Safety Data Sheet according to (EC) No 1907/2006

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V006.0
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LOCTITE ALU 97CU3 4C 2.0MM M known as 97CU3 ALUSOL D 4C

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
LOCTITE ALU 97CU3 4C 2.0MM M known as 97CU3 ALUSOL D 4C

Contains:
2-(2-Aminoethylamino)ethanol
Ammonium hydrogendifluoride

1.2. Relevant identified uses of the substance or mixture and uses advised against
Intended use:
Solder Wire

1.3. Details of the supplier of the safety data sheet
Henkel Ltd
Wood Lane End
HP2 4RQ Hemel Hempstead

Great Britain

Phone: +44 1442 278000
Fax-no.: +44 1442 278071

ua-productsafety.uk@uk.henkel.com

1.4. Emergency telephone number
24 Hours Emergency Tel: +44 (0)1442 278497

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (CLP):

Skin corrosion	Category 1B
H314 Causes severe skin burns and eye damage.	
Skin sensitizer	Category 1
H317 May cause an allergic skin reaction.	
Toxic to reproduction	Category 1B
H360D May damage the unborn child.	
Chronic hazards to the aquatic environment	Category 3
H412 Harmful to aquatic life with long lasting effects.	

2.2. Label elements

Label elements (CLP):

Hazard pictogram:	
Signal word:	Danger
Hazard statement:	H314 Causes severe skin burns and eye damage. H317 May cause an allergic skin reaction. H360D May damage the unborn child. H412 Harmful to aquatic life with long lasting effects.
Supplemental information	Restricted to professional users.
Precautionary statement: Prevention	P201 Obtain special instructions before use. P273 Avoid release to the environment. P280 Wear protective gloves/protective clothing/eye protection/face protection.
Precautionary statement: Response	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P308+P313 IF exposed or concerned: Get medical advice/attention. P310 Immediately call a POISON CENTER or doctor. P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

2.3. Other hazards
Avoid breathing fumes given out during soldering.
Flux fumes may irritate the nose, throat and lungs and may after prolonged/repeated exposure give an allergic reaction (asthma).
After handling solder wash hands with soap and water before eating, drinking or smoking.
Keep out of reach of children.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Declaration of the ingredients according to CLP (EC) No 1272/2008:

Hazardous components CAS-No.	EC Number REACH-Reg No.	content	Classification
Tin 7440-31-5	231-141-8 01-2119486474-28	50- 100 %	
2-(2-Aminoethylamino)ethanol 111-41-1	203-867-5	1- < 3 %	Repr. 1B H360Df Skin Corr. 1B H314 Skin Sens. 1 H317
Ammonium hydrogendifluoride 1341-49-7	215-676-4 01-2119489180-38	0,1- < 1 %	Skin Corr. 1B H314 Acute Tox. 3; Oral H301
zinc oxide 1314-13-2	215-222-5 01-2119463881-32	0,25- < 2,5 %	Aquatic Acute 1 H400 Aquatic Chronic 1 H410

For full text of the H - statements and other abbreviations see section 16 "Other information".
Substances without classification may have community workplace exposure limits available.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Move to fresh air. If symptoms persist, seek medical advice.

Skin contact:
Rinse with running water and soap.
Obtain medical attention if irritation persists.

Eye contact:
Rinse immediately with plenty of running water (for 10 minutes), seek medical attention from a specialist.

Ingestion:
Rinse mouth, drink 1-2 glasses of water, do not induce vomiting, consult a doctor.

4.2. Most important symptoms and effects, both acute and delayed
Flux fumes may irritate the nose, throat and lungs and may after prolonged/repeated exposure give an allergic reaction (asthma).

SKIN: Rash, Urticaria.

Causes burns.

4.3. Indication of any immediate medical attention and special treatment needed
See section: Description of first aid measures

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media:
water, carbon dioxide, foam, powder

Extinguishing media which must not be used for safety reasons:
Do not use water on fires where molten metal is present.

5.2. Special hazards arising from the substance or mixture
High temperatures may produce heavy metal dust, fumes or vapours.
The flux medium will give rise to irritating fumes.

5.3. Advice for firefighters
Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Wear protective equipment.

6.2. Environmental precautions
Do not empty into drains / surface water / ground water.

6.3. Methods and material for containment and cleaning up
Scrape up spilled material and place in a closed container for disposal.

6.4. Reference to other sections
See advice in section 8

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Extraction is necessary to remove fumes evolved during reflow.
When using do not eat, drink or smoke.
Wash hands before breaks and immediately after handling the product.
Avoid breathing fumes given out during soldering.
See advice in section 8

Hygiene measures:

Good industrial hygiene practices should be observed.
Do not eat, drink or smoke while working.
After handling solder wash hands with soap and water before eating, drinking or smoking.

7.2. Conditions for safe storage, including any incompatibilities

Ensure good ventilation/extraction.
Store in a cool, dry place.

7.3. Specific end use(s)

Solder Wire

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits

Valid for
Great Britain

Ingredient [Regulated substance]	ppm	mg/m^3	Value type	Short term exposure limit category / Remarks	Regulatory list
Tin 7440-31-5 [TIN (INORGANIC COMPOUNDS AS SN)]		2	Time Weighted Average (TWA):	Indicative	ECTLV
Copper 7440-50-8 [COPPER, FUME]		0,2	Time Weighted Average (TWA):		EH40 WEL
Copper 7440-50-8 [COPPER, INHALABLE DUSTS AND MISTS (AS CU)]		1	Time Weighted Average (TWA):		EH40 WEL
Copper 7440-50-8 [COPPER, INHALABLE DUSTS AND MISTS (AS CU)]		2	Short Term Exposure Limit (STEL):		EH40 WEL
Ammonium hydrogendifluoride 1341-49-7 [FLOURIDE (INORGANIC, AS F)]		2,5	Time Weighted Average (TWA):		EH40 WEL
Ammonium hydrogendifluoride 1341-49-7 [FLUORIDES, INORGANIC]		2,5	Time Weighted Average (TWA):	Indicative	ECTLV

Predicted No-Effect Concentration (PNEC):

Name on list	Environmental Compartment	Exposure period	Value				Remarks
			mg/l	ppm	mg/kg	others	
1341-49-7	aqua (freshwater)					1,3 mg/L	
1341-49-7	soil				22 mg/kg		
1341-49-7	STP					76 mg/L	
zinc oxide 1314-13-2	aqua (freshwater)					20,6 µg/L	
zinc oxide 1314-13-2	aqua (marine water)					6,1 µg/L	
zinc oxide 1314-13-2	STP					100 µg/L	
zinc oxide 1314-13-2	sediment (freshwater)				117,8 mg/kg		
zinc oxide 1314-13-2	sediment (marine water)				56,5 mg/kg		
zinc oxide 1314-13-2	soil				35,6 mg/kg		

Derived No-Effect Level (DNEL):

Name on list	Application Area	Route of Exposure	Health Effect	Exposure Time	Value	Remarks
Tin 7440-31-5	Workers	Dermal	Acute/short term exposure - systemic effects		133,3 mg/kg	
Tin 7440-31-5	Workers	Inhalation	Acute/short term exposure - systemic effects		11,75 mg/m3	
Tin 7440-31-5	Workers	Dermal	Long term exposure - systemic effects		133,3 mg/kg	
Tin 7440-31-5	Workers	Inhalation	Long term exposure - systemic effects		11,75 mg/m3	
Tin 7440-31-5	general population	Dermal	Acute/short term exposure - systemic effects		80 mg/kg	
Tin 7440-31-5	general population	Inhalation	Acute/short term exposure - systemic effects		3,476 mg/m3	
Tin 7440-31-5	general population	oral	Acute/short term exposure - systemic effects		80 mg/kg	
Tin 7440-31-5	general population	Dermal	Long term exposure - systemic effects		80 mg/kg	
Tin 7440-31-5	general population	Inhalation	Long term exposure - systemic effects		3,476 mg/m3	
Tin 7440-31-5	general population	oral	Long term exposure - systemic effects		80 mg/kg	
1341-49-7	Workers	Inhalation	Acute/short term exposure - local effects		3,8 mg/m3	
1341-49-7	Workers	Inhalation	Long term exposure - systemic effects		2,3 mg/m3	
1341-49-7	general population	oral	Long term exposure - systemic effects		0,015 mg/kg bw/day	
1341-49-7	general population	oral	Acute/short term exposure - systemic effects		0,015 mg/kg bw/day	
1341-49-7	general population	Inhalation	Long term exposure - systemic effects		0,045 mg/m3	
zinc oxide 1314-13-2	Workers	Inhalation	Long term exposure - systemic effects		5 mg/m3	
zinc oxide 1314-13-2	Workers	Dermal	Long term exposure - systemic effects		83 mg/kg bw/day	
zinc oxide 1314-13-2	general population	Inhalation	Long term exposure - systemic effects		2,5 mg/m3	
zinc oxide 1314-13-2	general population	Dermal	Long term exposure - systemic effects		83 mg/kg bw/day	
zinc oxide 1314-13-2	general population	oral	Long term exposure - systemic effects		0,83 mg/kg bw/day	

Biological Exposure Indices:
None

8.2. Exposure controls:

Engineering controls:
Ensure adequate ventilation, especially in confined areas.
Extraction is necessary to remove fumes evolved during reflow.

Respiratory protection:
Ensure adequate ventilation.
An approved mask or respirator fitted with an organic vapour cartridge should be worn if the product is used in a poorly ventilated area
In case of aerosol formation, we recommend wearing of appropriate respiratory protection equipment with ABEK P2 filter.
This recommendation should be matched to local conditions.

Hand protection:
Chemical-resistant protective gloves (EN 374).
Suitable materials for short-term contact or splashes (recommended: at least protection index 2, corresponding to > 30 minutes permeation time as per EN 374):
nitrile rubber (NBR; >= 0.4 mm thickness)
Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374):
nitrile rubber (NBR; >= 0.4 mm thickness)
This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

Eye protection:
Safety glasses with sideshields or chemical safety goggles should be worn if there is a risk of splashing.

Skin protection:
Wear suitable protective clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	solid material
	grey
Odor	None
Odour threshold	No data available / Not applicable
pH	Not applicable
Initial boiling point	No data available / Not applicable
Flash point	Not available.
Decomposition temperature	No data available / Not applicable
Vapour pressure	Not applicable
Density (25 °C (77 °F))	7,3 g/cm3
Bulk density	No data available / Not applicable
Viscosity	No data available / Not applicable
Viscosity (kinematic)	No data available / Not applicable
Explosive properties	No data available / Not applicable
Solubility (qualitative) (Solvent: Water)	Insoluble
Solidification temperature	No data available / Not applicable
Melting point	230 - 250 °C (446 - 482 °F)
Flammability	No data available / Not applicable
Auto-ignition temperature	No data available / Not applicable
Explosive limits	No data available / Not applicable
Partition coefficient: n-octanol/water	Not applicable
Evaporation rate	No data available / Not applicable

Vapor density	No data available / Not applicable
Oxidising properties	No data available / Not applicable

9.2. Other information

No data available / Not applicable

SECTION 10: Stability and reactivity

10.1. Reactivity
Solder alloy will react with concentrated nitric acid to produce toxic fumes of nitrogen oxides.

10.2. Chemical stability
Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions
See section reactivity

10.4. Conditions to avoid
No decomposition if stored and applied as directed.

10.5. Incompatible materials
See section reactivity

10.6. Hazardous decomposition products
Thermal decomposition can lead to release of irritating gases and vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

General toxicological information:
The mixture is classified based on the available hazard information for the ingredients as defined in the classification criteria for mixtures for each hazard class or differentiation in Annex I to Regulation 1272/2008/EC. Relevant available health/ecological information for the substances listed under Section 3 is provided in the following.

Oral toxicity:
This material is considered to have low toxicity if swallowed.

Inhalative toxicity:
Fumes evolved at soldering temperatures will irritate the nose, throat and lungs.

Skin irritation:
Causes severe skin burns and eye damage.

Eye irritation:
Corrosive
Avoid eye contact.

Sensitizing:
May cause an allergic skin reaction.

Reproductive toxicity:
May damage the unborn child.

Acute oral toxicity:

Hazardous components CAS-No.	Value type	Value	Route of application	Exposure time	Species	Method
2-(2-Aminoethylamino)ethanol 111-41-1	LD50	2.150 mg/kg	oral		rat	BASF Test
Ammonium hydrogendifluoride 1341-49-7	LD50	130 mg/kg	oral		rat	OECD Guideline 401 (Acute Oral Toxicity)
zinc oxide 1314-13-2	LD50	> 5.000 mg/kg	oral		rat	

Acute inhalative toxicity:

Hazardous components CAS-No.	Value type	Value	Route of application	Exposure time	Species	Method
zinc oxide 1314-13-2	LC50	> 5,7 mg/l		4 h	rat	

Acute dermal toxicity:

Hazardous components CAS-No.	Value type	Value	Route of application	Exposure time	Species	Method
2-(2-Aminoethylamino)ethanol 111-41-1	LD50	> 2.000 mg/kg	dermal		rabbit	BASF Test

Skin corrosion/irritation:

Hazardous components CAS-No.	Result	Exposure time	Species	Method
2-(2-Aminoethylamino)ethanol 111-41-1	corrosive		rabbit	BASF Test
zinc oxide 1314-13-2	not irritating		rabbit	

Serious eye damage/irritation:

Hazardous components CAS-No.	Result	Exposure time	Species	Method
2-(2-Aminoethylamino)ethanol 111-41-1	irritating		rabbit	BASF Test
zinc oxide 1314-13-2	slightly irritating		rabbit	

Respiratory or skin sensitization:

Hazardous components CAS-No.	Result	Test type	Species	Method
2-(2-Aminoethylamino)ethanol 111-41-1	sensitising	Patch-Test	guinea pig	Patch Test
zinc oxide 1314-13-2	not sensitising	Guinea pig maximisation test	guinea pig	OECD Guideline 406 (Skin Sensitisation)

Germ cell mutagenicity:

Hazardous components CAS-No.	Result	Type of study / Route of administration	Metabolic activation / Exposure time	Species	Method
2-(2-Aminoethylamino)ethanol 111-41-1	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Ammonium hydrogendifluoride 1341-49-7	negative	bacterial reverse mutation assay (e.g Ames test)	no data		
zinc oxide 1314-13-2	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		

Repeated dose toxicity

Hazardous components CAS-No.	Result	Route of application	Exposure time / Frequency of treatment	Species	Method
2-(2-Aminoethylamino)ethanol 111-41-1	LOAEL=>= 250 mg/kg	oral: gavage	28 daysdaily	rat	Guidelines for 28-Day Repeat Dose Toxicity Test (Japan)
2-(2-Aminoethylamino)ethanol 111-41-1	NOAEL=1.000 mg/kg		4 weeks6 hours/day, 5 days/week	rat	EPA Guideline

SECTION 12: Ecological information

General ecological information:
The mixture is classified based on the available hazard information for the ingredients as defined in the classification criteria for mixtures for each hazard class or differentiation in Annex I to Regulation 1272/2008/EC. Relevant available health/ecological information for the substances listed under Section 3 is provided in the following.

12.1. Toxicity

Ecotoxicity:
Harmful to aquatic life with long lasting effects.
Do not empty into drains / surface water / ground water.

Hazardous components CAS-No.	Value type	Value	Acute Toxicity Study	Exposure time	Species	Method
2-(2-Aminoethylamino)ethanol 111-41-1	LC50	> 243 mg/l	Fish	48 h	Leuciscus idus	DIN 38412-15
2-(2-Aminoethylamino)ethanol 111-41-1	EC50	190 mg/l	Daphnia	48 h	Daphnia magna	EU Method C.2 (Acute Toxicity for Daphnia)
2-(2-Aminoethylamino)ethanol 111-41-1	EC50	210 mg/l	Algae	72 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Ammonium hydrogendifluoride 1341-49-7	LC50	365 mg/l	Fish	96 h	Brachydanio rerio (new name: Danio rerio)	OECD Guideline 203 (Fish, Acute Toxicity Test)
zinc oxide 1314-13-2	LC50	> 1.000 mg/l	Fish		Leuciscus idus	OECD Guideline 203 (Fish, Acute Toxicity Test)
zinc oxide 1314-13-2	EC50	0,17 mg/l	Algae	72 h	Selenastrum capricornutum (new name: Pseudokirchnerella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
	NOEC	0,017 mg/l	Algae	72 h	Selenastrum capricornutum (new name: Pseudokirchnerella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)

12.2. Persistence and degradability

Persistence and Biodegradability:
The product is not biodegradable.

Hazardous components CAS-No.	Result	Route of application	Degradability	Method
2-(2-Aminoethylamino)ethanol 111-41-1		aerobic	13 - 29 %	EU Method C.4-E (Determination of the "Ready" BiodegradabilityClosed Bottle Test)

12.3. Bioaccumulative potential / 12.4. Mobility in soil

Mobility:
The product is insoluble and sinks in water.

Bioaccumulative potential:
No data available.

Bioaccumulative potential:
Octanol/Water distribution coefficient: Not applicable

Hazardous components CAS-No.	LogKow	Bioconcentration factor (BCF)	Exposure time	Species	Temperature	Method
2-(2-Aminoethylamino)ethanol 111-41-1	-1,37				25 °C	EU Method A.8 (Partition Coefficient)

12.5. Results of PBT and vPvB assessment

Hazardous components **CAS-No.**	**PBT/vPvB**
Ammonium hydrogendifluoride 1341-49-7	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
zinc oxide 1314-13-2	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.

12.6. Other adverse effects

No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product disposal:
Wherever possible unwanted solder alloy should be recycled for recovery of metal.
Otherwise dispose of in accordance with local and national regulations.

Disposal of uncleaned packages:
Dispose of in accordance with local and national regulations.

Waste code

06 04 05 - wastes containing other heavy metals

The valid EWC waste code numbers are source-related. The manufacturer is therefore unable to specify EWC waste codes for the articles or products used in the various sectors. The EWC codes listed are intended as a recommendation for users. We will be happy to advise you.

SECTION 14: Transport information

14.1. UN number

ADR	1759
RID	1759
ADN	1759
IMDG	1759
IATA	1759

14.2. UN proper shipping name

ADR	CORROSIVE SOLID, N.O.S. (Ammonium bifluoride,Aminoethylethanolamine)
RID	CORROSIVE SOLID, N.O.S. (Ammonium bifluoride,Aminoethylethanolamine)
ADN	CORROSIVE SOLID, N.O.S. (Ammonium bifluoride,Aminoethylethanolamine)
IMDG	CORROSIVE SOLID, N.O.S. (Ammonium bifluoride,Aminoethylethanolamine)
IATA	Corrosive solid, n.o.s. (Ammonium bifluoride,Aminoethylethanolamine)

14.3. Transport hazard class(es)

ADR	8
RID	8
ADN	8
IMDG	8
IATA	8

14.4. Packaging group

ADR	III
RID	III
ADN	III
IMDG	III
IATA	III

14.5. Environmental hazards

ADR	not applicable
RID	not applicable
ADN	not applicable
IMDG	not applicable
IATA	not applicable

14.6. Special precautions for user

ADR	not applicable Tunnelcode: (E)
RID	not applicable
ADN	not applicable
IMDG	IMDG-Code: Segregation group 2 - Ammonium compounds
IATA	not applicable

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

VOC content (2010/75/EC) < 5,0 %

15.2. Chemical safety assessment

A chemical safety assessment has not been carried out.

SECTION 16: Other information

The labelling of the product is indicated in Section 2. The full text
of all abbreviations indicated by codes in this safety data sheet are as follows:

H301 Toxic if swallowed.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H360Df May damage the unborn child. Suspected of damaging fertility.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

Further information:
This information is based on our current level of knowledge and relates to the product in the state in which it is delivered. It is intended to describe our products from the point of view of safety requirements and is not intended to guarantee any particular properties.

Relevant changes in this safety data sheet are indicated by vertical lines at the left margin in the body of this document. Corresponding text is displayed in a different color on shadowed fields.