1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Isopropyl Alcohol

OTHER/Generic Names: 2-Propanol, Isopropanol, IPA

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

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>CAS NUMBER</th>
<th>WEIGHT %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol</td>
<td>67-63-0</td>
<td>100%</td>
</tr>
</tbody>
</table>

Trace impurities and additional material names not listed above may also appear in Section 15 towards 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: Flammable. A clear, colorless, liquid with a slight alcoholic odor. Can cause skin, eye and respiratory tract irritation.

POTENTIAL HEALTH HAZARDS

SKIN: Repeated exposures to the skin may result in burning, itching, redness and dermatitis.

EYES: Liquid and vapor contact produces intense stinging and burning sensations. It has been reported that prolonged contact to the liquid may cause temporary damage to the eyes, but healing has been prompt.

INHALATION: Exposure can cause respiratory tract and throat irritation, headaches, shortness of breath and symptoms similar to intoxication. Overexposure can produce severe central nervous system depression, coma and possibly fatal respiratory failure.

INGESTION: The probable lethal dose in an adult is 240 ml but as little as 20 ml may produce symptoms. Symptoms may include, severe nausea, abdominal pain, bleeding and central nervous system depression.

DELAYED EFFECTS: None known.
Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>NTP STATUS</th>
<th>IARC STATUS</th>
<th>OSHA LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol</td>
<td>Group 3, Unclassifiable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

SKIN: Flush with water for at least 15 minutes. Remove contaminated clothing. Wash clothing before reuse.

EYES: Flush with water for at least 15 minutes. If irritation persists, get medical assistance.

INHALATION: Remove from exposure area to fresh air. If victim is not breathing administer artificial respiration according to your level of training and obtain professional medical assistance immediately.

INGESTION: If patient is conscious, rinse mouth with water. Do not induce vomiting unless instructed to do so by a physician. Get immediate medical attention.

ADVICE TO PHYSICIAN: No specific instructions. Treat symptomatically.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

- **FLASH POINT:** 53°F (12°C)
- **FLASH POINT METHOD:** Closed Cup
- **AUTOIGNITION TEMPERATURE:** 750°F (399°C)
- **LOWER FLAME LIMIT (volume % in air):** 2.0 (LFL)
- **UPPER FLAME LIMIT (volume % in air):** 12.0 (UFL)
- **FLAME PROPAGATION RATE (solids):** Not applicable
- **OSHA FLAMMABILITY CLASS:** 1B

EXTINGUISHING MEDIA:
Dry chemical, carbon dioxide or alcohol resistant foam. Water may be ineffective. Water spray may be used to reduce vapors and to cool containers exposed to fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Fire hazard when exposed to heat, flame or oxidizers. Vapors are heavier than air and may travel a considerable distance to an ignition source and flash back. Vapor mixtures are explosive.

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:
Wear self-contained breathing apparatus. Do not release runoff from fire control methods to sewers or waterways. Keep fire exposed containers cool and reduce vapors with water spray.
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.)
Keep away from heat, open flame or other high temperature sources. Avoid contact with skin, eyes and clothing;
avoid breathing vapor or mist. Use good personal hygiene and housekeeping practices.

STORAGE RECOMMENDATIONS:
Store in an area designed for storage of flammable liquids. (OSHA 29 CFR 1910.106)
Protect containers from physical damage. Store in a cool, dry, well-ventilated area away from ignition sources
and other fire hazards. 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 permissible TLV
levels. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by
controlling it at its source.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:
Where liquid contact is possible impervious coveralls are recommended. To minimize the possibility in other
handling and storage operations, wear appropriate PPE to include chemical resistant gloves, boots and apron.

EYE PROTECTION:
Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on
quantity of material and conditions of use.

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
ADDITIONAL RECOMMENDATIONS:
This material should be used in close proximity to eyewash station and safety shower. Use appropriate personal hygiene after handling this material. Do not smoke in the vicinity of flammable materials.

EXPOSURE GUIDELINES

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>OTHER LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol</td>
<td>400 ppm TWA</td>
<td>400 ppm TWA</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>500 ppm STEL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = 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, colorless liquid
PHYSICAL STATE: Liquid
MOLECULAR WEIGHT: 60.11
CHEMICAL FORMULA: (CH₃)₂CHOH
ODOR: Slight alcohol odor
SPECIFIC GRAVITY (water = 1.0): 0.785 @ 25°C
SOLUBILITY IN WATER (weight %): Complete
pH: Not Applicable.
BOILING POINT: 82.3°C
FREEZING POINT: -88°C
VAPOR PRESSURE: @ 20°C 33 mmHg
VAPOR DENSITY (air = 1.0): 2.1
EVAPORATION RATE: ~ 3
% VOLATILES: 100
FLASH POINT: 12°C

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

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID):
Stable at room temperatures. Avoid contact with ignition sources. Vapors are flammable. Containers may rupture violently in fire and travel a considerable distance.
INCOMPATIBILITIES:
Strong oxidizers, strong acids, reactive metals, including aluminum. Forms ketones in presence of oxygen.

CONDITIONS TO AVOID:
Heat, sparks and flame. Direct sunlight.

HAZARDOUS DECOMPOSITION PRODUCTS:
Incomplete combustion can generate carbon monoxide and other hazardous gases.

HAZARDOUS POLYMERIZATION:
Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:
Oral LD₅₀ (rat): 5045 mg/ kg
Skin Irritation (rabbit): 500 mg - mild
Eye Irritation (rabbit): 10 mg - moderate; 100 mg - moderate

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:
8000 ppm/ 8 hr./ day for 20 weeks (intermittent) caused sensory change involving peripheral nerves.

OTHER DATA:
None

12. ECOLOGICAL INFORMATION

Relatively biodegradable.
LC₅₀ Pimephales promelas (fathead minnows) 11,160 mg/ l/ 24 hr (static bioassay in Lake Superior water at 18-22 deg. C.
LC₅₀ Pimephales promelas (fathead minnows) 10.4 g/ l/ 96 hr.

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? Yes
If yes, the RCRA ID number is: D001 Ignitable

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: Isopropyl Alcohol
US DOT HAZARD CLASS: 3, Flammable Liquid
US DOT ID NUMBER: UN 1219
US DOT PACKING GROUP: II
NA EMERGENCY RESPONSE GUIDE: 129

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 the inventory.
OTHER TSCA ISSUES: Subject to export notification.

SARA TITLE III/CERCLA

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

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>SARA/CERCLA RQ (lb)</th>
<th>SARA EHS TPQ (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No ingredients listed in this section

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: Immediate Fire

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

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol</td>
<td>Only persons who manufacture by the strong acid process are subject to reporting requirements.</td>
</tr>
</tbody>
</table>

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
No ingredients listed in this section

WEIGHT %  COMMENT

ADDITIONAL REGULATORY INFORMATION:
None

WHMIS CLASSIFICATION (CANADA):
Not determined

FOREIGN INVENTORY STATUS:
Listed on the Canadian DSL and EINECS

16. OTHER INFORMATION

CURRENT ISSUE DATE:  June, 2000

NFPA Classification

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Health:</td>
<td>1</td>
</tr>
<tr>
<td>Flammability:</td>
<td>3</td>
</tr>
<tr>
<td>Reactivity:</td>
<td>0</td>
</tr>
</tbody>
</table>

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING: