Material Safety Data Sheet

10/8

SECTION 1 - PRODUCT IDENTIFICATION AND USE

SOLDER ALLOYS CONTAINING LEAD

MSDS Number:

Lead Solder

Product Identifier As Used On Label

Date Prepared:

15-Oct-96

Product Use: Used with flux to bond most common metals.

88721

Manufacturer's Name and Address

Supplier's Name and Address (if different from manufacturer)

KESTER SOLDER
DIVISION OF LITTON SYSTEMS, INC.
515 E. TOUHY AVENUE
DES PLAINES, IL 60018 USA

Telephone Number For Information: (847) 297-1600

CHEMTREC 24-Hour Emergency Telephone Number: (800) 424-9300

NFPA Rating:

Health: 1

Flammability:

Reactivity

Special:

HMIS Rating:

Health: 1

Flammability: 0

Reactivity: 0

Personal Protection: X

DOT: Not Regulated.

WHMIS: Class D, Division 2, Subdivision B.

TDG: Not Regulated.

NA = Not Applicable

NE = Not Established

UN = Unknown

SECTION 2 - HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS 1 % or greater CARCINOGENS 0.1 % or greater	C.A.S. Number	Weight Percent	OSHA PEL mg/m³	ACGIH TLV TWA mg/m³	LD 50 injested g / Kg	LC 50 inhaled g / m³
Lead	7439-92-1 *	**	0.05	0.15	NE	NE
Tin	7440-31-5	**	2	2	NE	NE
Silver	7440-22-4 *	**	0.01	0.1	NE	NE
Bismuth	7440-69-9	**	NE	NE	NE	NE
Antimony .	7440-36-0 *	##	0.5	0.5	7.0 Rat	NE
Соррег	7440-50-8	**	NE	0.2	NE	NE
Indium	7440-74-6	**	NE	0.1	NE	NE
NON-HAZARDOUS INGREDIENTS						

NOTES: * This Chemical is 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.

88921

Composition and weight % of solder alloys varies widely and can be determined by product label.

Product Identifier / MSDS Number: Lead Solder

Date Prepared: 15-Oct-96



SECTION 3 - PHYSICAL DATA

Physical State at 20 °C: Solid

NA °F

NA °C

Melting Point:

NA °F

NA°C

Vapor Pressure (mm Hg at 20 °C): NA

Evaporation Rate (butyl acetate = 1): NA

Vapor Density (air = 1): NA

Boiling Point (760 mm Hg):

Percent Volatile (by volume):

Solubility in Water (% by weight): 0

Volatile Organic Compound (VOC):

NAg/Liter

pH: NA

Odor Threshold: NE

Freezing Point (760 mm Hg):

NE °C

Coefficient of Water / Oil Distribution: NE

Specific Gravity (water = 1 at 25 °C): >1

Appearance and Odor: Silver-gray metal in bar, wire, ribbon, or preformed shapes, no odor.

NE °F

SECTION 4 - FIRE AND EXPLOSION HAZARDS					
Flammability: N	O Yes C	onditions to avoid: NE			
Flash Point (T.O.C):	NA°F NA°C	Auto-Ignition	Temperature:	NA °F	NA °C
Flammability Limits percei	nt by volume in air	LEL: NA	UEL: NA		
Extinguishing Means:	○ Water ○	Carbon Dioxide	O Alcohol Foam	ODry Ch	emical
Hazardous Combustion Pr	oducts: Melted solde	r above 1000 °F will liber	rate highly toxic lead and	or antimony fu	mes.
Explosion Sensitivity:	Impact - None Identi	fied Static Disc	harge Sensitivity -	○ Yes	No
Special Firefighting Proced	iures: Wear self-conta	ned breathing apparatus	if this material is in the v	icinity of a fire.	
Unusual Fire and Explosio	n Hazards: Flux in core	ed solder may ignite wher	n the solder melts in a fire	3.	
	SECTION	ON 5 - REACTIVIT	Y DATA		

Chemical Stability:

Stable

Unstable

Conditions to avoid: None

Incompatibility (materials to avoid):

Strong acids, strong oxidizers.

Hazardous Decomposition Products:

No lead or antimony are detected in fumes from soldering below 1000 °F (537 °C).

HAZARDOUS POLYMERIZATION:

May Occur

Conditions to avoid: NE

Will Not Occur

Form Number: 1F-RD-G-02-01

INGESTION:

Product Identifier / MSDS Number: Lead Solder

Date Prepared: 15-Oct-96

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SECTION 6 - HEALTH HAZARD DATA / TOXICOLOGICAL PROPERTIES

EXPOSURE LIMITS: Not determined for the product. See Section 2 for ingredients.

Primary exposure during soldering is to flux furnes. See appropriate Material Safety Data Sheet.

	•							
PRIMARY ROUTES OF ENT	TRY:	Skin (Eyes @) Inhalation	Ingestion			
TARGET ORGANS: Ingestion	•	•	•					
EFFECTS OF ACUTE (sever	EFFECTS OF ACUTE (severe short-term) EXPOSURE:							
INHALATION:	Over exposure t	o lead may result i		system disorders ch				
	drowsiness, seiz	zures, coma and de	eath. Exposure o	f this magnitude is ur	ılikely.			
OVIV CONTACT	Mana							
SKIN CONTACT:	None.							
SKIN ABSORPTION:	None.							
EYE CONTACT:	None.	•						
					•			
INGESTION:	Not likely to occ	ur, but would have	similar effects as	inhalation.				
:	•	·						
EFFECTS OF CHRONIC (pro	olonged) EXPOS	URE:						
Repeated inhalation or ingestic	on of lead can resu	ult in systemic pois	oning.					
Medical Conditions Generally Lead: Diseases of the blood an		•	nves and nossibly	reproductive system	·s			
	id blood-lottiming o	ngans, kidneys, ne	ives una possibily	reproductive system	J.			
CARCINOGENICITY	O NTP	O OSHA	IARC	○ Not	Listed			
TERATOGENICITY / MUTAG	ENICITY: Se	ee Section 9 for a	dditional inform	ation.				
	SECTI	ON 7 - FIRST	AID MEASUI	RES				
Seek medica	l assistance for	r further treatme	ent, observatio	n and support if n	eeded.			
EYE CONTACT: For burns	flush immediately	with cool water.						
CIVIN CONTACT: Fashires	flenk Image 19 4 4							
SKIN CONTACT: For burns	Tiush immediately	with cool water.						
INHALATION: Remove p	person from expos	ure to fumes.						

If thought to be overexposed, the person should have a blood lead analysis done.

Form Number: 1F-RD-G-02-01

Product Identifier / MSDS Number: Lead Solder

Date Prepared: 15-Oct-96

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SECTION 8 - PREVENTIVE MEASURES

PROCEDURES FOR MATERIAL CONTROL:

Steps to be Taken if Material is Spilled or Released:

Melted solder will solidify on cooling and can be scraped up. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces.

Precautions to be taken in Handling and Storage:

Store away from sources of sulfur. Wash hands after handling solder containing lead before eating or smoking. Avoid breathing smoke / furnes generated during soldering. Do not place flux cored solder into a hot solder pot because the flux may ignite. Use of strong acid fluxes may result in liberation of toxic lead chloride furnes.

Waste Disposal Methods:

Solder can be reclaimed.

CAUTION: Empty containers may contain product residue. Observe all label precautions.

PERSONAL PROTECTIVE EQUIPMENT:

VENTILATION

Provide adequate exhaust ventilation (general and / or local) if necessary to meet exposure requirements.

TO BE USED:

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

should be worn.

Protective Gloves: Usually not required.

Eye Protection: When soldering, use goggles or face

shield.

Other Protective Clothing and Equipment: None.

Hygienic Work Practices: Wash hands thoroughly after handling solder containing lead before eating or smoking.

SECTION 9 - ADDITIONAL INFORMATION

If the solder contains lead, these precautions are applicable.

This product contains lead which is known to the State of California to cause cancer, birth defects or other reproductive harm. Lead and its compounds have been placed in Class B2, probably carcinogenic to humans by USEPA.

IARC has placed lead and its compounds in Class 2B, possibly carcinogenic to humans.

SECTION 10 - PREPARATION INFORMATION

Prepared By: D. Bernier

Date Prepared: 15-Oct-96

Telephone Number: (847) 297-1600

Supersedes:

20-May-93

The information contained herein is based on data considered accurate and is offered solely for information, consideration and investigation. Kester Solder extends no warranties, makes no representations and assumes no responsibility as to the accuracy, completeness or suitability of this data for any purchaser's use. The Data on this Material Safety Data Sheet relates only to this product and does not relate to use with any other material or in any process. All chemical products should be used only by or under the direction of technically qualified personnel who are aware of the hazards involved and the necessity for reasonable care in handling. 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.

Form Number: 1F-RD-G-02-01

Material Safety Data Sheet 8892/

SECTION 1 - PRODUCT IDENTIFICATION AND USE

"44" ROSIN FLUX CORED SOLDER

MSDS Number:

"44" Core

Product Identifier As Used On Label

Date Prepared:

15-Oct-96

Product Use: Soldering flux in cored solder for electrical or electronic applications.

Manufacturer's Name and Address

Supplier's Name and Address (if different from manufacturer)

KESTER SOLDER DIVISION OF LITTON SYSTEMS, INC. **515 E. TOUHY AVENUE** DES PLAINES, IL 60018 USA

Telephone Number For Information: (847) 297-1600

CHEMTREC 24-Hour Emergency Telephone Number: (800) 424-9300

NFPA Rating:

Health: 1

Flammability: 2

Reactivity

Special:

HMIS Rating:

Health: 1

Flammability: 2

Reactivity: 0

Personal Protection: X

DOT: Not Regulated.

WHMIS: Class D, Division 2, Subdivision B.

TDG: Not Regulated.

NA = Not Applicable NE = Not Established UN = Unknown

SECTION 2 - HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS 1 % or greater CARCINOGENS 0.1 % or greater	C.A.S. Number	Weight Percent	OSHA PEL mg/m³	ACGIH TLV TWA mg/m³	LD 50 injested g / Kg	LC 50 inhaled g / m³
Lead	7439-92-1 *	**	0.05	0.15	NE	NE
Tin	7440-31-5	**	2	2	NE	NE
Silver	7440-22-4 *	**	0.01	0.1	NE	NE
Bismuth	7440-69-9	**	NE	NE	NE	NE
Antimony	7440-36-0 *	**	0.5	0.5	7.0 Rat	NE
Rosin	8050-09-7	< 3	NE	NE	NE	NE
NON-HAZARDOUS INGREDIENTS						
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NOTES: * This Chemical is 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.

Composition and weight percent of solder alloys varies widely and can be determined by product label. Flux in core is typically 1 - 3 % by weight.

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Product Identifier / MSDS Number: "44" Core

Date	Prepared:	15-Oct-9

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SECTION 3 - PHYSICAL DATA

Physical State at 20 °C: Solid

Specific Gravity (water = 1 at 25 °C): >1

Boiling Point (760 mm Hg):

NA °F NA °C

NA °F Melting Point:

NA °C

Vapor Pressure (mm Hg at 20 °C): NA

Evaporation Rate (butyl acetate = 1): NA

Vapor Density (air = 1): NA

Percent Volatile (by volume):

Solubility in Water (% by weight): 0

Volatile Organic Compound (VOC):

NA g / Liter

pH: NA ·

Odor Threshold: NE

Freezing Point (760 mm Hg):

NE °F

Coefficient of Water / Oil Distribution: NE

Appearance and Odor: Silver-gray metal in wire, ribbon or preformed shapes with a core of flux, no odor.

SECTION 4 - FIRE AND	EXPLOSION	HAZARDS
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NE °C

A °C
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1 0
ıi

Unusual Fire and Explosion Hazards: Flux in cored solder may ignite when the solder melts in a fire.

SECTION 5 - REACTIVITY DATA

Chemical Stability:

Stable

Unstable

Conditions to avoid: None.

Incompatibility (materials to avoid): Strong acid, strong oxidizers

Hazardous Decomposition Products:

When heated to soldering temperatures, the solvent in the flux will boil away and carry up droplets of rosin and thermal degradation products such as aliphatic aldehydes, acids and terpenes. No lead is detected in fumes from soldering below 1000 °F (537 °C).

HAZARDOUS POLYMERIZATION:

May Occur

Conditions to avoid: NE

Will Not Occur

Product Identifier / MSDS Number: "44" Core

Date Prepared: 15-Oct-96

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SECTION 6 - HEALTH HAZARD DATA / TOXICOLOGICAL PROPERTIES

EXPOSURE LIMITS: Not determined for the product. See Section 2 for ingredients.

Primary exposure during soldering is to evaporated solvent which may contain droplets of rosin and / or other organic decomposition products.

PRIMARY ROUTES O	F ENTRY:	○ Skin ●	Eyes	Inhalation	Ingestion
TARGET ORGANS:		skin, mucous membra stinal, reproductive an			lead metal can affect
EFFECTS OF ACUTE	(severe short-ten	m) EXPOSURE:			
INHALATION:	Flux fume respirator	s during soldering mag y system	y cause irritation and (damage of mucous	membranes and
SKIN CONTAC	CT: Possible lo	ocal irritation by conta	ct with flux or fumes.		
SKIN ABSORF	PTION: None.				
EYE CONTAC	T: Irritation fr	om contact with smok	e from soldering.		
INGESTION:	Not likely t	o occur.			
EFFECTS OF CHRON Breathing fumes during during soldering will cor ingestion of lead can re-	soldering may cau stain rosin which is	se respiratory system an allergen and can c	irritation, headache a ause respiratory syste	nd irritation of mucc em irritation and dar	ous membranes. Smoke nage. Repeated
Medical Conditions Ger Flux: Pre-existing condit reproductive system.		•	blood and blood-form	ning organs, kidneys	, nerves and possibly
CARCINOGENICITY	O NTP	O OSHA	● IARC	○ Not	Listed
TERATOGENICITY / M	IUTAGENICITY:	See Section 9 fo	r additional informat	tion.	
	SE	CTION 7 - FIRS	T AID MEASUR	ES	
Seek n	nedical assistan	ce for further treat	ment, observation	and support if n	eeded.
					emove from exposure.

SKIN CONTACT: For burns flush immediately with cool water. If a rash develops from flux fumes, remove person from

exposure and wash skin with soap and water.

INHALATION: Remove person from exposure to fumes.

INGESTION: NA

Product Identifier / MSDS Number: "44" Core

Date Prepared: 15-Oct-96





SECTION 8 -PREVENTIVE MEASURES

PROCEDURES FOR MATERIAL CONTROL:

Steps to be Taken if Material is Spilled or Released:

Melted solder will solidify on cooling and can be scraped up. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces.

Precautions to be taken in Handling and Storage:

Store away from sources of sulfur. Wash hands after handling solder containing lead before eating or smoking. Avoid breathing smoke / furnes generated during soldering. Do not place flux cored solder into a hot solder pot because the flux may ignite.

Waste Disposal Methods:

Solder can be reclaimed.

CAUTION:

Empty containers may contain product residue. Observe all label precautions.

PERSONAL PROTECTIVE EQUIPMENT:

VENTILATION

Provide adequate exhaust ventilation (general and / or local) if necessary to meet exposure requirements.

TO BE USED:

Local exhaust ventilation is preferred to minimize dispersion of smoke and furnes into the work area.

Respiratory Protection: When ventilation is not sufficient to remove fumes from the breathing zone, a NIOSH approved respirator

should be worn.

Protective Gloves: Usually not required.

Eve Protection: When soldering, use goggles or face

shield.

Other Protective Clothing and Equipment: None.

Hygienic Work Practices: Wash hands thoroughly after handling solder containing lead and before eating or smoking.

SECTION 9 - ADDITIONAL INFORMATION

If the solder contains lead, these precautions are applicable.

This product contains lead which is known to the State of California to cause cancer, birth defects or other reproductive harm. Lead and its components have been placed in Class B2, probably carcinogenic to humans by USEPA. IARC has placed lead and its compounds in Class 2B, possibly carcinogenic to humans.

SECTION 10 - PREPARATION INFORMATION

Prepared By: D. Bernier

Date Prepared:

15-Oct-96

Telephone Number: (847) 297-1600

Supersedes:

20-May-93

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#88921

Material Safety Data Sheet

KESTER SOLDER 515 E. TOUHY AVENUE DES PLAINES, IL 60018

MSDS Number: "Acid" Core

Page 1 of 4

Date Prepared:

18 May 1993

Supersedes:

01 June 1992

Prepared By:

D. Bernier

Telephone Number For Information: (708) 297-1600

CHEMTREC 24-Hour Emergency Telephone Number: (800) 424-8300

SECTION 1 - PRODUCT IDENTIFICATION AND USE

"ACID" FLUX CORED SOLDER

Product Name And Number As Used On Label

PRODUCT USE:

Soldering flux in cored solder for general applications.

NFPA Rating:

Health:

Flammability:

Reactivity:

Special:

HMIS Rating:

Health:

Flammability:

Reactivity: 0 Personal Protection:

X

DOT: Not Regulated.

WHMIS: Class D. Division 2, Subdivision B.

TDG: Not Regulated.

NA = Not Applicable

NE = Not Established

UN = Unknown

SECTION 2 - INGREDIENTS AND HAZARDS

HAZARDOUS INGREDIENTS 1% or greater	C.A.S.	WT.	OSHA	ACGIH TLV
CARCINOGENS 0.1% or greater	Number	%	PEL	STEL
			mg/m ³	mg/m°3
Lead	7439-92-1*	+*	0.05	0.15
Tin	7440-31-5	**	2.0	2.0
Silver	7440-22-4+	**	0.01	0.1
Bismuth	7440-69-9	++	NE	NE
Antimony	7440-36-0 *	**	0.5	0.5
Zinc Chloride	7646-85-7	3	NA	NA
NON-HAZARDOUS INGREDIENTS				

NOTES: *This Chemical is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

** Composition and weight % of solder alloys varies widely and can be determined by product label. Flux in core is typically 1-3 % by weight.

MSDS Number:

"Acid" Core

Page 2 of 4

Date Prepared:

18 May 1993

SECTION 3 - PHYSICAL DATA

Boiling Point (760 mm Hg):

NA° F NA° C Specific Gravity (water = 1 at 25 °C): >1

Vapor Pressure (mm Hg at 20 °C): NA

NA°F NA° C Melting Point:

Vapor Density (air=1): NA

Evaporation Rate (butyl acetate=1): NA

Solubility in Water (% by weight): 0

% Volatile(by volume): NA

Volatile Organic Compound (VOC):

NA g/liter

Odor Threshold: NE

pH: NA

Appearance and Odor: Silver-gray metal in wire, ribbon or preformed shapes with a core of flux

SECTION 4- FIRE AND EXPLOSION HAZARD DATA

Flash Point (T.O.C.):

NA °F

NA °C

Auto-Ignition Temperature:

NA °F

NA °C

Flammability Limits % by volume in air

LEL:NA

UEL: NA

() CARBON DIOXIDE Extinguishing Media: () WATER

() ALCOHOL FOAM

) DRY CHEMICAL

Hazardous Combustion Products: Melted solder may liberate carbon monoxide, carbon dioxide, lead oxide fumes.

Explosion Sensitivity:

Impact - None Identified

Static discharge - () Yes

(X) No

Special Firefighting Procedures: Wear self-contained breathing apparatus if this material is in the vicinity of a fire.

Unusual Fire and Explosion Hazards:

Flux in cored solder may ignite when the solder melts in a fire.

SECTION 5 - REACTIVITY HAZARD DATA

STABILITY (X) Stable () Unstable

Conditions to Avoid: None

Incompatability(materials to avoid):

Strong acid, strong oxidizers.

Hazardous Decomposition Products:

When heated to soldering temperatures, the solvent in the flux will boil away and carry

up droplets of thermal degradation products and acids. Zinc chloride emits hydrochloric

acid during the heat of soldering. 35 ppm HCl causes irritation to throat. Concentrations of 50-100 ppm can be

tolerated for 1-hour. No lead is detected in fumes from soldering below 1000°F (537°C).

HAZARDOUS POLYMERIZATION:

() May Occur

Conditions To Avoid: NE

(X) Will Not Occur

"Acid" Core MSDS Number:

Page 3 of 4

Date Prepared:

18 May 1993

SECTION 6 - HEALTH HAZARD DATA

EXPOSURE LIMITS: In	igested LD(50):	NE g/Kg	Inhaled LC(50):	NE g/Kg
Primary exposure during	g soldering is to evaporate	d solvent which	n may contain organic (decomposition products, zinc
chloride and hydrochlor	ic acid fumes.			
			·	
PRIMARY ROUTES OF EN	NTRY: (X) Skin	(X) Eyes	(X) Inhalatio	on (X) Ingestion
	t fumes: eyes, mucous me reproductive and neurolo		espiratory system. Ing	estion of lead metal can affect
EFFECTS OF ACUTE (seve	ere short-term) EXPOSUR	E:		
INHALATION:	Flux fumes during solder respiratory system.	ring may cause	imitation and damage (of mucous membranes and
SKIN CONTACT:	Possible local irritation of	r burns by cont	act with flux or fumes.	
SKIN ABSORPTION:	None.			
EYE CONTACT:	Irritation from contact wi	th smoke from	soldering.	
INGESTION:	Not likely to occur.		·	
EFFECTS OF CHRONIC (p	rolonged) EXPOSURE: of mucous membranes. Re	•	•	nay cause respiratory irritation, systemic poisoning.
Medical Conditions Generally blood-forming organs, k	y Aggravated by Exposure idneys, nerves and possible		•	ngs, diseases of the blood and
CARCINOGEN	() NTP () OSH	A (9)	IARC () Not Listed
EMERGENCY FIRST AID	PROCEDURES: Seek me	edical assistanc	e for further treatment.	, observation and support if needed

EYE CONTACT:

Flush immediately with cool water. For fume irritation use eye drops and remove from

exposure.

SKIN CONTACT: Flush immediately with cool water. If a rash develops from flux fumes, remove person from

exposure and wash skin with soap and water.

INHALATION:

Remove person from exposure to fumes.

INGESTION:

NA

MSDS Number: "Acid" Core

Page 4 of 4

Date Prepared:

18 May 1993

SECTION 7 - PROCEDURES FOR MATERIAL CONTROL

Melted solder will solidify on cooling and can be scraped Steps to be Taken If Material Is Spilled Or Released: up. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces.

Waste Disposal Methods:

Solder can be reclaimed.

CAUTION: Empty containers may contain product residue. Observe all label precautions.

Precautions to be Taken in Handling and Storage: Store away from sources of sulfur. Wash hands after handling solder containing lead and before eating or smoking. Avoid breathing smoke / furnes generated during soldering. Do not place flux cored solder into a hot solder pot because the flux may ignite.

SECTION 8 - PROTECTIVE MEASURES

Respiratory Protection: Usually not required. When ventilation is not sufficient to remove fumes from the breathing zone, a cartridge type respirator should be worn.

Protective Gloves: Not usually required.

Eve Protection:

When soldering, use goggles or face shield.

VENTILATION TO BE USED:

Provide adequate exhaust ventilation (general and / or local) to meet TLV requirements

Other Protective Clothing and Equipment:

None.

Hygienic Work Practices: Wash hands thoroughly after handling solder containing lead and before eating or smoking.

SECTION 9-ADDITIONAL INFORMATION

If the solder contains lead, these precautions are applicable.

This product contains lead which is known to the State of California to cause cancer. birth defects or other reproductive harm. Lead and its compounds have been placed in Class B2, probably carcinogenic to humans by USEPA.

IARC has placed lead and its compounds in Class 2B, possibly carcinogenic to humans.

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