

**Cyclohexane/Isopropyl Alcohol Azeotrope (412)**

Version 1

Revision Date 04/08/2008

Print Date 04/11/2008

**SECTION 1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : Cyclohexane/Isopropyl Alcohol Azeotrope  
MSDS Number : 000000011344  
Product Use Description : Solvent

Company : Honeywell International Inc.  
1953 South Harvey Street  
Muskegon, MI 49442

For more information call : 1-800-368-0050  
(Monday-Friday, 9:00am-5:00pm)

**In case of emergency call : Medical: 1-800-498-5701**  
: **Transportation: 1-800-424-9300 or 703-527-3887**  
: (24 hours/day, 7 days/week)

**SECTION 2. HAZARDS IDENTIFICATION****Emergency Overview**

Form : liquid, clear

Color : colourless

Odor : mild sweet ether-like

Hazard Summary : Extremely flammable. In use, may form flammable/explosive vapour-air mixture. Harmful or fatal if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage. May be harmful if inhaled. Irritating to eyes, respiratory system and skin. Causes headache, drowsiness or other effects to the central nervous system. Repeated exposure may cause skin dryness or cracking. May cause irritation of the gastrointestinal tract. Do not swallow. Avoid breathing vapors, mist or gas. Avoid contact with skin, eyes and clothing. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Potential Health Effects**

Skin : Irritating to skin.  
May cause systemic poisoning with symptoms paralleling those of inhalation.  
Prolonged or repeated skin contact with liquid may cause defatting resulting in drying, redness and possible blistering.

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Eyes	: Irritating to eyes. Causes itching, burning, redness and tearing. May cause irreversible eye damage.
Ingestion	: Harmful or fatal if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. May cause systemic poisoning with symptoms paralleling those of inhalation.
Inhalation	: Causes respiratory tract irritation. Causes headache, drowsiness or other effects to the central nervous system. Vapours may cause drowsiness and dizziness. Repeated or prolonged exposure to the substance can produce kidney damage. Repeated or prolonged exposure to the substance can produce liver damage. Inhalation of high vapour concentrations can cause CNS-depression and narcosis. High concentration of vapours may induce unconsciousness.
Chronic Exposure	: Repeated and prolonged exposure to solvents may cause brain and nervous system damage. Repeated or prolonged exposure to the substance can produce liver damage. Repeated or prolonged exposure to the substance can produce kidney damage. Prolonged or repeated skin contact with liquid may cause defatting resulting in drying, redness and possible blistering.
Aggravated Medical Condition	: Eye disorders Skin disorders Respiratory disorders Neurological disorders Cardiac irregularities Liver disorders Kidney disorders
Target Organs	: Eyes Skin Respiratory system Central nervous system Heart Liver Kidney Gastrointestinal tract

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**Carcinogenicity**

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Component	CAS-No.	Weight %
Cyclohexane	110-82-7	68.00
Propan-2-ol	67-63-0	32.00

**SECTION 4. FIRST AID MEASURES**

Inhalation	:	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Use oxygen as required, provided a qualified operator is present. Call a physician.
Skin contact	:	Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Call a physician.
Eye contact	:	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician.
Ingestion	:	Do not induce vomiting without medical advice. Immediate medical attention is required. Never give anything by mouth to an unconscious person. Call a physician.

**Notes to physician**

Treatment : Treat symptomatically.

**SECTION 5. FIRE-FIGHTING MEASURES**

Flash point	:	<-12 °C (10 °F)
Lower explosion limit	:	not determined
Upper explosion limit	:	not determined
Suitable extinguishing media	:	Carbon dioxide (CO <sub>2</sub> ) Alcohol-resistant foam Dry chemical

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| Extinguishing media which shall not be used for safety reasons | : | Water may be ineffective.<br>Do not use a solid water stream as it may scatter and spread fire.   |
| Specific hazards during fire fighting                          | : | Extremely flammable.<br>Vapours may form explosive mixtures with air.<br>Vapours are heavier than air and may spread along floors.<br>Vapors may travel to areas away from work site before igniting/flashing back to vapor source.<br>Cool closed containers exposed to fire with water spray.<br>Do not allow run-off from fire fighting to enter drains or water courses.<br>In case of fire hazardous decomposition products may be produced such as:<br>Carbon monoxide<br>Carbon dioxide (CO <sub>2</sub> ) |
| Special protective equipment for fire-fighters                 | : | In the event of fire and/or explosion do not breathe fumes.<br>Wear self-contained breathing apparatus and protective suit.<br>No unprotected exposed skin areas.   |

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

- |                           |   |  |
|---------------------------|---|--|
| Personal precautions      | : | Immediately evacuate personnel to safe areas.<br>Keep people away from and upwind of spill/leak.<br>Wear personal protective equipment. Unprotected persons must be kept away.<br>Ensure adequate ventilation.<br>Remove all sources of ignition.<br>Vapors may travel to areas away from work site before igniting/flashing back to vapor source.<br>Do not swallow.<br>Avoid breathing vapors, mist or gas.<br>Avoid contact with skin, eyes and clothing. |
| Environmental precautions | : | Prevent further leakage or spillage if safe to do so.<br>Discharge into the environment must be avoided.<br>Do not flush into surface water or sanitary sewer system.<br>Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  |
| Methods for cleaning up   | : | Ventilate the area.<br>No sparking tools should be used.<br>Use explosion-proof equipment.<br>Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations (see section 13).  |

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**SECTION 7. HANDLING AND STORAGE****Handling**

Handling : Handle with care.  
Wear personal protective equipment.  
Use only in well-ventilated areas.  
Keep container tightly closed.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Keep away from fire, sparks and heated surfaces.  
Take precautionary measures against static discharges.  
Ensure all equipment is electrically grounded before beginning transfer operations.  
No sparking tools should be used.  
Use explosion-proof equipment.  
Do not smoke.  
Do not swallow.  
Avoid breathing vapors, mist or gas.  
Avoid contact with skin, eyes and clothing.

Advice on protection against fire and explosion : Vapours may form explosive mixtures with air.  
Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits.  
Vapours are heavier than air and may spread along floors.  
Vapors may travel to areas away from work site before igniting/flashing back to vapor source.  
Container hazardous when empty.  
Keep product and empty container away from heat and sources of ignition.  
Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.  
Take measures to prevent the build up of electrostatic charge.  
To avoid ignition of vapours by static electricity discharge, all metal parts of the equipment must be grounded.  
Electrical equipment should be protected to the appropriate standard.  
No sparking tools should be used.  
Use explosion-proof equipment.  
No smoking.

**Storage**

Requirements for storage areas and containers : Storage rooms must be properly ventilated.  
Keep containers tightly closed in a dry, cool and well-ventilated place.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.

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Keep away from heat and sources of ignition.  
 Keep away from direct sunlight.  
 Store in area designed for storage of flammable liquids. Protect from physical damage.  
 Store away from incompatible substances.

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

- Protective measures : Ensure that eyewash stations and safety showers are close to the workstation location.  
 Do not swallow.  
 Avoid breathing vapors, mist or gas.  
 Avoid contact with skin, eyes and clothing.
- Engineering measures : Use with local exhaust ventilation.  
 Prevent vapor buildup by providing adequate ventilation during and after use.
- Eye protection : Do not wear contact lenses.  
 Wear as appropriate:  
 Safety glasses with side-shields  
 If splashes are likely to occur, wear:  
 Goggles or face shield, giving complete protection to eyes
- Hand protection : Solvent-resistant gloves  
 Gloves must be inspected prior to use.  
 Replace when worn.
- Skin and body protection : Wear as appropriate:  
 Solvent-resistant apron and boots  
 Flame retardant antistatic protective clothing  
 If splashes are likely to occur, wear:  
 Protective suit
- Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.  
 For rescue and maintenance work in storage tanks use self-contained breathing apparatus.  
 Use NIOSH approved respiratory protection.
- Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.  
 When using, do not eat, drink or smoke.  
 Wash hands before breaks and immediately after handling the product.  
 Keep working clothes separately.  
 Remove and wash contaminated clothing before re-use.  
 Do not swallow.  
 Avoid breathing vapors, mist or gas.

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Avoid contact with skin, eyes and clothing.

**Exposure Guidelines**

Cyclohexane	110-82-7	ACGIH	TWA		100 ppm
		NIOSH	REL	300 ppm	1,050 mg/m <sup>3</sup>
		US CA OEL	TWA PEL	300 ppm	1,050 mg/m <sup>3</sup>
		OSHA Z1	PEL	300 ppm	1,050 mg/m <sup>3</sup>
		OSHA Z1A	TWA	300 ppm	1,050 mg/m <sup>3</sup>
Isopropanol	67-63-0	NIOSH	REL	400 ppm	980 mg/m <sup>3</sup>
		NIOSH	STEL	500 ppm	1,225 mg/m <sup>3</sup>
		OSHA Z1	PEL	400 ppm	980 mg/m <sup>3</sup>
		OSHA Z1A	TWA	400 ppm	980 mg/m <sup>3</sup>
		OSHA Z1A	STEL	500 ppm	1,225 mg/m <sup>3</sup>
		US CA OEL	TWA PEL	400 ppm	980 mg/m <sup>3</sup>
		US CA OEL	STEL	500 ppm	1,225 mg/m <sup>3</sup>
		ACGIH	TWA		200 ppm
		ACGIH	STEL		400 ppm

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Form	:	liquid, clear
Color	:	colourless
Odor	:	mild sweet ether-like
pH	:	not applicable
Melting point/range	:	6.5 °C (43.7 °F) The information regarding melting point/freezing point are those of the pure substance.
Boiling point/boiling range	:	67 - 70 °C (153 - 158 °F)
Vapor pressure	:	not determined

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Relative vapour density : not determined

Density : not determined

Water solubility : partly soluble

**SECTION 10. STABILITY AND REACTIVITY**Conditions to avoid : Heat, flames and sparks.  
Keep away from direct sunlight.Materials to avoid : Keep away from metals.  
Strong oxidizing agents  
Acids  
Acetaldehyde  
Aluminium  
Chlorine  
Ethylene oxide  
Isocyanates  
Oxygen  
May attack many plastics, rubbers and coatings.Hazardous decomposition products : In case of fire hazardous decomposition products may be produced such as:  
Carbon monoxide  
Carbon dioxide (CO<sub>2</sub>)Hazardous reactions : Hazardous polymerisation does not occur.  
Stable under recommended storage conditions.**SECTION 11. TOXICOLOGICAL INFORMATION**Acute oral toxicity (Component) : Component: 110-82-7 Cyclohexane  
LD50 rat  
Dose: 12.7 g/kgAcute oral toxicity (Component) : Component: 67-63-0 Isopropanol  
LD50 rat  
Dose: 5,045 mg/kgAcute dermal toxicity (Component) : Component: 110-82-7 Cyclohexane  
LD50 rabbit  
Dose: > 180 g/kgAcute dermal toxicity (Component) : Component: 67-63-0 Isopropanol  
LD50 rabbit

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	Dose: 12,800 mg/kg
Acute inhalation toxicity (Component)	Component: 110-82-7 Cyclohexane LCLo mouse Dose: 70 mg/l Exposure time: 2 h
Acute inhalation toxicity (Component)	Component: 67-63-0 Isopropanol LC50 rat Dose: 39.36 mg/l Exposure time: 8 h
Skin irritation (Component)	Component: 67-63-0 Isopropanol rabbit Mild skin irritation
Eye irritation (Component)	Component: 67-63-0 Isopropanol rabbit Severe eye irritation
Repeated dose toxicity	: Inhalation rat (786 ppm; 6 hours/day for 50 days; NOEL: 434 ppm), Based on experimental results, may cause adverse health effects on the following:, Liver, Kidney Test substance: Cyclohexane

**SECTION 12. ECOLOGICAL INFORMATION**

Toxicity to fish (Component)	: Component: 110-82-7 Cyclohexane static test LC50 Species: Pimephales promelas (fathead minnow) Dose: 117 mg/l Exposure time: 96 h
Toxicity to fish (Component)	: Component: 67-63-0 Isopropanol LC50 Species: Pimephales promelas (fathead minnow) Dose: 10,400 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates. (Component)	: Component: 67-63-0 Isopropanol EC50 Species: Daphnia magna (Water flea) Dose: > 100 mg/l Exposure time: 48 h
Toxicity to algae (Component)	: Component: 67-63-0 Isopropanol LC50 Species: Scenedesmus subspicatus

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Dose: > 2 g/l  
 Exposure time: 72 h

Toxicity to bacteria (Component) : Component: 67-63-0 Isopropanol  
 EC50  
 Species: Photobacterium phosphoreum  
 Dose: 35,390 mg/l  
 Exposure time: 5 min

Additional ecological information : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**SECTION 13. DISPOSAL CONSIDERATIONS**

Waste Information: Observe all Federal, State, and Local Environmental regulations.

**SECTION 14. TRANSPORT INFORMATION**

**DOT** UN-Number : 1993  
 Proper shipping name : FLAMMABLE LIQUID, N.O.S.  
 (Cyclohexane, Isopropanol)  
 Class : 3  
 Packing group : II  
 Hazard Label : 3

**IATA** UN Number : 1993  
 Description of the goods : FLAMMABLE LIQUID, N.O.S.  
 (Cyclohexane, Isopropanol)  
 Class : 3  
 Packaging group : II  
 Hazard Label : 3  
 Packing instruction (cargo aircraft) : 307  
 Packing instruction (passenger aircraft) : 305  
 Packing instruction (passenger aircraft) : Y305

**IMDG** Substance No. : UN 1993  
 Description of the goods : FLAMMABLE LIQUID, N.O.S.  
 (Cyclohexane, Isopropanol)  
 Class : 3  
 Packaging group : II  
 Hazard Label : 3  
 EmS Number : F-E  
 Marine pollutant : no

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**SECTION 15. REGULATORY INFORMATION**
**Inventories**

- EU. EINECS : On the inventory, or in compliance with the inventory
- US. Toxic Substances Control Act : On TSCA Inventory
- Australia. Industrial Chemical (Notification and Assessment) Act : On the inventory, or in compliance with the inventory
- Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL). (Can. Gaz. Part II, Vol. 133) : All components of this product are on the Canadian DSL list.
- Japan. Kashin-Hou Law List : On the inventory, or in compliance with the inventory
- Korea. Toxic Chemical Control Law (TCCL) List : On the inventory, or in compliance with the inventory
- Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act : On the inventory, or in compliance with the inventory
- China. Inventory of Existing Chemical Substances : On the inventory, or in compliance with the inventory
- Switzerland. Consolidated Inventory : On the inventory, or in compliance with the inventory
- New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand : On the inventory, or in compliance with the inventory

**National regulatory information**

**SARA 313 Components** : Cyclohexane 110-82-7  
 : Isopropanol 67-63-0

**SARA 311/312 Hazards** : Fire Hazard  
 Acute Health Hazard

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**CERCLA Reportable Quantity** : 313 lbs

**California Prop. 65** : This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

**Massachusetts RTK** : Cyclohexane 110-82-7  
: Isopropanol 67-63-0

**New Jersey RTK** : Cyclohexane 110-82-7  
: Isopropanol 67-63-0

**Pennsylvania RTK** : Cyclohexane 110-82-7  
: Isopropanol 67-63-0

**WHMIS Classification** : B2

**SECTION 16. OTHER INFORMATION**

	<b>HMIS III</b>	<b>NFPA</b>
Health Hazard	: 2*	1
Flammability	: 3	3
Physical Hazard	: 0	
Instability	:	0

**Further information**

\* - Chronic health hazard