MATERIAL SAFETY DATA SHEET

Tapmatic Dual Action Plus #1 Cutting Fluid

Revision 4 **Revision Date: 6/18/2009** **Supercedes: 4/2/2008**

Section 1 – Identification

Product Name:	LPS Tapmatic Dual Action Plus #1 Cutting Fluid
Part Number:	40120, 40130, 40140, C40120
Chemical Name:	Chlorinated Hydrocarbon (trichloroethylene)
Product Use:	A metal-cutting fluid designed to simultaneously cool and lubricate to reduce friction and eliminate chip welding in tapping, drilling, reaming and threading.
Manufacturer Information:	LPS Laboratories, 4647 Hugh Howell Rd., Tucker, GA, USA 30084
TEL:	1 770-243-8800
Emergency Telephone Number:	1-800-424-9300 Chemtrec; Outside U.S.: (703) 527-3887
FAX:	1 770-243-8899
Website:	http://www.lpslabs.com

PLAIN LANGUAGE HAZARD SUMMARY

Material Safety Data Sheets can be confusing. Federal and State laws require us to include a great deal of technical information that probably will not help the non-professional. LPS includes this “PLAIN LANGUAGE HAZARD SUMMARY” to address the questions and concerns of the average worker. If you have additional health, safety or product questions, do not hesitate to call us at 1 770 243-8800.

Worker Toxicity

LPS Tapmatic Dual Action #1 is a high performance metal cutting fluid designed to reduce tapping torque of hard-to-machine metals and cool the tool and work-piece at the same time. It contains trichloroethylene, which can be irritating to skin at a minimum and if handled improperly can be dangerous. We suggest you wear gloves and avoid extended exposure to unprotected skin. Do not get it in your eyes (it stings), or breath large amounts of the vapor, (it will dry out your Nasal passages and if you breathe large amounts in poorly ventilated areas it can make you dizzy and even sick). Do not apply large amounts of LPS Tapmatic Dual Action #1 for extended periods without adequate ventilation. If you are going to perform work involving a lot of product in a poorly ventilated area, use of a respirator may be necessary. For more exposure and first aid information, refer to MSDS Sections 2, 8 and 11.

Flammability

LPS Tapmatic Dual Action Plus #1 Cutting Fluid does not have a flash point, and is considered non-flammable. However, if forced to burn, it will produce a highly irritating and potentially dangerous smoke. Please refer to handling and storage section for further information

Disposal

If you spill Tapmatic Dual Action Plus #1 Cutting Fluid, notify the proper environmental or safety department at your company right away. Tapmatic Dual Action Plus #1 Cutting Fluid has a RCRA hazardous waste classification of F001 and D040. Dispose of in accordance with municipal, provincial and federal regulations for chlorinated solvents. Recovered liquid may be sent to a licensed reclaimer or incinerator for hazardous wastes. Do not flush to the sewer. See section 13 for more details.

Section 2 • Hazards Identification

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Emergency Overview: WARNING: Harmful or Fatal if Swallowed. Contains trichloroethylene. Overexposure to vapor may cause irritation to the nose and throat and may also cause dizziness, drowsiness, central nervous system effects, irregular heartbeats, unconsciousness and death. Use with adequate ventilation and avoid prolonged or repeated breathing of vapors. Avoid contact with eyes. Liquid and vapor may cause eye irritation.

Primary route(s) of entry: Skin and Eye contact. Inhalation.

Potential Acute Health Effects:

Eyes: Liquid in eyes produces pain and irritation with mild temporary damage possible. Vapor can irritate eyes.

Skin: Prolonged or repeated contact of liquid can cause skin irritation, defatting of skin, and dermatitis. Absorption of liquid through intact skin is possible, causing systemic poisoning, but this is an unlikely route of significant toxic exposure.

Inhalation: High concentrations of vapor, in excess of the occupational exposure limit, will lead to adverse effects on the central nervous system, causing Nausea, headaches, dizziness and lightheadedness (concentrations in excess of 300ppm). Higher concentrations, around 5000ppm and above, will cause anesthetic effects, leading to unconsciousness and in extreme cases, coma and death. Very high exposures may cause an abnormal heart rhythm and prove suddenly fatal.

Ingestion: Product has a low order of acute oral toxicity, but ingestion of large quantities may cause Nausea, vomiting, and gastrointestinal irritation. May cause injury if aspirated into lungs causing adverse health effects as described in the inhalation section above.

Potential Chronic Health Effects:

Carcinogenic Effects: See Section 11
NTP: Suspect Carcinogen **IARC:** Group 2A **OSHA:** No

Mutagenic Effects: Has been linked to mutagenic effects in humans.

Teratogenic Effects: Did not cause birth defects in laboratory animals. Has been toxic to the fetus in lab animals at levels toxic to the mother.

Target Organs:
In animals, effects have been reported on the following organs: Kidney, Liver, Central nervous system, Peripheral nervous system.

Medical conditions aggravated by exposure:
Repeated exposure to high levels produces adverse effects on the liver and, to a lesser extent on the kidney. A condition known as 'Degreaser's Flush', a pronounced redness of the skin, may occur on the face, hands, arms, feet and trunk of some individuals following repeated exposure to trichloroethylene and the consumption of alcohol. This effect can intensify over a 30 minute period but usually disappears completely after 1 hour.
These symptoms may occur up to 6 weeks after the last exposure to trichloroethylene and can reoccur if exposure continues.
Interactions with other chemicals which enhance toxicity: Consumption of alcoholic beverages may increase potential for development of toxic effects resulting from exposure to this product.

Signs and Symptoms:
Stinging in eyes. Repeated or prolonged skin contact can cause redness, irritation, and scaling of the skin (dermatitis). Breathing of high vapor concentrations may cause headaches, stupor, irritation of throat and eyes, and kidney effects.

Section 3 – Compositon / Information on Ingredients

Ingredient	CASRN	Weight Percent
Trichloroethylene	79-01-6	80 - 90

Section 4 – First Aid Measures

Eyes: Check for and remove contact lenses. If irritation or redness develops, flush eyes with cool, clean, low pressure water for at least 15 minutes. Hold eyelids apart to ensure complete irrigation of the eye and eyelid tissue. Do not use eye ointment. Seek medical attention immediately.

Skin: Remove contaminated shoes and clothing. Clean affected area thoroughly with mild soap and water. Do not use ointments. Seek medical attention if irritation persists.

Inhalation: Immediately move victim to fresh air. If victim is not breathing, immediately begin rescue breathing. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). If breathing is difficult, seek medical attention immediately.

Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. Do not leave victim unattended. Seek medical attention immediately.

Section 5 – Fire Fighting Measures

Products of Combustion: Carbon monoxide, carbon dioxide, chlorine, hydrogen chloride and traces of phosgene.

Firefighting media: SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: UseCO2, water spray, fog or foam. Cool containing vessels with water jet in order to prevent pressure build-up, auto ignition or explosions.

Sensitivity to Impact: None. **Sensitivity to Static Discharge:** None

Protection Clothing (Fire): Concentrated vapors can be ignited by high intensity ignition source. Firefighters should wear self-contained, positive pressure breathing apparatus and full protective clothing due to thermal decomposition products.

Special Remarks on Explosion Hazards: Explosive mixtures of trichloroethylene and air can be formed, but are difficult to ignite and require high intensity sources of heat, such as welding arcs, sparks and flames or high temperatures and pressures; addition of small amounts of flammable substances to trichloroethylene (such as flammable liquids or gases) and / or an increase in the oxygen content of the local atmosphere, may strongly enhance these effects. Welding or cutting should not be carried out on any vessel likely to contain solvent because of the risk of explosion. Thermal decomposition will evolve toxic and corrosive vapors of hydrogen chloride and phosgene. Containers may burst if overheated due to thermal expansion of the contents.

Section 6 – Accidental Release Measures

Containment Procedures	**Small Spill and Leak:**	Absorb with an inert material and dispose of properly.
	Large Spill and Leak:	Dike far ahead of a liquid spill to ensure complete collection. Pick up free liquid for disposal using absorbent pads, sand, or other inert non-combustible absorbent materials. Place into appropriate waste containers for later disposal. Do not allow to enter drains, sewers or waterways. Spillages or uncontrolled discharges into waterways must be alerted to the Environment Agency or other appropriate regulatory body.
Clean-Up Procedures	Recover free product and place in suitable container for disposal. Do not allow to enter drains, sewers or waterways. Spillages or uncontrolled discharges into waterways must be alerted to the Environment Agency or other appropriate regulatory body.	
Evacuation Procedures	Ventilate area of leak or spill. Keep unnecessary and unprotected people away.	
Special Procedures	Ventilate area. Wear appropriate protective equipment during cleanup.	

Section 7 – Handling and Storage

Handling: Do not breathe vapor. Use only in well ventilated areas. Avoid contact with skin and eyes.
Avoid contact with naked flames and hot surfaces as toxic and corrosive decomposition products (hydrogen chloride) can be formed. The vapor is heavier than air and may reach dangerously high concentrations in pits, tanks, and other confined spaces. In such cases provide adequate ventilation or wear suitable respiratory protective equipment with positive air supply. When using do not smoke. When welding metals degreased with trichloroethylene, special care is needed to ensure all solvent has evaporated from the components. Separate cleaning and welding areas. Ensure vapors from degreasing operations do not enter welding areas - welding arcs can cause trichloroethylene vapors to break down producing toxic vapors.

Storage: Keep container dry. Keep in a cool, well ventilated place. Keep away from direct sunlight. Keep away from heat and sources of ignition.

Section 8 – Exposure Controls / Personal Protection

Exposure Guidelines:

Component	CASRN	OSHA TWA-PEL	OSHA STEL	ACGIH-TLV	ACGIH-STEL	NIOSH REL
Trichloroethylene	79-01-6	100 ppm	200 ppm	50 ppm	100 ppm	Not Established

Engineering measures	Provide general and/or local exhaust ventilation to keep exposures below the exposure guidelines listed above. Lethal concentrations may exist in areas with poor ventilation.

Personal protective equipment

Eye protection	Safety glasses with side shields conforming to appropriate regulations. Eye wash fountain and emergency shower facilities are recommended.
Hand protection	Use laminate gloves chemically resistant to this material and conforming to appropriate regulations. Please observe the instructions regarding permeability and breakthrough time that are provided by the supplier of the gloves. Take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion and the contact time.
Respiratory protection	Typical use of this product under normal conditions does not require the use of respiratory protection. If airborne concentrations are above the applicable exposure limits (listed above), use NIOSH approved respiratory protection.

Section 9 – Physical and Chemical Properties

Appearance:	Clear liquid.	**Colour:**	Clear, light brown
Odour/Taste:	Sweet, spice.	**Evaporation Rate:**	0.3 (Ethyl Ether =1)
Solubility Description:	0.1% by weight.	**Flash Point (°C):**	None
Odour Threshold:	Not Determined.	**Decomposition Temperature:**	Not Determined.
Boiling Point:	87°C(189°F)	**Auto Ignition Temperature (°C):**	>420°C (788°F)
Specific Gravity (Water=1):	1.35 at 20°C	**Partition Coefficient (octanol/water):**	2.4
Vapour Density (Air=1):	4.5	**Volatiles:**	90%
Vapour Pressure:	58 mmHg at 20°C	**V.O.C. content**	87%,1169 g/L, 9.8#/gal by CARB definition
pH:	Not applicable	**Viscosity:**	<3 mm²/sec. @ 25°C
Flammable limits (estimated):	LOWER: 8% UPPER:10.5%	**Melting Point (°C):**	Not Applicable

Section 10 – Chemical Stability and Reactivity

Chemical Stability:	Product is stable under recommended storage conditions.
Conditions to Avoid:	Keep away from red hot surfaces, sparks or naked flames which may generate toxic fumes of phosgene and hydrogen chloride. Prolonged contact with aluminum or light alloys may cause a reaction resulting in the generation of hydrogen chloride gas and heat.
Incompatibility:	Extremely reactive or incompatible with oxidizing agents. Reacts violently with sodium, potassium, barium metal. Reacts with finely divided aluminum, zinc and magnesium.
Hazardous Decomposition:	Combustion will generate smoke, possibly thick and choking, resulting in zero visibility and combustion products include hydrogen chloride and traces of phosgene gas.
Hazardous Polymerization:	Will not occur.

Section 11 – Toxicological Information

General Product Information

Acute Toxicity: An acute toxicity study of this product has not been conducted. Information given in this section relates only to individual constituents contained in this preparation.

200 ppm causes mild eye irritation. 400 ppm causes slight eye irritation and minimal light-headedness after 3 hours. 1,000 to 1,200 ppm after 6 minutes causes eye and nasal irritation, light-headedness and dizziness. 2,000 ppm cannot generally be tolerated, is irritating to the eyes and respiratory tract and causes drowsiness, dizziness and nausea within 5 minutes. Ventricular arrhythmias and very rapid respiration have been observed in individuals exposed to 15,000 ppm. High concentrations or prolonged overexposure can cause unconsciousness and death.

Component Analysis

Ingredients	CASRN	LC-50	LD-50	Carcinogenicity IARC, NTP,OSHA	Neurotoxicity	Reproductive Toxicity
Trichloroethylene	79-01-6	8450ppm/4hour	5650mg/kg/oral rat	See below	See below	See below

Carcinogenicity:
NTP: Suspected carcinogen **IARC:** (2A) probable carcinogen **OSHA:** No

Trichloroethylene has been shown to cause cancer in animals. Mechanistic studies have shown that some of these observations are not relevant for humans. Some experts believe that repeated exposure to high concentrations of trichloroethylene may cause kidney cancer, although the evidence for a causal relationship between these events is far from conclusive. None of the toxic effects of trichloroethylene will occur provided that exposures are kept below the current TLV.
The International Agency for Research on Cancer (IARC) has concluded that with respect to trichloroethylene, there is sufficient evidence of carcinogenicity to experimental animals and limited evidence of carcinogenicity to humans, resulting in a classification in Group 2A as a substance probably carcinogenic to humans. NTP has classified trichloroethylene as reasonably anticipated to be a human carcinogen.

Mutagenicity: Rodent - rat /1000 ppm/4H Brain and Coverings - changes in surface EEG Peripheral Nerve and Sensation - sensory syndrome diagnostic of central lesion Sense Organs and Special Senses (Eye) RTECS# KX4550000. Trichloroethylene has been linked to mutagenic effects in humans. Some studies measuring DNA damage (strand breaks, unscheduled DNA synthesis, in-vitro and in-vivo micronucleus and chromosomal aberrations) have been positive.

Neurotoxicity: Rodent - rat /1000 ppm/4H Brain and Coverings - changes in surface EEG Peripheral Nerve and Sensation - sensory syndrome diagnostic of central lesion Sense Organs and Special Senses (Eye) RTECS# KX4550000.

Reproductive Toxicity: Did not cause birth defects in laboratory animals; has been toxic to the fetus in lab animals at levels toxic to the mother.

Note to Physician: Note to Physician: Gastric lavage may be effective within four hours of ingestion. Product is an asphyxiant and can induce cardiac muscular sensitization to circulating epinephrine-like compounds, resulting in potentially fatal heart arrhythmias. Do not give adrenaline or similar sympathomimetic drugs. Do not allow exposed person to exercise vigorously for 24 hours following potentially toxic exposure.

Section 12 – Ecological Information

Mobility: High mobility in soil and sediment

Persistence and degradability: Not readily biodegradable

Bioaccumulative potential: Minimal bioaccumulation potential

Other adverse effects: Harmful to aquatic organisms; may cause long-term adverse effects in the aquatic environment. This product has potential for leaching.

Environmental Fate: When released into the soil, trichloroethylene is expected to quickly evaporate, but large spills have potential to leach into groundwater. When released to water trichloroethylene will quickly evaporate, but large spills are expected to be slightly toxic to aquatic life. When released into the air, trichloroethylene is expected to have a half-life between 1 and 10 days.

Environmental Toxicity: The LC_{50}/96-hour values for trichloroethylene in fish are between 10 and 100 mg/l. Trichloroethylene has an experimentally-determined bioconcentration factor (BCF) of less than 100 and is not expected to significantly bioaccumulate.

Ecotoxicology

Effect on Organisms	Component	CASRN	Test	Species	Results
Acute Toxicity on Fishes	Trichloroethylene	79-01-6	LC_{50}	Pimephales promelas	53,300 ug/L
Acute Toxicity on Daphnia	Trichloroethylene	79-01-6	LC_{50}	Daphnia magna	18,000 ug/L
Bacterial inhibition	No Data Available				
Growth inhibition of algae	Trichloroethylene	79-01-6	EC_{50}	Scenedesmus abundans	450,000 ug/L
Bioaccumulation in fish	Trichloroethylene	79-01-6	BCF	Fish species (unidentified)	17

Section 13 – Disposal Considerations

Waste Status: Under 40 CFR 261.7 (U.S.) this material, if disposed of in its received form, carries waste code D040.

Disposal: Waste must be disposed of in accordance with national, regional, provincial, and local environmental control regulations.

Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information inaccurate, incomplete, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive than federal laws and regulations.

Section 14 – Transportation Information

16 fluid ounce containers

D.O.T. Ground	**Shipping Name:**	Consumer Commodity	**UN Number:**	N/A
	Hazard Class:	ORM-D	**Technical Name:**	N/A
	Subclass:	N/A	**Hazard Label:**	ORM-D
Road/Rail - ADR/RID	**UN no:**	1710	**ADR Class:**	6.1
	Packing group:	III	**Classification code:**	T1
	Name and Description:	Trichloroethylene mixture	**Hazard ID no:**	N/A
	Labeling:	6.1		
IMDG-IMO	**UN no:**	1710	**Class:**	6.1
	Shipping Name:	Trichloroethylene mixture	**Subsidiary Risk:**	N/A
	Packing Instructions:	P001, LP01	**Packing group:**	III
	Marine pollutant:	NO	**EmS:**	F-A, S-A
IATA-ICAO	**UN no:**	1710	**Class:**	6.1
	Shipping Name:	Trichloroethylene mixture	**Subclass**	N/A
	Packing instructions:	N/A	**Packing group:**	N/A
	Labeling:	Toxic		

1 gallon and 5gallon containers

D.O.T. Ground	**Shipping Name:**	Trichloroethylene mixture	**UN Number:**	1710
	Hazard Class:	6.1	**Technical Name:**	N/A
	Subclass:	N/A	**Hazard Label:**	6.1
Road/Rail - ADR/RID :	**UN no:**	1710	**ADR Class:**	6.1
	Packing group:	III	**Classification code:**	T1
	Name and Description:	Trichloroethylene mixture	**Hazard ID no:**	N/A
	Labeling:	6.1		
IMDG-IMO	**UN no:**	1710	**Class:**	6.1
	Shipping Name:	Trichloroethylene mixture	**Subsidiary Risk:**	N/A
	Packing Instructions:	P001, LP01	**Packing group:**	III
	Marine pollutant:	NO	**EmS:**	F-A, S-A
IATA-ICAO:	**UN no:**	1710	**Class:**	6.1
	Shipping Name:	Trichloroethylene mixture	**Subclass**	N/A
	Packing instructions:	N/A	**Packing group:**	N/A
	Labeling:	Toxic		

Section 15 – Regulatory Information

U.S. Federal Regulations

RCRA Hazardous Waste No.: D040

Comprehensive Environmental Response and Liability Act of 1980 (CERCLA): 100 lbs

Toxic Substances Control Act (TSCA):
All components of this product are TSCA inventory listed and/or are exempt.

Superfund Amendments and Reauthorization Act (SARA) Title III
SARA Section 311/312 (40 CFR 370) Hazard Categories: Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

This product contains the following toxic chemical(s) subject to reporting requirements of SARA Section 313 (40 CFR 372): Trichloroethylene 79-01-6

Section 112 Hazardous Air Pollutants (HAPs): Trichloroethylene 79-01-6

State Regulations

California: This product contains chemical(s) known to the State of California to cause cancer, birth defects or reproductive harm.

New Jersey Right to Know:
Trichloroethylene 79-01-6 ● Chlorinated Paraffin 61788-76-9 ● Methyl Oleate 67762-26-9 ● Methyl Salicylate 119-36-8 ● Benzyl Acetate 140-11-4

International Regulations

Canadian Environmental Protection Act: All of the components of this product are included on the Canadian Domestic Substances list (DSL).

Canadian Workplace Hazardous Materials Information System WHMIS:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Classification:

Class D1B, Class D2A, D2B

Other Regulations

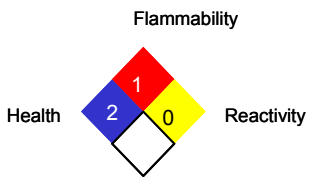
Montreal Protocol listed ingredients:	None.
Stockholm Convention listed ingredients:	None.
Rotterdam Convention listed ingredients:	None.
RoHS Compliant:	Yes.

MATERIAL SAFETY DATA SHEET

Tapmatic Dual Action Plus #1 Cutting Fluid

Revision 4 **Revision Date: 6/18/2009** **Supercedes: 4/2/2008**

Section 16 • Other Information

	HMIS 1996		HMIS III		NFPA
MSDS# 40120 **Responsible Name:** **Clea Johnson** **Regulatory Affairs Coordinator**	Health:	2	Health:	2*	
	Flammability:	1	Flammability:	1	
	Reactivity	0	Physical Hazard:	0	

Notice to Reader:
To the best of our knowledge, the information contained herein is accurate. However, neither the above Named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Clea Johnson, Regulatory Affairs Coordinator
LPS Laboratories, A division of Illinois Tool Works