GC Electronics
1801 Morgan Street
Rockford, IL 61102
Phone: (815) 968-9661
Fax: (815) 96y8-9731
www.gcelectronics.com

Product Name: Liquid Solder Flux
MSDS Number: 112
Revision Date: 5/04/09
Supersedes Date: 8/16/06

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Product Type:	Solder Flux		
Product Name:	**Liquid Solder Flux**		
Part Number(s):	**10-4202**	**Emergency Contact:**	**Chemtrec**
	10-4216	**Phone:**	**(800) 424-9300**

Section 1 – Identification of Product

Common Name: Liquid Solder Flux
Chemical Name: Rosin Solder Flux
Family Usage: Soldering Flux for Electrical or Electronic Applications
Description: Mixture of the substances listed below with non-hazardous additions.

HMIS RATINGS		NFPA RATINGS			
				Least	0
				Slight	1
Health	1	Health	1	Moderate	2
Flammability	3	Flammability	3	High	3
Reactivity	0	Reactivity	0	Extreme	4
Personal Protection	5			Gloves, Safety Glasses	B

Information pertaining to particular dangers
for man and environment:

This product has to be labeled due to the calculation procedure of international guidelines. Has a narcotizing effect. Highly flammable. Irritating to eyes. May cause sensitization by skin contact. Vapors may cause drowsiness and dizziness.

Section 2 – Hazardous Ingredients/SARA III Information

Hazardous Ingredients 1% or greater Carcinogens 0.1% or greater	C.A.S. NUMBER	WEIGHT PERCENT	OSHA PEL	SHORT TERM REL	LONG TERM REL	ACGIH TLV SHORT TERM	ACGIH TLV LONG TERM
Propan-2-ol*	67-63-0	50-100	980 mg/m3 400 ppm	1225 mg/m3 500 ppm	980 mg/m3 400 ppm	1230 mg/m3 500 ppm	983 mg/m3 400 ppm
Rosin (Colophony)	8050-09-7	25-50	NE	NE	NE		

Notes: *Chemical subject to the reporting requirements of Section 313 of Title III of the U.S.A. Superfund Amendment and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Section 3 – Physical Data

Physical State at 20°C:	Liquid
Density at 20°C (68°F):	0.880 g/cm^3
Boiling Point (760 mm Hg):	180°F 82°C
Melting Point:	Undetermined
Vapor Pressure (mm Hg at 20°C):	33
Solubility in /Miscibility w/Water :	Partly miscible
Flash Point:	64°F (18°C)
Ignition Temperature:	797°F (425/0°C
Odor Threshold:	200 ppm for 2-propanol
Appearance and Odor:	Amber, liquid with alcohol odor

Section 4 – Fire and Explosion Hazards

Flammability:	Yes
Conditions to Avoid:	Sparks, open flames
Flash Point (T.O.C.):	65°F 18°C
Auto-Ignition Temperature:	750°F 399°C
Flammability Limits Percent by Volume in Air:	LEL: 2.0 UEL: 12.0
Extinguishing Means:	CO2, sand, extinguishing powder. Do not use water.
Hazardous Combustion Products:	Carbon monoxide, carbon dioxide, aliphatic aldehydes.
Danger of Explosion:	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
Explosion Limits:	
Lower:	2.0 Vol %
Upper:	12.0 Vol %
Unusual Fire and Explosion Hazards:	A moderate explosion hazard exists when exposed to heat or flames.
For safety reasons unsuitable extinguishing Agents:	Water with full jet
In case of fire, the following can be Released:	Carbon monoxide (CO), carbon dioxide (CO2), aliphatic aldehydes
Protective equipment:	Wear self-contained respiratory protective device.

Section 5– Health Hazard Data

Emergency Overview:

Fumes during soldering are irritating to eyes and may cause headache and respiratory system irritation or damage. Prolonged or repeated exposure to rosin flux fumes during soldering may result in allergic reaction in a sensitive person, resulting in asthma symptoms. Harmful if swallowed. May cause allergic skin reaction. Flammable liquid and vapor.

ECC (Europe) Dangerous Substance Hazard Designation:	R-Phrases (Risks to Humans and the Environment): R11-Highly flammable. F=Easily Flammable R20/22-Harmful by inhalation and if swallowed. R42/43-May cause sensitization by inhalation and skin contact.
Exposure Limits:	Not determined for the product. See Section 2 for ingredients.
Primary Exposure:	Fumes during soldering will contain evaporated solvent and droplets of rosin and/or organic decomposition products.
Primary Routes of Entry:	__ Skin X Eyes X Inhalation X Ingestion
Target Organs:	Eyes, skin, mucous membranes and respiratory system.

Effects of Acute (severe short-term) Exposure:

Inhalation:	Flux fumes during soldering may cause irritation and damage of mucous membranes and respiratory system. High concentrations can cause headache, dizziness, narcosis and nausea.
Skin Contact:	Possible local irritation by contact with flux or fumes.
Skin Absorption:	None
Eye Contact:	Irritation from contact with liquid and smoke from soldering.
Ingestion:	May exhibit burning sensation in the digestive tract.

Effects of Chronic (prolonged) Exposure

Inhalation:	Vapors can cause headache, dizziness, narcosis and irritation of the mucous membranes. Smoke during soldering will contain resin which is an allergen that can cause eye irritation and respiratory system irritation and damage.
Skin Contact:	Prolonged or repeated contact with skin can cause a rash.

Medical Conditions Generally Aggravated by Exposure:	Chemical hypersensitivity, asthma and other respiratory conditions, existing eye and skin disorders. Continued breathing of high concentrations of solvent vapors can affect the liver and central nervous system.

First Aid Measures

Seek medical assistance for further treatment, observation and support if needed.

Eye Contact:	Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor..
Skin Contact:	Immediately wash with water and soap and rinse thoroughly.
Inhalation:	Remove person from exposure to fumes. Supply fresh air. Consult a doctor in case of complaints.
Ingestion:	Induce vomiting if person is conscious. Seek medical help.

Section 6–Reactivity Data

Chemical Stability:	X Stable __ Unstable
Conditions to Avoid:	
Thermal Decomposition:	No decomposition if used according to specifications.
Incompatibility (materials to avoid):	Strong oxidizing materials. Strong acids.
Hazardous Decomposition Products:	When heated to soldering temperatures, the solvents are evaporated and rosin may be thermally degraded to liberate aliphatic aldehydes and acids.
Hazardous Polymerization:	__ May Occur X Will Not Occur
Dangerous Reactions:	No dangerous reactions known.
Dangerous Products of Decomposition:	When heated to soldering temperatures, the solvents are evaporated and rosin may be thermally degraded to liberate alphatic aldehydes and acids.

Section 7-Spill or Leak Procedures

Procedures for Material Control

Steps to be Taken if Material is Spilled or Released:	Ensure adequate ventilation. Keep away from ignition sources. Use caution to avoid breathing fumes.
Measures for environmental Protection	Do not allow product to reach sewage system or any water course.:Prevent runoff into storm sewers and natural waterways.
Measures for cleaning/ collecting:	Absorb with clay, diatomaceous earth, dry sand or other inert material. Do not use combustible materials such as sawdust. Place in a chemical waste container. Keep out of waterways. Harmful to fish and other water organisms. Biodegradation is expected in a waste treatment plant. Emissions are photochemically reactive.
Waste Disposal Methods:	According to local regulations, usually by incineration. EPA Hazardous Waste Number is D001. Hazard Class is Ignitable Waste.
Caution:	Empty containers may contain product residue. Observe all label precautions
Ecological Information:	
General Notes:	Do not allow product to reach ground water, water course or sewage system.
Product Recommendation:	Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Uncleaned Packagings:	
Recommendation:	Disposal must be made according to official regulations.

Section 8 – Special Protection Information

Personal Protective Equipment General Protective & Hygienic Measures:	Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.
Ventilation to be used:	Provide adequate exhaust ventilation (general and/or local) if necessary to meet exposure requirements. Local exhaust ventilation is preferred to minimize dispersion of smoke and fumes into the work area.
Respiratory Protection:	When ventilation is not sufficient to remove fumes from the breathing zone, a NIOSH approved respirator or self-contained breathing apparatus should be worn.
Protective Gloves:	Nitrile or natural rubber gloves where necessary to avoid skin contact. The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
Eye Protection:	Safety glasses or tightly sealed goggles should be used.
Other Protective Clothing and Equipment:	Impermeable apron is advised to avoid contact through clothing.
Hygienic Work Practices:	Wash hands thoroughly after handling chemicals or solder containing lead before eating or smoking.
Exposure Limits:	Not determined for the product. See section 2 for ingredients. Rosin is an allergen. Prolonged or repeated exposure to fumes during soldering may result in allergic reaction In a sensitive person, resulting in eye and skin irritation and asthma symptoms.

Section 9 – Special Precautions

Waste Disposal Methods:	According to local regulations, usually by incineration. EPA Hazardous Waste Number is D001. Hazard Class is Ignitable Waste.
Caution:	Empty containers may contain product residue. Observe all label precautions
Precautions to be taken in handling and storage:	Store in cool, dry conditions in well sealed receptacles. Store in a cool location. Store away from oxidizing agents. Store away from sources of ignition. Keep containers sealed when not in use. Open containers cautiously to allow venting of any internal pressure. Use grounding and bonding connection when transferring material to prevent static discharge, fire or explosion. Do not use a cutting torch or containers (even empty) as residual may explode.
Personal Precautions:	Avoid breathing smoke/fumes generated during soldering. Avoid contact with eyes and skin. Ensure good ventilation/exhaustion at the workplace.
Information about Protection Against Explosions and Fire:	Keep ignition sources away. Do not smoke. Protect against electrostatic charges.

Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Section 10 – Regulatory Information

DOT Classification: Isopropanol, mixture
Hazard Class: 3
UN #: UN1219
Packing Group: II
Label: 3
Description: Soldering Flux

Land Transport ADR/RID (cross border):
ADR/RID Class: 3 Flammable Liquids
Danger Code (Kemler): 33
UN-Number: 1219
Packaging Group: II
Description of Goods: 1219 Isopropanol, Mixture

Maritime Transport IMDG:
IMDG Class: 3
UN Number: 1219
Label: 3
Packaging Group: II
EMS Number: F-E,S-D
Marine Pollutant: No
Proper Shipping Name: Isopropanol, Mixture

Air Transport ICAO-TI and IATA-DGR:
ICAO/IATA Class: 3
UN/ID Number: 1219
Label: 3
Packaging Group: II
Proper Shipping Name: Isopropanol, Mixture

Toxicological Information:

Acute Toxicity:	Oral	LD50	5045 mg/kg (rat)
	Dermal	LD50	12800 mg/kg (rabbit)
	Inhalative	LC50/4 h	30 mg/l (rat)

Primary Irritant Effect:
Skin: Possible local irritation by contact with flux or fumes.

Eye: Smoke during soldering can cause eye irritation.

Inhalation:	Fumes during use may irritate mucous membranes and respiratory system. High concentrations can cause headache, dizziness, narcosis, and nausea. Flux fumes during soldering may cause irritation and damage of mucuous membranes and respiratory system.
Ingestion:	May cause gastrointestinal irritation.
Sensitization:	Sensitization possible through skin contact.
Additional Toxicological Information:	The product shows the following dangers according to internally approved calculation methods for preparations: Irritant
U.S.A.	All chemical substances in this product are listed in the EPA (Environmental Protection Agency) TSCA (Toxic Substances Control Act) Inventory.
California Proposition 65:	None

Carcinogenicity:
67-63-0 Propanol-2-ol

NTP	None
OSHA	None
IARC	None
TLV	None
NIOSH-Ca	None

Canada:
WHMIS (Workplace Hazardous Materials Information System)

Classification:	B2 D2B
Components on Ingredient List for WHMIS:	Rosin, Propan-2-ol

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Product Regulations (CPR) and the MSDS contains all the information required by the CPR.

NA = Not Applicable NE = Not Established UN = Unknown

Hazard communication regulations, U.S.A. Occupational Safety and Health Act (OSHA) and Canada Workplace Hazardous Materials Information Systems (WHMIS), require that employees must be trained how to use a Material Safety Data Sheet as a source for Hazard information.

European Union:	The following information relates to product regulation specific to the directives of the European Union.
Europe:	European Council Directive 67/548/EEC
Dangerous Substance Hazard Classification:	F=Highly Flammable Xn=Harmful
R-Phrases (Risks to Humans or the Environment):	R11=Highly flammable. Irritating to eyes. R20/22=Harmful by inhalation and if swallowed. R42/43=May cause sensitization by skin contact. Vapors may cause drowsiness and dizziness.
S-Phrases (Safety pre-cautions for storing, handling and using the product):	Wear suitable gloves S2=Keep out of reach of children Avoid contact with skin and eyes. S7=Keep containers tightly closed. S16=Keep away from sources of ignition-No Smoking. S23=Do not breathe the fumes. S29=Do not empty into drains. Dispose of this material and its containers at hazardous or special waste collection points.

If swallowed, seek medical advise immediately and show this container or label.

Disclaimer

GC Electronics believes that the information contained herein is accurate and reliable as of the date of this material safety data sheet, but no representation guarantee or warranty, express or implied, is made as to the accuracy, reliability, or completeness of the information. Persons receiving this information are encouraged to make their own determination as to the information's suitability and completeness for their particular application. NO INFORMATION CONTAINED HEREIN CONSTITUTES A PRODUCT WARRANTY OF ANY KIND, WHETHER EXPRESS OR IMPLIED; AND ALL IMPLIED WARRANTIES OF MERCHANT ABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BY GC ELECTRONICS.