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 (Honeywell - Domestic)
602-365-4980 (Honeywell - International)

For Transportation Emergencies:
1-800-424-9300 (CHEMTREC - Domestic)
703-527-3887 (CHEMTREC - International)

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 contact produces intense stinging and burning sensations. Prolonged contact may cause eye damage.

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 respiratory failure.
**INGESTION:** Symptoms may include nausea, abdominal pain, 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 plenty of water for at least 15 minutes while removing contaminated clothing. Get medical attention as needed for irritation or any other symptoms. Launder contaminated clothing before reuse.

**EYES:** Immediately flush with water, continuing for at least 15 minutes. Get immediate medical attention.

**INHALATION:** Remove to fresh air. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen provided a qualified operator is available. Get medical attention.

**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
- **UPPER FLAME LIMIT (volume % in air):** 12.0
- **FLAME PROPAGATION RATE (solids):** Not applicable
- **OSHA FLAMMABILITY CLASS:** 1B Flammable Liquid

**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. Containers may rupture violently in fire.
SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Wear NIOSH approved self-contained breathing apparatus, and full protective clothing. 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. Provide adequate ventilation and isolate the spill area. Contain and recover liquid when possible. Absorb spilled material in an absorbent recommended for solvent spills and place in an approved chemical waste container. Do not allow spill to enter into sewers 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.)

Ground containers for transfer of contents. Keep away from sparks, open flames and sources of ignition. Use with adequate ventilation. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke in the work area. Wash thoroughly after handling.

STORAGE RECOMMENDATIONS:

Store in an area designed for storage of flammable liquids. (OSHA 29 CFR 1910.106)
Store in a cool, dry, well-ventilated area away from ignition sources and other fire hazards. Protect containers from physical damage. Flammable liquid and vapor. Empty containers may contain product residue and/or vapors. Label warnings apply to empty containers that have not been cleaned.

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:

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

EYE PROTECTION:

Wear safety glasses with non-perforated sideshields for normal handling. If there is potential for contact with liquid, wear splash-proof goggles and full-face shield. See OSHA eye and face protection regulations 29 CFR 1910.133.
RESPIRATORY PROTECTION:
Not required for properly ventilated areas. If there is potential for inhalation of vapor or mist, use an appropriate NIOSH approved respirator.

The respirator must be selected based on contamination levels and use conditions found in the workplace. Use conditions must not exceed the working limits of the respirator. The respirator must be approved by the National Institute for Occupational Safety and Health (NIOSH) and used in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.134.

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 (NIOSH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol</td>
<td>200 ppm TWA</td>
<td>400 ppm TWA</td>
<td>400 ppm TWA</td>
</tr>
<tr>
<td></td>
<td>400 ppm STEL</td>
<td></td>
<td>500 ppm STEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2000 ppm IDLH</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 @ 77°F (25°C)
SOLUBILITY IN WATER (weight %): Complete
pH: Not Applicable.
BOILING POINT: 180.1°F (82.3°C)
FREEZING POINT: -126.4°F (-88°C)
VAPOR PRESSURE @ 20°C: 33 mm Hg
VAPOR DENSITY (air = 1.0): 2.1
EVAPORATION RATE: ~ 3
% VOLATILES: 100
FLASH POINT: 53.6°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 at room temperature. Avoid heat, sparks, flame, ignition sources and direct sunlight.

INCOMPATIBILITIES:
Strong oxidizers, strong acids, reactive metals, including aluminum. Forms ketones in presence of oxygen.

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

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:
Oral LD₅₀ (rat): 5045 mg/kg
Inhalation LC₅₀ (rat): 16,000 ppm/8 hours
Skin LD₅₀ (rabbit): 12,800 mg/kg
Skin Irritation (rabbit): 500 mg - mild
Eye Irritation (rabbit): 10 mg - moderate; 100 mg - severe

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:
Subchronic Inhalation (rat): TC₅₀ 5000 ppm/6 hr/day for 90 days (intermittent) caused a change in motor activity.
Chronic Inhalation (rat): TC₅₀ 2500 ppm/6 hr/day for 2 years (intermittent) caused changes in liver and bladder weight and changes in urine composition.

OTHER DATA:
None

12. ECOLOGICAL INFORMATION

Biodegradation: 58% theoretical BOD, 5 days at 20° C - Relatively biogradeable.
Bioconcentration: Not expected to bioaccumulate in aquatic organisms based on low octanol/water partition coefficient.

Acute Toxicity (fathead minnow): LC₅₀ 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:
Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or RCRA approved waste facility. Dispose of container and unused contents in accordance with federal, state and local requirements.

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

Proper DOT Shipping Description: Isopropyl Alcohol, 3, UN 1219, II

Reportable Quantity (RQ): None

Label(s) Required: Class 3, Flammable Liquid


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: TSCA 8(a) Inventory Update Rule (IUR).

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 FHS TPQ (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No ingredients listed in this section</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 percents are found in Section 2.

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol [67-63-0]</td>
<td>Manufacturing-Strong Acid Process, no supplier notification. DeMinimis Concentration is 1.0%.</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.

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>WEIGHT %</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>No ingredients listed in this section</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ADDITIONAL REGULATORY INFORMATION:

None

WHMIS CLASSIFICATION (CANADA):
Class B, Division 2
This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.

FOREIGN INVENTORY STATUS:
Isopropyl Alcohol is on the following inventories:
    Australian
    Canadian DSL
    Chinese
    EINECS
    Japanese (ENCS & ISHL). Examined by MITI
    Korean
    Philippines (PICCS)

16. OTHER INFORMATION

CURRENT ISSUE DATE: April 22, 2003
PREVIOUS ISSUE DATE: June, 2000
CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:
Amended or modified the following:
  Emergency Telephone Numbers, Section 1.
  Potential Health Hazards (eyes, ingestion), Section 3.
  First Aid Measures, Section 4.
  Accidental Release Measures, Section 6.
  Handling & Storage, Section 7.
  Respiratory Protection, Section 8.
  Exposure Guidelines, Section 8.
  Toxicological Information, Section 11.
  Ecological Information, Section 12.
  Other Disposal Considerations, Section 13.
  Transport Information, Section 14.
  Foreign Inventory Status, Section 15.

OTHER INFORMATION:

NFPA Hazard Rating:
  Health: 1
  Flammability: 3
  Reactivity: 0