

**846**  
**LYNBROOK ROBOTICS**



**SAFETY**  
**PROGRAM**

# Lynbrook Robotics Safety Manual

Machine Shop Safety  
General Safety Precautions  
CNC Mill Checklist  
Mini Manual Mill Checklist  
Lathe Checklist  
Battery  
Robot Safety  
Machine Specific Safety  
MSDS Sheets

## Machine Shop Safety

### General Safety Precautions

1. Before you walk into the shop
  - a. Ensure you are wearing safety glasses
  - b. Wear comfortable clothing
  - c. Closed Toed Shoes
    - i. Shoelaces are tied and will not be a tripping hazard
  - d. Don't wear anything that can get caught in a machine
    - i. Long Sleeves
    - ii. Jewelry
    - iii. Drawstrings
    - iv. Long hair
2. When you are in the shop
  - a. Keep your safety glasses on at all times
  - b. Look where you are going
    - i. Don't walk into machinery
    - ii. Don't bump operators
    - iii. Tied shoelaces
  - c. No running or horseplay
  - d. Don't lean against machinery
3. Before you use the machine
  - a. Remove hazards from the area
  - b. Understand what you are doing
    - i. Do not operate the machine by yourself if you are not approved by a mentor
    - ii. If you have any questions or doubts what-so-ever about the hazards or operation of any machine, do not run it until a mentor/approved member has answered your question
  - b. Run the individual machine checklist
4. During machine operation
  - a. Follow the operating procedure detailed in the checklists
  - b. Do not reach across the cutting tool
  - c. Do not stop the machine by hand
  - d. Do not leave the machine while it is running
  - e. One operator, don't distract the operator
  - f. Shut down the machine during tool changes
5. After you use the machine
  - a. Shut down the machine before cleaning up
  - b. Clean up the work area
    - i. Make sure the floor is dry
    - ii. Don't remove chips/shavings by hand
    - iii. Put away all the tools you have used
  - c. Report broken/malfunctioning tools

### CNC Mill Checklist

1. Check configuration
  - a. Feed rate override set
  - b. Tool Table
  - c. Fixtures
  - d. Check machine zero

2. Machine Set-up
  - a. Check for parallel interference
  - b. Check that the vise is tight
3. Make sure people are clear of the machine
4. Check that coolant is on/auto/off
5. Check that spindle is armed correctly and set to on/auto
7. Emergency Stop (E-Stop)
  - a. Person on E-Stop
  - b. Make sure he/she understands the expected tool path
7. Review the G-Code
  - a. Safety block
  - b. Z heights
    - i. Check that the length of the tool is adequate for the cut
  - c. Check feeds and speeds
  - d. Air cut first
    - i. Ensure the program won't hit the vise
    - ii. Ensure program path looks correct

#### Mini Mill Checklist

1. Machine Set-up
  - a. Check for parallel interference
  - b. Check that the vise is tight
  - c. Make sure the tool is tightened adequately
  - d. Ensure the tool length is adequate for the job
2. Make sure people are clear of the machine
3. Cutting
  - a. Use the correct spindle speed and feed rate, if you are unsure, use a feed/speed calculator or ask help from a mentor/approved member
  - b. Make sure the cutter is adequately lubricated
  - c. Lock all axes that aren't in use
  - d. Make sure to use chip brush to clean the work area periodically
4. Power Down
  - a. Stop the spindle before turning off the machine

#### Lathe Checklist

1. Machine Setup
  - a. Tool
    - i. Ensure the holder is tight
    - ii. Check the tool height
    - iii. Make sure the tool doesn't hit the jaws of the chuck at the cutting position
  - b. Ensure the chuck is tight
    - i. Insert the right set of jaws
    - ii. **Remove the chuck key**
    - iii. Ensure part is centered in the jaws
3. Machine Operation
  - a. Before powering on
    - i. Ensure people/tools are clear of the machine
    - ii. **Check that the chuck key is removed**
    - iii. **Do not wear scarves, sweaters with cords, long sleeves that can get caught**

- b. Cutting
  - i. Use the correct spindle speed, if you are unsure, use a feed/speed calculator
  - ii. **Do not reach across the machine when the chuck is spinning**
  - iii. Do not take off too much material at once, this can cause excessive chatter
  - iv. Take caution not to hit the jaws when you are maneuvering in the vicinity of the chuck
- c. Power Down
  - i. Stop the spindle before turning off the machine

## Batteries

### Handling:

1. Batteries are heavy:
  - a. Never carry batteries by the wires
  - b. Use **two hands** to support the bottom of the battery
2. Have Battery Safety Kit readily available

### If a battery is damaged:

1. Visible leaking/cracking/deformation
  - a. Neutralize leaked acid with baking soda
  - b. Generously flush area with water
2. Protection Requirement
  - a. Rubber gloves
  - b. Safety goggles
  - c. Avoid inhaling fumes and touching acid
3. Dispose of the battery immediately
  - a. Use rubber gloves to place battery in prepared bin
  - b. Neutralize remaining acid

- c. At event, contact Pit Admin
- d. At school, contact County of Santa Clara Household Hazardous Waste Program (408) 299-7300

**In the event of injury involving battery acid:**

**\*Drinking Fountain outside Robotics Room, Rm. 612**

**\*\*Calling 911 at School with a school phone = 9 - 911**

**\*\*\*Poison Control = 1-800-876-4766 or 1-800-222-1222**

1. Skin Contact
  - a. Remove contaminated clothing
  - b. Flush contact area with water for at least 15 min.
  - c. Consult a physician immediately
2. Eye Contact
  - a. Flush eye for 15 min. or until person stops moving
  - b. Consult a physician immediately
3. Ingestion
  - a. Flush mouth immediately
  - b. Drink large quantities of water, milk, and/or sodium bicarbonate solution
  - c. Provide CPR if breathing has stopped
  - d. Consult a physician immediately
4. Inhalation
  - a. Go outside for fresh air
  - b. Provide artificial respiration if necessary
  - c. Consult a physician immediately

## Robot Safety

- Maintenance
  - Ensure robot is powered down before beginning work
  - Cover electronics when metal chips may be created
- Operation
  - Make sure nobody is around before operating
  - Yell “Clear!” before operating any component of the robot
    - Get verbal confirmation from everyone working on the robot before operating any of the components
  - Driving
    - Make sure driver knows the controls
    - Have enough area to drive around
    - Do not drive with people area
    - Don’t drive with excessive speed
  - Emergency Stop (E-Stop)
    - Keep E-Stop in an accessible location



# BANDSAW SAFETY GUIDELINES

- Check the blade tension and tracking before starting.
- Never clear small pieces while the blade is moving.
- Never use your thumbs to push toward the blade.
- Never back out of a curve cut while the machine is running.
- Always use a spotter when cutting, long pieces
- Safety glasses with side shields or a face shield must be worn.
- Remove loose fitting clothing, jewelry, and tieback long hair.
- The blade alignment tracking should be at the center of the wheels.
- Make sure that the upper and lower wheel guard doors are closed when running.
- Keep the blade guard & guide only 1/4" above your stock.
- Keep bystanders away from the right hand area of the saw. Broken blades have a tendency to fly out to the right.
- To control the stock, use push sticks, feather boards, or any other safety device when cutting small or short stock.
- Cut at a moderate feed rate into the blade. Do not force a cut.
- If you need to back out of a cut, shut the machine off, after blade stops, and then back out.
- If a blade breaks, shut the machine off and stand clear until everything stops.
- Always disconnect the power before changing the blade or performing any other maintenance operation.
- Turn off the band saw and wait until comes to a complete stop. Never stick an object into the blade to stop the machine quicker.





# CNC MACHINE SAFETY GUIDELINES

- Always wear safety glasses and appropriate clothing when operating CNC machines.
- Always wear close toed shoes or other suitable footwear.
- Always keep long hair covered when operating CNC machines.
- Always stand clear of the machine while it is running and warn others of the dangers of being too close.
- Always turn the CNC machine off completely and clean it up when you have finished using it.
- Always check that tools are sharp and set correctly.
- Always check that the correct tool data is entered into the CNC program.
- Always make sure spindle direction is correct for right-hand or left-hand operation.
- Always conduct a dry run to ensure the program is correct.
- Never place hands near a revolving spindle.
- Never use blunt tools.
- Never use cracked or chipped tools.
- Only operate the machine if you have been evaluated and approved by a mentor.
- It is absolutely required to have one person vigilantly operating the emergency shut-off button during operation.



# DRILL PRESS SAFETY GUIDELINES

- Safety glasses with side shields or a face shield must be worn. Hearing protection should be worn.
- Remove loose fitting clothing, jewelry, and tie back long hair.
- Give the work your undivided attention.
- Do not wear gloves or anything that would allow a hand, fingers or clothing to be wrapped around the revolving bit.
- Make all drill press adjustments with the power shut off.
- Do not exceed the recommended speeds for the type and size of drill bit being used or composition of the stock being drilled.
- Insert bit into drill chuck and tighten with the chuck key. Remove chuck key from the drill chuck before starting the drill press.
- Support the underside of the stock to be drilled with a backer board secured to the drill press table.
- Never start the machine without the table clear of everything except the stock you are drilling.
- When drilling deep holes, frequently raise the drill bit from the hole to remove cuttings and cool the bit.
- If a drill bit binds, turn off the drill press and carefully turn drill chuck backwards by hand to free the drill bit.
- Never reach around or under a rotating drill bit or grab the chuck to stop a drill press. This can result in hand puncture or other serious injury.
- Turn the drill press off before looking up or walking away from the machine.
- Never stop the rotation of the drill chuck, spindle, or stock rotating on bit with your hands or fingers.



# GRINDER WHEEL SAFETY GUIDELINES

- Inspect the wheels for a hairline crack before using. **DO NOT USE A CRACKED WHEEL.**
- Used wheels should be trued and dressed when worn out of round, or the surface face is clogged or worn smooth. This provides a clean sharp grinding surface and rebalancing of the wheel.
- Dress the wheel on the face only. Dressing the side of the wheel would cause it to become too thin for safe use.
- Safety glasses with side shields and a face shield must be worn.
- Remove loose fitting clothing, jewelry, and tie back long hair.
- Stand to one side of the wheel when turning on power. Allow the grinding wheel to run at full operating speed for one minute. **DO NOT** use a wheel that vibrates.
- Move the object being ground, back and forth across the face of the wheel only, as this prevents "ruts" or grooves from forming.
- Never grind small stock. Do not attempt to grind or sharpen anything that cannot be adequately supported by the tool rest. Use clamping pliers when grinding parts that cannot be held easily by hand.
- Do not touch the ground portion of the work piece until cooled.
- Turn off grinder and wait until comes to a complete stop. Never stick an object into the wheel to stop the grinder quicker. Let it stop on its own.



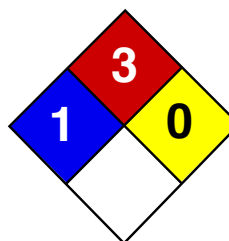
# LATHE SAFETY GUIDELINES

- Always wear eye protection - preferably industrial quality safety glasses with side-shields.
- Wear short sleeves
- Closed toes shoes only.
- Remove wrist watches, necklaces, chains and other jewelry.
- Tie back long hair so it can't get caught in the rotating work.
- Always double check to make sure your work is securely clamped in the chuck or between centers before starting the lathe. Start the lathe at low speed and increase the speed gradually.
- Remove the chuck key immediately after use
- Keep your fingers clear of the rotating work and cutting tools.
- Avoid reaching over the spinning chuck. For filing operations, hold the tang end of the file in your left hand so that your hand and arm are not above the spinning chuck.
- Be sure to apply oil to your work at all times.
- Work with sharp tools that are in good condition. Do not use any blunt, cracked, or broken bits.



# Mini Mill SAFETY GUIDELINES

- Always wear safety glasses and appropriate clothing when operating mini mill.
- Always wear close-toed shoes or other suitable footwear.
- Always keep long hair covered or tied up when operating Mini mill.
- Always stand clear of the machine while it is running and warn others of the dangers of being too close.
- Always avoid contact with cutting edges when handling tools or changing tools by hand.
- Always turn the Mini mill off completely and clean it up when you have finished using it.
- Always make sure that all work and fixtures are clamped securely before starting machine.
- Always make sure spindle direction is correct for right-hand or left-hand operation.
- Never wear loose clothing or jewelry.
- Never leave the machine while in operation
- Never make contact with the tool while it is running.
- Never place hands near a revolving spindle.
- Never use blunt bit.
- Never use cracked or chipped bit.
- Only operate the machine if you have been evaluated and approved by a mentor.



Health	2
Fire	3
Reactivity	0
Personal Protection	H

# Material Safety Data Sheet

## Acetone MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Acetone

**Catalog Codes:** SLA3502, SLA1645, SLA3151, SLA3808

**CAS#:** 67-64-1

**RTECS:** AL3150000

**TSCA:** TSCA 8(b) inventory: Acetone

**CI#:** Not applicable.

**Synonym:** 2-propanone; Dimethyl Ketone;  
Dimethylformaldehyde; Pyroacetic Acid

**Chemical Name:** Acetone

**Chemical Formula:** C3-H6-O

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Acetone	67-64-1	100

**Toxicological Data on Ingredients:** Acetone: ORAL (LD50): Acute: 5800 mg/kg [Rat]. 3000 mg/kg [Mouse]. 5340 mg/kg [Rabbit]. VAPOR (LC50): Acute: 50100 mg/m 8 hours [Rat]. 44000 mg/m 4 hours [Mouse].

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED]. The substance is toxic to central nervous system (CNS). The substance may be toxic to kidneys, the reproductive system, liver, skin. Repeated or prolonged exposure to the substance can produce target organs damage.

### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** Flammable.

**Auto-Ignition Temperature:** 465°C (869°F)

**Flash Points:** CLOSED CUP: -20°C (-4°F). OPEN CUP: -9°C (15.8°F) (Cleveland).

**Flammable Limits:** LOWER: 2.6% UPPER: 12.8%

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>).

**Fire Hazards in Presence of Various Substances:** Highly flammable in presence of open flames and sparks, of heat.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks, of oxidizing materials, of acids.

**Fire Fighting Media and Instructions:**

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

**Special Remarks on Fire Hazards:** Vapor may travel considerable distance to source of ignition and flash back.

**Special Remarks on Explosion Hazards:**

Forms explosive mixtures with hydrogen peroxide, acetic acid, nitric acid, nitric acid + sulfuric acid, chromic anhydride, chromyl chloride, nitrosyl chloride, hexachloromelamine, nitrosyl perchlorate, nitril perchlorate, permonosulfuric acid, thiodiglycol + hydrogen peroxide, potassium ter-butoxide, sulfur dichloride, 1-methyl-1,3-butadiene, bromoform, carbon, air, chloroform, thitriazylperchlorate.

## Section 6: Accidental Release Measures

**Small Spill:**

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

**Large Spill:**

Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

**Precautions:**

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, acids, alkalis.

**Storage:**

Store in a segregated and approved area (flammables area) . Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Keep away from direct sunlight and heat and avoid all possible sources of ignition (spark or flame).

## Section 8: Exposure Controls/Personal Protection

**Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection:**

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:**

TWA: 500 STEL: 750 (ppm) from ACGIH (TLV) [United States] TWA: 750 STEL: 1000 (ppm) from OSHA (PEL) [United States] TWA: 500 STEL: 1000 [Australia] TWA: 1185 STEL: 2375 (mg/m3) [Australia] TWA: 750 STEL: 1500 (ppm) [United Kingdom (UK)] TWA: 1810 STEL: 3620 (mg/m3) [United Kingdom (UK)] TWA: 1800 STEL: 2400 from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid.

**Odor:** Fruity. Mint-like. Fragrant. Ethereal

**Taste:** Pungent, Sweetish

**Molecular Weight:** 58.08 g/mole

**Color:** Colorless. Clear

**pH (1% soln/water):** Not available.

**Boiling Point:** 56.2°C (133.2°F)

**Melting Point:** -95.35 (-139.6°F)

**Critical Temperature:** 235°C (455°F)

**Specific Gravity:** 0.79 (Water = 1)



**Vapor Pressure:** 24 kPa (@ 20°C)

**Vapor Density:** 2 (Air = 1)

**Volatility:** Not available.

**Odor Threshold:** 62 ppm

**Water/Oil Dist. Coeff.:** The product is more soluble in water;  $\log(\text{oil/water}) = -0.2$

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water.

**Solubility:** Easily soluble in cold water, hot water.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Excess heat, ignition sources, exposure to moisture, air, or water, incompatible materials.

**Incompatibility with various substances:** Reactive with oxidizing agents, reducing agents, acids, alkalis.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Absorbed through skin. Dermal contact. Eye contact. Inhalation.

### Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 3000 mg/kg [Mouse]. Acute toxicity of the vapor (LC50): 44000 mg/m<sup>3</sup> 4 hours [Mouse].

### Chronic Effects on Humans:

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED]. Causes damage to the following organs: central nervous system (CNS). May cause damage to the following organs: kidneys, the reproductive system, liver, skin.

### Other Toxic Effects on Humans:

Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

**Special Remarks on Toxicity to Animals:** Not available.

### Special Remarks on Chronic Effects on Humans:

May affect genetic material (mutagenicity) based on studies with yeast (*S. cerevisiae*), bacteria, and hamster fibroblast cells. May cause reproductive effects (fertility) based upon animal studies. May contain trace amounts of benzene and formaldehyde which may cancer and birth defects. Human: passes the placental barrier.

### Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: May cause skin irritation. May be harmful if absorbed through the skin. Eyes: Causes eye irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury. Inhalation: Inhalation at high concentrations affects the sense organs, brain and causes respiratory tract irritation. It also may affect the Central Nervous System (behavior) characterized by dizziness, drowsiness, confusion, headache, muscle weakness, and possibly motor incoordination, speech abnormalities, narcotic effects and coma. Inhalation may also affect the gastrointestinal tract (nausea, vomiting). Ingestion: May cause irritation of the digestive (gastrointestinal) tract (nausea, vomiting). It may also

affect the Central Nervous System (behavior), characterized by depression, fatigue, excitement, stupor, coma, headache, altered sleep time, ataxia, tremors as well as the blood, liver, and urinary system (kidney, bladder, ureter) and endocrine system. May also have musculoskeletal effects. Chronic Potential Health Effects: Skin: May cause dermatitis. Eyes: Eye irritation.

## Section 12: Ecological Information

### Ecotoxicity:

Ecotoxicity in water (LC50): 5540 mg/l 96 hours [Trout]. 8300 mg/l 96 hours [Bluegill]. 7500 mg/l 96 hours [Fathead Minnow]. 0.1 ppm any hours [Water flea].

**BOD5 and COD:** Not available.

### Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The product itself and its products of degradation are not toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

## Section 13: Disposal Considerations

### Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## Section 14: Transport Information

**DOT Classification:** CLASS 3: Flammable liquid.

**Identification:** : Acetone UNNA: 1090 PG: II

**Special Provisions for Transport:** Not available.

## Section 15: Other Regulatory Information

### Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Benzene California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Benzene California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Benzene, Formaldehyde Connecticut hazardous material survey.: Acetone Illinois toxic substances disclosure to employee act: Acetone Illinois chemical safety act: Acetone New York release reporting list: Acetone Rhode Island RTK hazardous substances: Acetone Pennsylvania RTK: Acetone Florida: Acetone Minnesota: Acetone Massachusetts RTK: Acetone Massachusetts spill list: Acetone New Jersey: Acetone New Jersey spill list: Acetone Louisiana spill reporting: Acetone California List of Hazardous Substances (8 CCR 339): Acetone TSCA 8(b) inventory: Acetone TSCA 4(a) final test rules: Acetone TSCA 8(a) IUR: Acetone

### Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

### Other Classifications:

### WHMIS (Canada):

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2B: Material causing other toxic effects (TOXIC).

**DSCL (EEC):**

R11- Highly flammable. R36- Irritating to eyes. S9- Keep container in a well-ventilated place. S16- Keep away from sources of ignition - No smoking. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 3

**Reactivity:** 0

**Personal Protection:** h

**National Fire Protection Association (U.S.A.):**

**Health:** 1

**Flammability:** 3

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

## Section 16: Other Information

**References:**

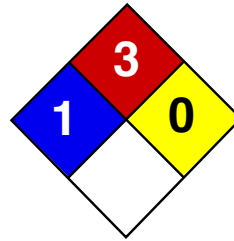
-Material safety data sheet issued by: la Commission de la Sant  et de la S curit  du Travail du Qu bec. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. LOLI, RTECS, HSDB databases. Other MSDSs

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 08:13 PM

**Last Updated:** 11/01/2010 12:00 PM

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.*



Health	2
Fire	3
Reactivity	0
Personal Protection	E

# Material Safety Data Sheet

## Isopropyl Alcohol, 70% MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Isopropyl Alcohol, 70%

**Catalog Codes:** SLI1669

**CAS#:** Mixture.

**RTECS:** Not applicable.

**TSCA:** TSCA 8(b) inventory: Isopropyl alcohol; Water

**CI#:** Not available.

**Synonym:** 2-Propanol, 70%; Isopropanol, 70%; Isopropyl Rubbing Alcohol

**Chemical Name:** Not applicable.

**Chemical Formula:** Not applicable.

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Isopropyl alcohol	67-63-0	70
Water	7732-18-5	30

**Toxicological Data on Ingredients:** Isopropyl alcohol: ORAL (LD50): Acute: 5045 mg/kg [Rat]. 3600 mg/kg [Mouse]. 6410 mg/kg [Rabbit]. DERMAL (LD50): Acute: 12800 mg/kg [Rabbit].

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, . Slightly hazardous in case of skin contact (sensitizer, permeator). Non-corrosive for skin. Non-corrosive to the eyes. Non-corrosive for lungs.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Classified A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC [Isopropyl alcohol]. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Development toxin [POSSIBLE] [Isopropyl alcohol]. The substance may be toxic to kidneys, liver, skin, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

## Section 4: First Aid Measures

### **Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

### **Skin Contact:**

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

### **Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

### **Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

### **Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

### **Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** Flammable.

**Auto-Ignition Temperature:** The lowest known value is 399°C (750.2°F) (Isopropyl alcohol).

**Flash Points:** CLOSED CUP: 18.3°C (64.9°F) - 24 deg. C (75 deg. F)

**Flammable Limits:** The greatest known range is LOWER: 2% UPPER: 12.7% (Isopropyl alcohol)

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>).

### **Fire Hazards in Presence of Various Substances:**

Highly flammable in presence of open flames and sparks, of heat. Flammable in presence of oxidizing materials. Non-flammable in presence of shocks

### **Explosion Hazards in Presence of Various Substances:**

Slightly explosive in presence of open flames and sparks, of heat. Non-explosive in presence of shocks.

### **Fire Fighting Media and Instructions:**

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

### **Special Remarks on Fire Hazards:**

Vapor may travel considerable distance to source of ignition and flash back. CAUTION: MAY BURN WITH NEAR INVISIBLE FLAME. Hydrogen peroxide sharply reduces the autoignition temperature of Isopropyl alcohol. After a delay, Isopropyl alcohol ignites on contact with dioxgenyl tetrafluorborate, chromium trioxide, and potassium tert-butoxide. When heated to decomposition it emits acrid smoke and fumes. (Isopropyl alcohol)

### **Special Remarks on Explosion Hazards:**

Secondary alcohols are readily autooxidized in contact with oxygen or air, forming ketones and hydrogen peroxide. It can become potentially explosive. It reacts with oxygen to form dangerously unstable peroxides which can concentrate and explode during distillation or evaporation. The presence of 2-butanone increases the reaction rate for peroxide formation. Explosive in the form of vapor when exposed to heat or flame. May form explosive mixtures with air. Isopropyl alcohol +

phosgene forms isopropyl chloroformate and hydrogen chloride. In the presence of iron salts, thermal decomposition can occur, which in some cases can become explosive. A homogeneous mixture of concentrated peroxides + isopropyl alcohol are capable of detonation by shock or heat. Barium perchlorate + isopropyl alcohol gives the highly explosive alkyl perchlorates. It forms explosive mixtures with trinitromethane and hydrogen peroxide. It produces a violent explosive reaction when heated with aluminum isopropoxide + crotonaldehyde. Mixtures of isopropyl alcohol + nitroform are explosive. (Isopropyl alcohol)

## Section 6: Accidental Release Measures

### Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

### Large Spill:

Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

### Precautions:

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

### Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

## Section 8: Exposure Controls/Personal Protection

### Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

### Personal Protection:

Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves (impervious).

### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

### Exposure Limits:

Isopropyl alcohol TWA: 983 STEL: 1230 (mg/m<sup>3</sup>) [Australia] TWA: 200 STEL: 400 (ppm) from ACGIH (TLV) [United States] [1999] TWA: 980 STEL: 1225 (mg/m<sup>3</sup>) from NIOSH TWA: 400 STEL: 500 (ppm) from NIOSH TWA: 400 STEL: 500 (ppm) [United Kingdom (UK)] TWA: 999 STEL: 1259 (mg/m<sup>3</sup>) [United Kingdom (UK)] TWA: 400 STEL: 500 (ppm) from OSHA (PEL) [United States] TWA: 980 STEL: 1225 (mg/m<sup>3</sup>) from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid.

**Odor:** Alcohol like.

**Taste:** Not available.

**Molecular Weight:** Not applicable.

**Color:** Clear Colorless.

**pH (1% soln/water):** Neutral.

**Boiling Point:** The lowest known value is 82.5°C (180.5°F) (Isopropyl alcohol). Weighted average: 87.75°C (189.9°F)

**Melting Point:** May start to solidify at -88.5°C (-127.3°F) based on data for: Isopropyl alcohol.

**Critical Temperature:** The lowest known value is 235°C (455°F) (Isopropyl alcohol).

**Specific Gravity:** Weighted average: 0.84 (Water = 1)

**Vapor Pressure:** The highest known value is 4.4 kPa (@ 20°C) (Isopropyl alcohol). Weighted average: 3.77 kPa (@ 20°C)

**Vapor Density:** The highest known value is 2.07 (Air = 1) (Isopropyl alcohol). Weighted average: 1.63 (Air = 1)

**Volatility:** Not available.

**Odor Threshold:** The highest known value is 22 ppm (Isopropyl alcohol)

**Water/Oil Dist. Coeff.:** The product is equally soluble in oil and water.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water, methanol, diethyl ether, n-octanol, acetone.

**Solubility:** Easily soluble in cold water, hot water, methanol, diethyl ether, n-octanol, acetone.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Heat, flame, ignition sources, incompatible materials

**Incompatibility with various substances:** Reactive with oxidizing agents, acids, alkalis.

**Corrosivity:** Non-corrosive in presence of glass.

### Special Remarks on Reactivity:

Reacts violently with hydrogen + palladium combination, nitroform, oleum, COCl<sub>2</sub>, aluminum triisopropoxide, oxidants  
Incompatible with acetaldehyde, chlorine, ethylene oxide, isocyanates, acids, alkaline earth, alkali metals, caustics, amines, crotonaldehyde, phosgene, ammonia. Isopropyl alcohol reacts with metallic aluminum at high temperatures. Isopropyl alcohol attacks some plastics, rubber, and coatings. Vigorous reaction with sodium dichromate + sulfuric acid. (Isopropyl alcohol)

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Absorbed through skin. Eye contact. Inhalation.

### Toxicity to Animals:

Acute oral toxicity (LD50): 5143 mg/kg (Mouse) (Calculated value for the mixture). Acute dermal toxicity (LD50): 18286 mg/kg (Rabbit) (Calculated value for the mixture).

### Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC [Isopropyl alcohol]. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Development toxin [POSSIBLE] [Isopropyl alcohol]. Contains material which may cause damage to the following organs: kidneys, liver, skin, central nervous system (CNS).

**Other Toxic Effects on Humans:**

Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (sensitizer, permeator).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:**

May cause adverse reproductive/teratogenic effects (fertility, fetotoxicity, developmental abnormalities (developmental toxin)) based on animal studies. Detected in maternal milk in human. (Isopropyl alcohol)

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: May cause mild skin irritation, and sensitization. Eyes: Can cause eye irritation. Inhalation: Breathing in small amounts of this material during normal handling is not likely to cause harmful effects. However, breathing large amounts may be harmful and may affect the respiratory system and mucous membranes (irritation), behavior and brain (Central nervous system depression - headache, dizziness, drowsiness, stupor, incoordination, unconsciousness, coma and possible death), peripheral nerve and sensation, blood, urinary system, and liver. Ingestion: Swallowing small amounts during normal handling is not likely to cause harmful effects. Swallowing large amounts may be harmful. Swallowing large amounts may cause gastrointestinal tract irritation with nausea, vomiting and diarrhea, abdominal pain. It also may affect the urinary system, cardiovascular system, sense

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The product itself and its products of degradation are not toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

## Section 13: Disposal Considerations

**Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## Section 14: Transport Information

**DOT Classification:** CLASS 3: Flammable liquid.

**Identification:** : Isopropanol, solution (Isopropyl alcohol) UNNA: 1219 PG: II

**Special Provisions for Transport:** Not available.

## Section 15: Other Regulatory Information

**Federal and State Regulations:**

Connecticut hazardous material survey.: Isopropyl alcohol Illinois toxic substances disclosure to employee act: Isopropyl alcohol Rhode Island RTK hazardous substances: Isopropyl alcohol Pennsylvania RTK: Isopropyl alcohol Florida: Isopropyl alcohol Minnesota: Isopropyl alcohol Massachusetts RTK: Isopropyl alcohol New Jersey: Isopropyl alcohol New Jersey spill list: Isopropyl alcohol TSCA 8(b) inventory: Isopropyl alcohol; Water TSCA 4(a) final testing order: Isopropyl alcohol TSCA 8(a) IUR: Isopropyl alcohol TSCA 8(d) H and S data reporting: Isopropyl alcohol: Effective date: 12/15/86 Sunset Date: 12/15/96 TSCA 12(b) one time export: Isopropyl alcohol SARA 313 toxic chemical notification and release reporting: Isopropyl alcohol 70%



**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

**Other Classifications:**

**WHMIS (Canada):**

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2B: Material causing other toxic effects (TOXIC).

**DSCL (EEC):**

R11- Highly flammable. R36- Irritating to eyes. S2- Keep out of the reach of children. S46- If swallowed, seek medical advice immediately and show this container or label.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 3

**Reactivity:** 0

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 1

**Flammability:** 3

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves (impervious). Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

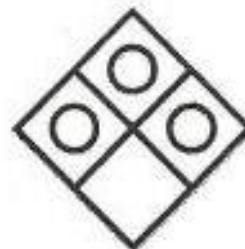
**Created:** 10/09/2005 05:53 PM

**Last Updated:** 11/01/2010 12:00 PM

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.*

# Material Safety Data Sheet

May be used to comply with OSHA's  
Hazard Communication Standard,  
29 CFR 1910.1200. Standard must be  
consulted for specific requirements



## IDENTITY FORMULA 77

### SECTION I

Manufacturer's Name  
KOOL MIST CORPORATION

Emergency Telephone Number  
(562) 246-0949

Address  
9218 NORWALK BLVD.  
SANTA FE SPRINGS, CA 90670

Emergency Telephone for Information  
(562) 246-0949

DATE PREPARE: JANUARY 1, 2010

### SECTION II - Hazardous Ingredients/Identity Information

NO HAZARDOUS INGREDIENTS  
AS DEFINED IN OSHA 29 CFR 1910, 1000 (SUBPART Z) OR  
CALIFORNIA HAZARDOUS SUBSTANCES LIST

### SECTION III - Physical/Chemical Characteristics

BOILING POINT	212° F	SPECIFIC GRAVITY (H2O-1)	1.104
VAPOR PRESSURE (mm Hg)	NA	MELTING POINT	NA
VAPOR DENSITY (Air-1)	>1	EVAPORATION RATE (BUTYL ACETATE-1)	NA
SOLUBILITY IN WATER	100%		

APPEARANCE AND ODOR  
GREEN LIQUID, MILD PLEASANT ODOR

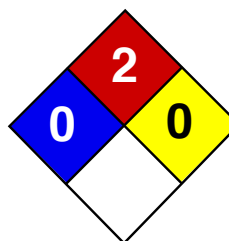
### SECTION IV - Fire and Explosion Hazard Data

Flash point (Method Used)	Flammable Limits	LEL	UEL
NA SELF- EXTINGUISHING	NA	NA	NA

Extinguishing Media:  
NOT REQUIRED. NO FIRE HAZARD

Special Fire Fighting Procedures:  
NONE

Unusual Fire and Explosion Hazards:  
NONE



Health	0
Fire	2
Reactivity	0
Personal Protection	H

## Material Safety Data Sheet Mineral spirits MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Mineral spirits

**Catalog Codes:** SLM3616

**CAS#:** 64475-85-0

**RTECS:** WJ8925000

**TSCA:** TSCA 8(b) inventory: Mineral spirits

**CI#:** Not applicable.

**Synonym:**

**Chemical Name:** Not available.

**Chemical Formula:** Not available.

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Mineral spirits	64475-85-0	100

**Toxicological Data on Ingredients:** Mineral spirits LD50: Not available. LC50: Not available.

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs, the nervous system. Repeated or prolonged exposure to the substance can produce target organs damage.

### Section 4: First Aid Measures

**Eye Contact:** Check for and remove any contact lenses. Do not use an eye ointment. Seek medical attention.

**Skin Contact:**

After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Inhalation:** Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

**Ingestion:**

Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** Flammable.

**Auto-Ignition Temperature:** 245°C (473°F)

**Flash Points:** CLOSED CUP: 38°C (100.4°F).

**Flammable Limits:** LOWER: 1%

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:** Not available.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:**

Flammable liquid, insoluble in water. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal.

## Section 7: Handling and Storage

**Precautions:**

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not breathe gas/ fumes/ vapour/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes.

**Storage:**

Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. Keep container dry. Keep in a cool place.

**Section 8: Exposure Controls/Personal Protection****Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection:**

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:** Not available.

**Section 9: Physical and Chemical Properties**

**Physical state and appearance:** Liquid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** Not available.

**Color:** Clear Colorless.

**pH (1% soln/water):** Not applicable.

**Boiling Point:** 148°C (298.4°F)

**Melting Point:** Not available.

**Critical Temperature:** Not available.

**Specific Gravity:** 0.74 (Water = 1)

**Vapor Pressure:** 2 mm of Hg (@ 20°C)

**Vapor Density:** 4.9 (Air = 1)

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:** Insoluble in cold water.

**Section 10: Stability and Reactivity Data**

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Not available.

**Incompatibility with various substances:** Not available.

**Corrosivity:** Not considered to be corrosive for metals and glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** No.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:**

LD50: Not available. LC50: Not available.

**Chronic Effects on Humans:** The substance is toxic to lungs, the nervous system.

**Other Toxic Effects on Humans:**

Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:** Not available.

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are more toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

## Section 13: Disposal Considerations

**Waste Disposal:**

## Section 14: Transport Information

**DOT Classification:** CLASS 3: Combustible liquid with a flash point greater than 37.8C (100F).

**Identification:** : Flammable liquids n.o.s. : UN1993 PG: Not available.

**Special Provisions for Transport:** No DOT, ref 49CFR, 173.150

## Section 15: Other Regulatory Information

**Federal and State Regulations:** TSCA 8(b) inventory: Mineral spirits

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

**Other Classifications:**

**WHMIS (Canada):**

CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):**

R10- Flammable. R36/38- Irritating to eyes and skin.

**HMIS (U.S.A.):**

**Health Hazard:** 0

**Fire Hazard:** 2

**Reactivity:** 0

**Personal Protection:** h

**National Fire Protection Association (U.S.A.):**

**Health:** 0

**Flammability:** 2

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

## Section 16: Other Information

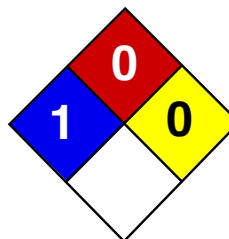
**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 10:50 AM

**Last Updated:** 11/01/2010 12:00 PM

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.*



Health	1
Fire	0
Reactivity	0
Personal Protection	E

## Material Safety Data Sheet

### Sodium bicarbonate MSDS

#### Section 1: Chemical Product and Company Identification

**Product Name:** Sodium bicarbonate

**Catalog Codes:** SLS3241, SLS2446, SLS3868

**CAS#:** 144-55-8

**RTECS:** VZ0950000

**TSCA:** TSCA 8(b) inventory: Sodium bicarbonate

**CI#:** Not available.

**Synonym:** Baking Soda; Bicarbonate of soda; Sodium acid carbonate; Monosodium carbonate; Sodium hydrogen carbonate; Carbonic acid monosodium salt

**Chemical Name:** Sodium Bicarbonate

**Chemical Formula:** NaHCO<sub>3</sub>

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

#### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Sodium bicarbonate	144-55-8	100

**Toxicological Data on Ingredients:** Not applicable.

#### Section 3: Hazards Identification

**Potential Acute Health Effects:** Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition.

#### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention if irritation occurs.



**Skin Contact:**

Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.

**Serious Skin Contact:** Not available.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Serious Inhalation:** Not available.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** Non-flammable.

**Auto-Ignition Temperature:** Not applicable.

**Flash Points:** Not applicable.

**Flammable Limits:** Not applicable.

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:** Not applicable.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:** Not applicable.

**Special Remarks on Fire Hazards:** When heated to decomposition it emits acrid smoke and irritating fumes.

**Special Remarks on Explosion Hazards:** Not available.

## Section 6: Accidental Release Measures

**Small Spill:**

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:**

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

## Section 7: Handling and Storage

**Precautions:**

Do not ingest. Do not breathe dust. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as acids.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area.

## Section 8: Exposure Controls/Personal Protection

**Engineering Controls:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:** Not available.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid.

**Odor:** Odorless.

**Taste:** Saline. Alkaline.

**Molecular Weight:** 84.01g/mole

**Color:** White.

**pH (1% soln/water):** Not available.

**Boiling Point:** Not available.

**Melting Point:** Not available.

**Critical Temperature:** Not available.

**Specific Gravity:** Density: 2.159 (Water = 1)

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water.

**Solubility:**

Soluble in cold water. Slightly soluble in alcohol. Solubility in Water: 6.4, 7.6, 8.7, 10.0, 11.3, 12.7, 14.2, 16.5, 19.1 g/100 solution at 0, 10, 20, 30, 40, 50, 60, 80, and 100 deg. C, respectively. Solubility in Water: 6.9, 8.2, 9.6, 11.1, 12.7, 14.5, 16.5, 19.7, and 23.6 g/100g water at 0, 10, 20, 30, 40, 50, 60, 80, 100 deg. C, respectively.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Incompatible materials, Moisture. Stable in dry air, but slowly decomposes in moist air.

**Incompatibility with various substances:** Reactive with acids.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:**

Reacts with acids to form carbon dioxide. Dangerous reaction with monoammonium phosphate or a sodium-potassium alloy.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Inhalation. Ingestion.

**Toxicity to Animals:** Acute oral toxicity (LD50): 3360 mg/kg [Mouse].

**Chronic Effects on Humans:** Not available.

**Other Toxic Effects on Humans:** Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:**

Sodium Bicarbonate as produced genetic effects in rats (unscheduled DNA synthesis). However, no affects have been found in humans.

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: May cause mild skin irritation. Eyes: May cause mild eye irritation. Inhalation: May cause respiratory tract irritation. Symptoms may include coughing and sneezing. Ingestion: Symptoms of overexposure to Sodium Bicarbonate include thirst, abdominal pain, gastroenteritis, and inflammation of the digestive tract. Chronic Potential Health Effects: Skin: Repeated or prolonged skin contact may cause irritation, drying or cracking of the skin. Ingestion and Inhalation: Chronic toxicity usually occurs within 4 to 10 days following ingestion of very large amounts. Repeated or prolonged ingestion or inhalation of large amounts may cause metabolic abnormalities, and sodium retention. Metabolic abnormalities such as acidosis, hypernatremia, hypochloremia, alkalosis, hypocalcemia, or sodium retention may affect the blood, kidneys, respiration (cyanosis, apnea secondary to metabolic acidosis or pulmonary edema), and cardiovascular system (tachycardia, hypotension). Severe toxicity may also affect behavior/central nervous system/nervous system. Neurological changes may result from metabolic abnormalities. These may include fatigue, irritability, dizziness, mental confusion, paresthesia, seizures, tetany, cerebral edema Medical Conditions Aggravated by Exposure: Persons with pre-existing skin conditions might have increased sensitivity. Predisposing conditions that contribute to a mild alkali syndrome include, renal disease, dehydration, adn electrolyte imbalance, hypertension, sarcoidosis, congestive heart failure, edema, or other sodium retaining conditions.

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The product itself and its products of degradation are not toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

## Section 13: Disposal Considerations

**Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## Section 14: Transport Information

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

## Section 15: Other Regulatory Information

**Federal and State Regulations:** TSCA 8(b) inventory: Sodium bicarbonate

**Other Regulations:** Not available.

**Other Classifications:**

**WHMIS (Canada):** Not controlled under WHMIS (Canada).

**DSCL (EEC):**

This product is not classified according to the EU regulations. Not applicable.

**HMIS (U.S.A.):**

**Health Hazard:** 1

**Fire Hazard:** 0

**Reactivity:** 0

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 1

**Flammability:** 0

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Safety glasses.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 08:26 PM

**Last Updated:** 11/01/2010 12:00 PM

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.*

# MATERIAL SAFETY DATA SHEET

U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200

The Steco Corporation  
2330 Cantrell Road  
P.O. Box 2238  
Little Rock, AR 72203

Emergency Response: (800) 255-3924  
Information: (800) 643-8026  
Fax: (501) 374-4278  
Date Reviewed: **August 15, 2011**

TRADE NAME  
CHEMICAL NAME & SYNONYMS  
DOT SHIPPING NAME  
HMIS/NFPA CODE  
MANUFACTURING CODE NO.:  
COMMODITY CODE NO.:

**TAP MAGIC ALUMINUM Cutting Fluid**  
Hydrocarbon Mixture  
n.o.s., Combustible Liquid, NA1993, III, (Petroleum Distillate)  
Health 1; Fire 2; Reactivity 1; Specific - Solvent  
8358  
332-9150

## I. HAZARDOUS INGREDIENTS

<u>Component</u>	<u>CAS #</u>	<u>OSHA PEL,</u> <u>ppm</u>	<u>ACGIH TLV,</u> <u>ppm</u>	<u>Other Limits</u> <u>Recommended</u>	<u>Max. %</u>
Petroleum Distillate (Aliphatic 90%/Aromatic 10%)	8008-20-6	Not Listed	Not Listed	est. TLV 1000 ppm	60
Methyl Laurate	111-82-0	Not Listed	Not Listed	--	40
Vegetable Oil, Essential	8007-80-5	Not Listed	Not Listed	--	10

## II. PHYSICAL DATA

BOILING RANGE, (760 mm, Mercury)	:	370 to 560°F
SPECIFIC GRAVITY (Water = 1) (lbs/gal)	:	0.824 (6.88)
VAPOR PRESSURE (mm of Mercury) @ 75°F	:	Less than 5
VAPOR DENSITY (Air = 1)	:	5.5
SOLUBILITY IN WATER, % by weight	:	Less than 1 (Insoluble)
EVAPORATION RATE (Butyl Acetate = 1)	:	0.04
% VOLATILE BY VOLUME @ 75°F	:	Less than 1
APPEARANCE	:	Light yellow liquid
ODOR	:	Pleasant
pH	:	Neutral (Nonaqueous)

## III. FIRE & EXPLOSION DATA

LOWER FLAMMABLE LIMIT IN AIR (% by volume)	:	0.7
UPPER FLAMMABLE LIMIT IN AIR (% by volume)	:	5.0
FLASH POINT, PMCC	:	185°F
AUTOIGNITION TEMPERATURE	:	450°F
EXTINGUISHING MEDIA	:	Foam, Carbon Dioxide, Dry Chemical

## IV. HEALTH HAZARD INFORMATION

ROUTES OF ENTRY	:	Ingestion is the primary method of possible entry. Material will not pass the skin barrier. Inhalation is unlikely due to low vapor pressure.
EFFECTS OF ACUTE OVEREXPOSURE	:	<b>INHALATION:</b> Concentration in excess of 1000 ppm may cause headache, nasal and respiratory irritation, nausea, drowsiness, fatigue, eye irritation and central nervous system depression. Narcotic effects may be severe at concentrations greater than 20,000 ppm. <b>SKIN CONTACT:</b> Material will not pass the skin barrier. <b>INGESTION:</b> Headache, drowsiness, nausea, fatigue, CNS depression. LD50 for rabbits is 28g/kg; estimated toxic adult dose 3-4 oz. <b>EYE:</b> May cause pain and irritation.
EFFECTS OF CHRONIC OVEREXPOSURE	:	<b>SKIN CONTACT:</b> Prolonged or repeated exposure may cause defatting of the skin and subsequent rash or irritation. <b>ALL ROUTES OF ENTRY:</b> Based on available data, repeated exposures are not anticipated to cause any significant adverse effects. Birth defects are unlikely. Exposures having no adverse effects on mother should have no effect on the fetus. In animal studies, has been shown not to interfere

with reproduction. Results of in vitro ("test tube") mutagenicity tests have been negative. Results of mutagenicity tests in animals have been negative. Does not cause cancer in long term animal studies. Not a carcinogen or suspect carcinogen.

**CARCINOGENICITY :**

**EMERGENCY AND FIRST AID PROCEDURES :**

**EYE:** Flush eyes gently with water for at least 15 minutes. Supportive treatment by a physician is recommended.

**SKIN:** Wash with mild soap and water. Remove wetted clothing until dry.

**INHALATION:** Remove to fresh air. Individuals showing pronounced anesthetic effects may require artificial respiration and oxygen.

**INGESTION:** Do not induce vomiting. Call a physician and/or transport to emergency medical facility immediately.

**NOTES TO PHYSICIAN :**

**ORAL:** Low in toxicity. Emetics are contraindicated due to danger of aspiration. If CNS Depression is prominent, nikethamide may be given parenterally. Avoid epinephrine. If and when warranted by special circumstances, gastric lavage may be performed cautiously with 3% sodium bicarbonate or water. Instill 30 to 60 ml of olive oil in the stomach at the conclusion of lavage and follow with a saline cathartic (sodium sulfate) in water.

#### V. REACTIVITY DATA

**STABILITY :** Chemical stability is great; odor and color may be adversely affected by prolonged storage in hot, moist environment.

**INCOMPATIBILITY :** May cause swelling of some plastics and synthetic rubbers. Contact with strong oxidizing agents should be avoided. (Example: Oxygen gas under high pressure.)

**HAZARDOUS DECOMPOSITION PRODUCTS:** None, Incomplete combustion can yield carbon monoxide.  
**CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION:** None

#### VI. DISPOSAL, SPILL OR LEAK PROCEDURES

**AQUATIC TOXICITY :** Aquatic toxicity is low: Product is not soluble in water.

**SPILL OR LEAK PROCEDURES :** **SMALL SPILLS:** Absorb with inert material (saw dust, rags, activated charcoal). Remove to out of doors and incinerate.  
**LARGE SPILLS:** Evacuate area. Contain liquid; transfer to closed metal (steel) containers. Keep out of water supply. Protect from ignition sources.

**WASTE DISPOSAL METHOD :** Small amounts may be incinerated in compliance with local, state and federal regulations. The recommended method of disposal for large quantities is recycling by a reclaimer or incineration. "If inert absorbents are employed in spill containment or cleanup, these absorbents must be non-biodegradable materials if destined for landfill disposal. Suitable absorbents include natural minerals (clay), activated charcoal, man-made polymers (HD polyethylene)."

**NEUTRALIZATION CHEMICAL :** Product may be effectively absorbed with activated charcoal.

#### VII. SPECIAL PROTECTION INFORMATION

**VENTILATION REQUIREMENTS :** Normal ventilation with regular use to maintain vapor concentration below 1000 ppm.

**SPECIFIC PERSONAL PROTECTIVE EQUIPMENT:** **RESPIRATORY:** None during normal use. Up to 2500 ppm, half-mask organic vapor respirator. Up to 5000 ppm, full-face organic vapor respirator, or full-face supplied air respirator. Greater than 5000 ppm, fire fighting or unknown concentration, self-contained breathing apparatus with positive pressure.  
**EYES:** None during normal use; face shield is recommended during machining operations.  
**SKIN:** None required for casual contact during normal use. Nitrile, neoprene or other petroleum distillate resistant gloves and/or boots recommended for dealing with large spills.

#### VIII. SPECIAL PRECAUTIONS

It is a combustible liquid, keep away from open flames. Do not ingest. Do not expose to ignition sources. Do not store with any strong oxidizers.

## IX. ADDITIONAL INFORMATION

Tap Magic Aluminum DOES NOT CONTAIN 1,1,1-trichloroethane, or any ozone depleting substances. Tap Magic Aluminum does not contain nitrites, nitrite derivatives, amines, polynuclear aromatic compounds either as an ingredient or a trace contaminant. Shelf life is indefinite at ambient temperatures and left in original containers.

Tap Magic Aluminum does not contain any chemical compound listed on the SARA list of "Extremely Hazardous Chemicals" and is in compliance with all of the requirements of the TSCA at the time of shipment.

Caution: Any cutting fluid can be "overworked" or "overheated", causing it to break down. This overuse is identified by the sight of or strong odor of vapors or fumes not normally present. The effects of these vapors or fumes on human health have not been fully determined. After use of this product, clean and lubricate metal surfaces to avoid staining and/or corrosion.

---

BY: Asa L. Morton, Chief Chemist, American Interplex Corporation, Little Rock, AR 72204  
TELEPHONE: (501) 224-5060