

MATERIAL SAFETY DATA SHEET

DATE PRINTED: 11/19/2003

Page 1 of 9

Tin/Lead Solder Wire containing the Crystal Series of Modified Rosin-Based Fluxes

MSDS No. IWB012 Rev. 2

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

COMPANY IDENTIFICATION

HENKEL LOCTITE CORPORATION

15051 East Don Julian Road

Industry, California 91746

USA

Phone: 1-626-968-6511

Fax: 1-626-336-0526

EMERGENCY TELEPHONE NUMBERS

Transportation:

Chemtrec, USA, 1-800-424-9300

International 1-703-527-3887

Non-Transportation:

1-626-926-5107

PRODUCT NAME Tin/Lead Solder Wire containing the Crystal Series of Modified Rosin-Based Fluxes
Loctite/Multicore rosin based flux cored solder wire is identified by the alloy and flux codes shown below.
The flux code can be found under the word 'Type' on the label.

ALLOYS:

Tin / Lead	60/40, 63/37, Sn62
Tin / Lead / Silver	HMP

FLUX TYPES: Crystal 400, Crystal 502, Crystal 511

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Alloy	Density	Lead Content	Tin Content	Silver Content	Rosin Content
		CAS 7439-92-1	CAS 7440-31-5	CAS 7440-22-4	CAS *
		% max.	% max.	% max.	% max.
HMP	11.1	93.5	5	1.5	3.5
63/37	8.4	37	63	-	3.5
Sn62	8.5	36	62	2	3.5
60/40	8.5	40	60	-	3.5

* The CAS number is variable and depends on the exact identity of the modified rosins used. In the absence of evidence to the contrary, modified rosins are classified as sensitizers.

DISCLOSURE

This product is hazardous under the criteria of the USA OSHA Hazard Communication Standard 29 CFR 1910.1200. Any ingredient claimed as a trade secret will be disclosed in accordance with 29 CFR 1910.1200 (i). See Section 8 of this MSDS for any noted exposure limits for these compounds.

MATERIAL SAFETY DATA SHEET

DATE PRINTED: 11/19/2003

Page 2 of 9

Tin/Lead Solder Wire containing the Crystal Series of Modified Rosin-Based Fluxes

MSDS No. IWB012 Rev. 2

SECTION 3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

WARNING!

Contains Lead.

Harmful if swallowed or inhaled.

May cause irritation to skin, eyes and respiratory tract.

May cause pulmonary sensitization.

Silver-white to gray alloy wires.

EYE CONTACT

Flux fumes may irritate the eyes. The flux may splatter during soldering.

SKIN CONTACT

Prolonged or repeated contact may cause irritation and skin sensitization. Modified rosin may cause a rash to develop. Prolonged or repeated contact with silver may cause Argyria (a non-toxic, cosmetic blue, gray discoloration of the skin and mucous membranes that is irreversible and permanent).

INHALATION

Fumes produced during soldering may be irritating to the nose and throat and cause sensitization. Repeated or prolonged exposure to flux fumes may cause an allergic reaction leading to occupational asthma. Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms) which come on a few hours after large exposures.

INGESTION

Symptoms of lead poisoning include abdominal pain, nausea, vomiting and headache. May cause irritation to the gastrointestinal tract, mouth and nose.

PRIMARY ROUTE OF EXPOSURE

Inhalation, skin contact, ingestion.

MEDICAL CONDITIONS AGGRAVATED

Repeated or prolonged exposure to lead and its inorganic compounds may produce general health deterioration by an accumulation in one or more human organs.

CARCINOGENICITY

IARC - Group 2B Component Lead

OSHA - Component Lead

NTP - Not Listed

Note: Formaldehyde may be formed during thermal decomposition of rosin flux and is listed as a suspected human carcinogen by ACGIH.

TARGET ORGANS

Ingredients may be toxic to the following organs:

Skin, eyes, central nervous system, blood, kidneys, reproductive, and gastrointestinal tract.

MATERIAL SAFETY DATA SHEET

DATE PRINTED: 11/19/2003

Page 3 of 9

Tin/Lead Solder Wire containing the Crystal Series of Modified Rosin-Based Fluxes

MSDS No. IWB012 Rev. 2

SECTION 4. FIRST AID MEASURES

EYE CONTACT

Immediately wash/flush eyes with water for minimum 15 minutes. Seek medical attention.

SKIN CONTACT

Rinse skin immediately with plenty of soap and water for 15 minutes.

Remove contaminated clothing and shoes.

Do not reuse clothing until thoroughly cleaned.

Seek medical attention.

INHALATION

Remove victim to fresh air. If breathing is difficult get immediate medical attention. If not breathing, give artificial respiration and call for emergency medical attention.

INGESTION

Seek prompt medical attention.

Induce vomiting as directed by medical personnel.

Never give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN

Ingested material should be removed by gastric lavage, with care to avoid aspiration of liquid into the lungs, which may induce severe chemical pneumonitis. Consideration should be given to the use of an intratracheal tube, to prevent aspiration. Exposure to high concentrations may cause signs and symptoms of CNS depression and/or irritation of the nose, throat and respiratory tract.

SECTION 5. FIRE FIGHTING MEASURES

FLASH POINT

Not Determined

EXTINGUISHING METHOD

Carbon dioxide, dry chemical, foam

FIRE FIGHTING PROCEDURES

Recommended use of self-contained breathing apparatus (SCBA).

FIRE AND EXPLOSION HAZARDS

Do not use water on fires where molten metal is present. Temperatures above 500°C may produce heavy metal fumes, dust and vapor. Flux may give rise to irritating fumes.

HAZARDOUS PRODUCTS/COMBUSTION

Carbon dioxide

Carbon monoxide

Metallic oxides

MATERIAL SAFETY DATA SHEET

DATE PRINTED: 11/19/2003

Page 4 of 9

Tin/Lead Solder Wire containing the Crystal Series of Modified Rosin-Based Fluxes

MSDS No. IWB012 Rev. 2

SECTION 6. ACCIDENTAL RELEASE MEASURES

CLEAN-UP

Contain spill in natural form or with sand or dirt (inert material).

Eliminate all ignition sources.

Prevent runoff to storm sewers, ditches and waterways.

Shovel or scrape (non-metallic) absorbed waste materials into disposal container.

Seal lid tightly with tape or locking ring and label properly.

Clean up spill immediately, observing precautions including adequate ventilation and/or personal protective equipment (See Section 8).

SECTION 7. HANDLING AND STORAGE

HANDLING

If skin contact occurs immediately wash with soap and water.

STORAGE

Store in cool dry atmospheric conditions.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS

Work should be done in an adequately ventilated area (i.e., ventilation sufficient to maintain concentrations below one half of the PEL and other relevant standards). Local exhaust ventilation is recommended when general ventilation is not sufficient to control airborne contamination.

EYE PROTECTION

Wear appropriate goggles, face shields or other Personal Protection Equipment (PPE) which will be effective under the circumstances if the possibility of contact exists. A program meeting 29 CFR 1910.133 requirements must be followed when PPE is necessary.

SKIN PROTECTION

Impermeable gloves and protective clothing as necessary to prevent skin contact.

RESPIRATORY PROTECTION

Appropriate respirators must be used, and a program that follows 29 CFR 1910.134 must be followed, when workplace hazards warrant the use of a respirator. NIOSH-approved respirators must be used when respiratory protection is necessary.

OTHER PROTECTION

A safety shower and eye wash station should be within reasonable distance of the work area.

MATERIAL SAFETY DATA SHEET

DATE PRINTED: 11/19/2003

Page 5 of 9

Tin/Lead Solder Wire containing the Crystal Series of Modified Rosin-Based Fluxes

MSDS No. IWB012 Rev. 2

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION (Continued)

SUBSTANCE DESCRIPTION	EXPOSURE LIMITS/REGULATORY INFORMATION			
	REG. AGCY	PELTL	STEL	CEIL
Rosin acids	OSHA ACGIH	N/D N/D	N/D N/D	N/D N/D
Tin	OSHA ACGIH	2.0000 2.0000	N/D N/D	N/D N/D
Silver	OSHA ACGIH	0.0100 0.1000	N/D N/D	N/D N/D
Lead	OSHA ACGIH	0.0500 0.0500	N/D N/D	N/D N/D

LEGEND:

UNIT OF MEASURE

Mg/M3 Milligrams per Cubic Meter (Solid)

PPM Parts Per Million (Liquid)

EXPOSURE LIMIT DESCRIPTIONS

CEIL Ceiling Exposure Limit

PELTL PEL/TLV (TWA)

STEL Short Term Exposure Limit

N/D = Not Determined

NOTE: Rosin core solder thermal decomposition products. See Section 11.

ACGIH [Lead] - Biological Exposure Indices (BEI): 30ug/100ml, Notation B (see actual Indices for more information).

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE & ODOR

Silver-white to gray alloy wires. Odorless at ambient temperatures.

BOILING RANGE

Flux chars above 250°C. The vapor pressure of lead may be significant above 500°C.

SOLUBILITY IN WATER

Insoluble

VOLATILE ORGANIC COMPOUNDS

VOC - 0%

MATERIAL SAFETY DATA SHEET

DATE PRINTED: 11/19/2003

Page 6 of 9

Tin/Lead Solder Wire containing the Crystal Series of Modified Rosin-Based Fluxes

MSDS No. IWB012 Rev. 2

SECTION 10. STABILITY AND REACTIVITY

INCOMPATIBILITIES

Solder will react with concentrated nitric acid to release toxic fumes of nitric oxide, which oxidizes to nitrogen dioxide, a red gas with a pungent odor.

DECOMPOSITION

Heavy metal fumes, dust and vapors. Thermal oxidation may result in the formation of formaldehyde and carbon monoxide.

CONDITIONS TO AVOID

If solder is exposed to temperatures above 500°C then lead dust, fume and/or vapor may be produced.

STABILITY

Stable

SECTION 11. TOXICOLOGICAL INFORMATION

DERMAL EFFECTS

Small amounts of silver absorbed over long periods of time (several years) could produce Argyria.

TOXICITY DATA

Flux fumes produced during soldering will irritate the nose, throat and respiratory system. For personnel that have become sensitized to rosin fumes, further exposure can cause symptoms of asthma, alveolitis (breathlessness, and flu-like symptoms), or rhinitis and conjunctivitis (runny or stuffy nose and watery or prickly eyes typical of hay fever.) Rosin can also cause sensitization by skin contact causing skin rash, weals, and /or pustules to develop. Skin exposed to flux fumes may be affected by irritation and rash. Rosin thermal decomposition product (as formaldehyde) classified by NIOSH as potential occupational carcinogen.

Carcinogenic effect (Lead) - Classified A3 (proven for animals) by ACGIH, 2B (possible for humans) by IARC. Developmental Toxicity (Lead) - Classified Reproductive System Toxin (proven). Lead is a cumulative poison and exposure to small amounts can raise the body's content to toxic levels. Symptoms of chronic exposure are similar to those described in Section 3 under Ingestion. Repeated or prolonged exposure to this product may produce target organ damage.

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

No specific studies have been conducted by Henkel Loctite Corporation on the ecotoxicity or environmental fate of this material; however, commonly available data on the ecotoxicity and the environmental fate of certain constituents of this material indicate that uncontrolled releases to soil, groundwater, or surface waters could entail acute and/or chronic ecological effects, depending on the quantity and concentration of such releases. Releases of volatile components to the atmosphere are not believed to entail significant ecological consequences provided such releases are within the exposure levels set forth in Section 8. Accordingly, all appropriate measures should be taken to avoid uncontrolled releases of this material to the environment, and any spills or other uncontrolled releases which may occur should be contained and cleaned up immediately in accordance with Section 6. Lead is not degradable and will persist in the environment.

MATERIAL SAFETY DATA SHEET

DATE PRINTED: 11/19/2003

Page 7 of 9

Tin/Lead Solder Wire containing the Crystal Series of Modified Rosin-Based Fluxes

MSDS No. IWB012 Rev. 2

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL

Disposal of waste properly and in accordance with legal requirements is the responsibility of the owner/generator of the waste, and may be subject to state and/or local regulations, which may change frequently. Accordingly, applicable legal requirements should be confirmed with all relevant authorities prior to treatment, storage or disposal of waste containing the material described in this MSDS. It is recommended that all waste resulting from use of this material be reused or reintroduced into the process or reclaimed, regenerated or otherwise recycled, if reuse is not possible.

SECTION 14. TRANSPORT INFORMATION

DOT/IATA PROPER SHIPPING NAME

Not Regulated

DOT/IATA PACKING GROUP

Not Regulated

DOT/IATA HAZARD CLASS OR DIV

Not Regulated

DOT/IATA LABEL

Not Regulated

DOT/IATA PLACARD

Not Regulated

DOT/IATA UN NUMBER

Not Regulated

SECTION 15. REGULATORY INFORMATION

Component Rosin acids is subject to the following

Environmental List

311/312 SARA Sect. 311/312

Component Tin is subject to the following

Environmental List

311/312 SARA Sect. 311/312

MATERIAL SAFETY DATA SHEET

DATE PRINTED: 11/19/2003

Page 8 of 9

Tin/Lead Solder Wire containing the Crystal Series of Modified Rosin-Based Fluxes
MSDS No. IWB012 Rev. 2

SECTION 15. REGULATORY INFORMATION (Continued)

Component Silver is subject to the following

Environmental List

304 Sec. 302 and CERCLA Lists
311/312 SARA Sect. 311/312
313 SARA Sect. 313

Component Lead is subject to the following

Environmental List

CERCLA CERCLA Hazardous Substances
PROP65-C CA PROP 65 Carcinogen
PROP65-T CA PROP 65 Reproductive Toxin
311/312 SARA Sect. 311/312
313 SARA Sect. 313

CALIFORNIA PROPOSITION 65

This product contains a chemical(s) known to the State of California to cause cancer and birth defects, or other reproductive harm. (no significant risk level): Lead: 0.0005 mg/day (inhalation)

SECTION 16. OTHER INFORMATION

HMIS

Health Flammability Reactivity
3 1 0

Hazard Rating
Least 0 Slight 1
Moderate 2 High 3
Extreme 4

* Chronic

WHMIS CLASSIFICATION

D2A, D2B

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

RECOMMENDED USES

This safety data sheet covers a range of flux cored solder wires with both halide and halide-free activation.

REVISION NO.

002

REVISION DATE

11/19/2003

MATERIAL SAFETY DATA SHEET

DATE PRINTED: 11/19/2003

Page 9 of 9

Tin/Lead Solder Wire containing the Crystal Series of Modified Rosin-Based Fluxes

MSDS No. IWB012 Rev. 2

SECTION 16. OTHER INFORMATION
(Continued)

REVISION SECTION/REASON

Section 9 - VOC change

APPROVED BY

HSE - Industry, California

CREATED BY

HSE, INDUSTRY, CALIF.

LIMITATIONS AND DISCLAIMER

This MSDS relates only to the specific material identified in Section 2. In compiling this MSDS, Henkel Loctite Corporation has relied in good faith on information provided to Henkel Loctite Corporation by suppliers of the components of this material, and, in some cases, provided by independent data resources. Henkel Loctite Corporation has not independently verified such information, and, in addition, users should be aware that all materials may present unknown hazards. Use of this material in combination with other materials and/or in specific processes may render information set forth in this MSDS inaccurate or otherwise invalid.

NO WARRANTY, EXPRESSED OR IMPLIED, IS MADE REGARDING THE INFORMATION FURNISHED ON THIS MATERIAL SAFETY DATA SHEET.

KEY TO ABBREVIATIONS:

EQ=Equal

AP=Approximately

N/D = Not Determined

LT=Less Than

TR=TRace

GT=Greater Than

ND=No Data available