Honeywell

Burdick & Jackson

Material Safety Data Sheet

1,4-Dioxane

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: 1,4-Dioxane

OTHER/GENERIC NAMES: Dioxane, Diethylene Dioxide, Diethylene Ether

PRODUCT USE: Solvent

MANUFACTURER: Honeywell, Burdick & Jackson
1953 South Harvey Street
Muskegon, MI 49442

FOR MORE INFORMATION CALL:
(Monday-Friday, 8:00am-5:00pm)
1-800-368-0050

IN CASE OF EMERGENCY CALL:
(24 Hours / Day, 7 Days / Week)
1-800-707-4555 or Chemtrec 1-800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
1,4-Dioxane	123-91-1	100%

Trace impurities and additional material names not listed above may also appear in Section 15 toward the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Volatile and Flammable. Clear Colorless liquid with ether like odor. Can form dangerous peroxides when exposed to air, which are potentially explosive, shock and heat sensitive. Can cause respiratory tract irritation. May cause cancer.

POTENTIAL HEALTH HAZARDS

SKIN: Irritant. Can cause dermatitis through defatting of skin.

EYES: Can cause irritation.

INHALATION: Can cause respiratory tract irritation, drowsiness, disorientation and nausea. Can cause damage to the liver, kidneys and central nervous system.

INGESTION: Can cause cramps and nausea.

DELAYED EFFECTS: May produce blood disorders.

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

INGREDIENT NAME	NTP STATUS	IARC STATUS	OSHA LIST
1,4-Dioxane	Anticipated	listed, 2B, suspected	not listed

4. FIRST AID MEASURES

SKIN: Rinse skin thoroughly with water. Remove contaminated clothing. Contact a physician.

EYES: Rinse eyes with water for at least 15 minutes. Contact a physician.

INHALATION: Remove to fresh air immediately. If not breathing, administer rescue breathing (CPR). Contact a physician.

INGESTION: Contact a physician. Do Not induce vomiting.

ADVICE TO PHYSICIAN: No specific antidote. Treat supportively and symptomatically.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT:	54?F (12?C)
FLASH POINT METHOD:	Closed Cup
AUTOIGNITION TEMPERATURE:	365?F (180?C)
UPPER FLAME LIMIT (volume % in air):	22%
LOWER FLAME LIMIT (volume % in air):	2.0%
FLAME PROPAGATION RATE (solids):	Not applicable
OSHA FLAMMABILITY CLASS:	IB

EXTINGUISHING MEDIA:
Carbon dioxide, dry chemical or foam.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Dangerous fire hazard when exposed to heat or flame.
Vapor / air mixtures are explosive. Vapor is heavier than air and danger of flashback exists.

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Do not release runoff from fire fighting efforts to sewers or waterways. Fire may produce toxic fumes. Always wear Self Contained Breathing Apparatus.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.)
Eliminate sources of ignition. Isolate the spill area. Stop leak in a safe and practical manner. (If leak cannot be stopped easily and safely, advise trained emergency response personnel of the situation.) Using inert material (such as ground corncobs) dike the spilled solvent to prevent it from running into drains or waterways.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)
Flammable liquid and vapors. Keep container closed. Do not breathe vapors. Avoid contact with skin, eyes and mucous membranes. Keep away from heat, sparks and flame. Electrically ground all handling equipment.
Protective neoprene or rubber gloves and apron are recommended.

STORAGE RECOMMENDATIONS:

Store in an area designed for storage of flammable liquids. (OSHA 29 CFR 1910.106)
Protect from temperature extremes and sunlight, and store away from incompatible substances and in accordance with 29 CFR 1910.106. Avoid acids, bases, oxidizers, explosives, nitrogen-fluorine compounds, sulfites, perchlorates, reducing agents and plastics.

Flammable liquid and vapor. Once liquid solvent has been completely dispensed, containers which appear "empty" should be handled in the same manner as when they were "full" of liquid solvent.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

Provide general or local exhaust ventilation systems to maintain airborne concentrations below exposure limits. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

1,4-Dioxane

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:
Wear chemically protective gloves, boots and aprons to prevent prolonged or repeated skin contact.

EYE PROTECTION:
Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (*29 CFR 1910.133*). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

RESPIRATORY PROTECTION:

Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (*29 CFR 1910.134*) and, if necessary, wear a MSHA / NIOSH-approved respirator. For emergency or non-routine operations *(*cleaning spills, reactor vessels, or storage tanks*)*, wear an SCBA. Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

ADDITIONAL RECOMMENDATIONS:

Emergency eyewash stations and washing facilities available in work area.
Separate contaminated work clothes from street clothes. Launder before reuse. Remove material from your shoes and clean personal protective equipment. Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material.

EXPOSURE GUIDELINES

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMIT
1,4-Dioxane	25 ppm	100 ppm	None

* = Limit established by Honeywell International, Inc.
** = Workplace Environmental Exposure Level (AIHA).
*** = Biological Exposure Index (ACGIH).

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS: None

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear		
PHYSICAL STATE:	Colorless		
MOLECULAR WEIGHT:	88.11		
CHEMICAL FORMULA:	$C_4H_8O_2$		
ODOR:	Slight ether-like Threshold: (NSC) 150 ppm		
SPECIFIC GRAVITY (water = 1.0):	1.034		
SOLUBILITY IN WATER (weight %):	100		
pH:	Not applicable.		
BOILING POINT:	101.32?C		
MELTING POINT:	11.8?C		
VAPOR PRESSURE:	29mm Hg		
VAPOR DENSITY (air = 1.0):	3.0		
EVAPORATION RATE:	~3	**COMPARED TO:**	Butyl Acetate = 1
% VOLATILES:	~100		
FLASH POINT:	54?F (12?C)		

(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID):

Stable under conditions normal to recognized safe handling and storage practices.

INCOMPATIBILITIES:

Oxidizing agents, acids and bases.

HAZARDOUS DECOMPOSITION PRODUCTS:

Explosive peroxides can form upon exposure to air and/or direct sunlight. Thermal decomposition produces carbon monoxide and other toxic vapors.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

Oral Mouse LD_{50} : 5700 mg/kg Oral Cat LD_{50} : 2000 mg/kg

Skin Rabbit LD_{50} : 7600 mg/kg

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Preclude from exposure those persons with pre-existing skin, lung, liver and kidney disorders.

Exposure may result in headaches, central nervous system dysfunction, dermatitis, eye and mucous membrane damage, liver and kidney damage and may be fatal.

OTHER DATA: None

12. ECOLOGICAL INFORMATION

Evaporates readily. Easily mixes with water. Does not bind well with soil. Will readily leach through soil to ground water. Toxicity to aquatic life is low. Highest NOAEL (fathead Minnows) = 6000 mg/L.

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? Yes

If yes, the RCRA ID number is: D001, U108

OTHER DISPOSAL CONSIDERATIONS:

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT PROPER SHIPPING NAME: Dioxane
US DOT HAZARD CLASS: 3, Flammable Liquid
US DOT ID NUMBER: UN 1165
US DOT PACKING GROUP: II
NA EMERGENCY RESPONSE GUIDE: 127

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Listed on TSCA inventory.
OTHER TSCA ISSUES: May be subject to export notification.

SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

INGREDIENT NAME	SARA/CERCLA RQ (lb)	SARA EHS TPQ (lb)
1,4-Dioxane	100 lb	Not Listed.

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Acute, Chronic, Fire, Reactive

SARA 313 TOXIC CHEMICALS:
The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

INGREDIENT NAME	COMMENT

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1,4-Dioxane

1,4-Dioxane	None

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

INGREDIENT NAME	WEIGHT %	COMMENT
No ingredients listed in this section		

ADDITIONAL REGULATORY INFORMATION:
None.

WHMIS CLASSIFICATION (CANADA):
Class B, Division 2, Flammable Liquid. Class D, Division 1, Sub division A, Suspected Carcinogen

FOREIGN INVENTORY STATUS: Not determined.

16. OTHER INFORMATION

CURRENT ISSUE DATE: June, 2000
PREVIOUS ISSUE DATE: December, 1996, January, 1998

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:
Conversion to ANSI Standard. New header and footer information.

NFPA Classification	
Health:	2
Flammability:	3
Reactivity:	1

California Proposition 65 Label Statement

1,4-Dioxane appears on one of the California Proposition 65 lists; therefore, the following statement has been placed on the product label:

"Warning: This product contains a chemical known to the State of California to cause cancer."