. This compound possibly exists in both particulate and vapor phase. A particulate (NIOSH type N95 or better) prefilter should be used for the particulate.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

Section 9. Physical and Chemical Properties Appearance:

Clear, colorless liquid.

Odor:

Alcohol odor.

Solubility:

Infinitely soluble.

Specific Gravity:

0.804

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

97C (207F)

MSDS Perma-ink
REV. # 1
REV. DATE: January 11, 2006

Melting Point:

-127C (-197F)

Vapor Density (Air=1):

2.07

Vapor Pressure (mm Hg):

21 @ 25C (77F)

Evaporation Rate (BuAc=1):

1.3

Section 10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition. May produce acrid smoke and irritating fumes when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Reacts violently with potassium-tert-butoxide. Can react vigorously with oxidizing materials.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

Section 11. Toxicological Properties

Oral Rat LD50: 1870 mg/kg; Skin Rabbit LD50: 4060 mg/kg; Inhalation mouse LC50: 48 mg/m3; Irritation, open, eye rabbit 4mg, Severe; open, skin, rabbit: 580 mg/24 Hr. Mild; Investigated as a tumorigen, a mutagen, and a reproductive effector.

-----\Cancer Lists\-----

---NTP Carcinogen---

Ingredient	Known	Anticipated	IARC Category
------------	-------	-------------	---------------

Propyl Alcohol (71-23-8)	No	No	None
--------------------------	----	----	------

Section 12. Ecological Information

Environmental Fate:

When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into water, this material is expected to readily biodegrade. When released to water, this material is expected to quickly evaporate. This material is not expected to significantly bioaccumulate. This material has a log octanol-water partition coefficient of less than 3.0. When released into the water, this material is expected to have a half-life between 1 and 10 days. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to be readily removed from the atmosphere by wet deposition.

Environmental Toxicity:

The LC50/96-hour values for fish are between 1 and 10 mg/l. This material is expected to be toxic to aquatic life.

Section 13. Disposal Considerations

Disposal Method:

All recovered material should be packaged, labeled, transported

and disposed or reclaimed in accordance with federal, state and local regulations. Incineration is the preferred method. Reclaim where possible.

Section 14. Transportation Information

Domestic (Land, D.O.T.)

Proper Shipping Name: N-PROPANOL
Hazard Class: 3
UN/NA: UN1274
Packing Group: III
Information reported for product/size: 370LB

International (Water, I.M.O.)

Proper Shipping Name: N-PROPANOL
Hazard Class: 3
UN/NA: UN1274
Packing Group: III
Information reported for product/size: 370LB

Section 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----
Ingredient TSCA EC Japan Australia

Propyl Alcohol (71-23-8) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----
--Canada--
Ingredient Korea DSL NDSL Phil.

Propyl Alcohol (71-23-8) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----
-SARA 302- -----SARA 313-----
Ingredient RQ TPQ List Chemical Catg.

Propyl Alcohol (71-23-8) No No No No

-----\Federal, State & International Regulations - Part 2\-----
-RCRA- -TSCA-
Ingredient CERCLA 261.33 8(d)

Propyl Alcohol (71-23-8) No No No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: No (Pure / Liquid)

Australian Hazchem Code: 2[S]E

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Section 16. Other Information

MSDS Perma-ink
REV. # 1
REV. DATE: January 11, 2006

NFPA Ratings: Health: **1** Flammability: **3** Reactivity: **0**

Label Hazard Warning:

WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. MAY AFFECT CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

Label Precautions:

Keep away from heat, sparks and flame.
Avoid breathing vapor.
Avoid contact with eyes, skin and clothing.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.

Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, give large amounts of water to drink. Never give anything by mouth to an unconscious person. In all cases call a physician.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include:

This information presented herein is believed to be factual as it has been derived from works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as warranty or representation for which Perma-ink bears legal responsibility. Conditions of use and suitability of the product for particular uses are beyond our control. Any recommendations should be reviewed by the user in the specific context of the intended use to determine whether they are appropriate. Nothing is intended as a recommendation for uses which infringe valid patents or as extending license under valid patents.

ACGIH: American Conference of Governmental Industrial Hygienists
ANSI: American National Standards Institute
CASRN: Chemical Abstracts Service Registry Number
CERCLA: Comprehensive Emergency Response, Compensation and Liability Act
HMIS: Hazardous Material Identification System
IARC: International Agency for Resource and Conservation
NTP: National Toxicology Program
OSHA: Occupational Health and Safety Organization
PEL: OSHA Permissible Exposure Limit
RCRA: Resource Conservation and Recovery Act
SARA: Superfund Amendment Reauthorization Act
STEL: Short Term Exposure Limit
TLV: Threshold Limit Values
TSCA: Toxic Substances Control Act
TWA: Time Weighted Average