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

SDS No. : 182773
V003.5

LOCTITE ML1 known as ML1 LIQUID FLUX

Revision: 14.01.2016
printing date: 10.11.2016
Replaces version from: 13.06.2014

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

1.1. Product identifier
LOCTITE ML1 known as ML1 LIQUID FLUX

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

1.3. Details of the supplier of the safety data sheet
Henkel Westerlo
AE Belgium
Nijverheidsstraat 7
2260 Westerlo

Belgium

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):
The substance or mixture is not hazardous according to Regulation (EC) No 1272/2008 (CLP).

2.2. Label elements

Label elements (CLP):

The substance or mixture is not hazardous according to Regulation (EC) No 1272/2008 (CLP).

Supplemental information EUH210 Safety data sheet available on request.

Precautionary statement: Prevention P261 Avoid breathing fume.

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

General chemical description:
Aqueous solution of:
Base substances of preparation:
inorganic acids
organic acids
alcohol

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

Hazardous components CAS-No.	EC Number REACH-Reg No.	content	Classification
Hydrogen bromide solution 10035-10-6	233-113-0	5- < 10 %	STOT SE 3 H335 Skin Corr. 1B H314
Ethane-1,2-diol 107-21-1	203-473-3 01-2119456816-28	1- < 5 %	Acute Tox. 4; Oral H302 STOT RE 2; Oral H373

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 if necessary.

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
Prolonged or repeated contact may cause skin irritation.

Prolonged or repeated contact may cause eye irritation.

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:
All common extinguishing agents are suitable.

5.2. Special hazards arising from the substance or mixture
Non combustible - Danger of decomposition if exposed to heat.
The flux medium will give rise to irritating fumes.
May produce fumes when heated to decomposition. Fumes may contain carbon monoxide and other toxic fumes.
See section 10.

5.3. Advice for firefighters
Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.
In case of fire, keep containers cool with water spray.
Dispose of combustion residues and contaminated fire-fighting water in accordance with statutory regulations.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Avoid contact with skin and eyes.
Wear protective equipment.
Ensure adequate ventilation.

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

6.3. Methods and material for containment and cleaning up
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Store in a closed container until ready for disposal.

6.4. Reference to other sections
See advice in section 8

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Prolonged or repeated skin contact should be avoided
Do not spray onto flame or red-hot objects.

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

7.2. Conditions for safe storage, including any incompatibilities
Store in a cool place in closed original container.

7.3. Specific end use(s)
Liquid Flux

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits

Valid for
Great Britain

Ingredient [Regulated substance]	ppm	mg/m³	Value type	Short term exposure limit category / Remarks	Regulatory list
Hydrogen bromide 10035-10-6 [HYDROGEN BROMIDE]	3	10	Short Term Exposure Limit (STEL):		EH40 WEL
Hydrogen bromide 10035-10-6 [HYDROGEN BROMIDE]	2	6,7	Short Term Exposure Limit (STEL):	Indicative	ECTLV
Ethane-1,2-diol 107-21-1 [ETHANE-1,2-DIOL, VAPOUR]	40	104	Short Term Exposure Limit (STEL):		EH40 WEL
Ethane-1,2-diol 107-21-1 [ETHANE-1,2-DIOL, PARTICULATE]			Skin designation:	Can be absorbed through the skin.	EH40 WEL
Ethane-1,2-diol 107-21-1 [ETHANE-1,2-DIOL, VAPOUR]			Skin designation:	Can be absorbed through the skin.	EH40 WEL
Ethane-1,2-diol 107-21-1 [ETHANE-1,2-DIOL, PARTICULATE]		10	Time Weighted Average (TWA):		EH40 WEL
Ethane-1,2-diol 107-21-1 [ETHANE-1,2-DIOL, VAPOUR]	20	52	Time Weighted Average (TWA):		EH40 WEL
Ethane-1,2-diol 107-21-1 [ETHYLENE GLYCOL]	20	52	Time Weighted Average (TWA):	Indicative	ECTLV
Ethane-1,2-diol 107-21-1 [ETHYLENE GLYCOL]	40	104	Short Term Exposure Limit (STEL):	Indicative	ECTLV

Occupational Exposure Limits

Valid for
Ireland

Ingredient [Regulated substance]	ppm	mg/m³	Value type	Short term exposure limit category / Remarks	Regulatory list
Hydrogen bromide 10035-10-6 [HYDROGEN BROMIDE]	2	6,6	Short Term Exposure Limit (STEL):	Indicative OELV	IR_OEL
Hydrogen bromide 10035-10-6 [HYDROGEN BROMIDE]	2	6,7	Short Term Exposure Limit (STEL):	Indicative	ECTLV
Ethane-1,2-diol 107-21-1 [ETHANE-1,2-DIOL, VAPOUR]	40	104	Short Term Exposure Limit (STEL):	Indicative OELV	IR_OEL
Ethane-1,2-diol 107-21-1 [ETHANE-1,2-DIOL, VAPOUR]	20	52	Time Weighted Average (TWA):	Indicative OELV	IR_OEL
Ethane-1,2-diol 107-21-1 [ETHANE-1,2-DIOL, PARTICULATE]		10	Time Weighted Average (TWA):	Indicative OELV	IR_OEL
Ethane-1,2-diol 107-21-1 [ETHANE-1,2-DIOL, PARTICULATE]			Skin designation:	Can be absorbed through the skin.	IR_OEL
Ethane-1,2-diol 107-21-1 [ETHANE-1,2-DIOL, VAPOUR]			Skin designation:	Can be absorbed through the skin.	IR_OEL
Ethane-1,2-diol 107-21-1 [ETHYLENE GLYCOL]	20	52	Time Weighted Average (TWA):	Indicative	ECTLV
Ethane-1,2-diol 107-21-1 [ETHYLENE GLYCOL]	40	104	Short Term Exposure Limit (STEL):	Indicative	ECTLV

Predicted No-Effect Concentration (PNEC):

Name on list	Environmental Compartment	Exposure period	Value				Remarks
			mg/l	ppm	mg/kg	others	
Ethane-1,2-diol 107-21-1	aqua (freshwater)					10 mg/L	
Ethane-1,2-diol 107-21-1	aqua (marine water)					1 mg/L	
Ethane-1,2-diol 107-21-1	sediment (freshwater)				20,9 mg/kg		
Ethane-1,2-diol 107-21-1	sewage treatment plant (STP)					199,5 mg/L	
Ethane-1,2-diol 107-21-1	aqua (intermittent releases)					10 mg/L	
Ethane-1,2-diol 107-21-1	soil				1,53 mg/kg		

Derived No-Effect Level (DNEL):

Name on list	Application Area	Route of Exposure	Health Effect	Exposure Time	Value	Remarks
Ethane-1,2-diol 107-21-1	Workers	dermal	Long term exposure - systemic effects		106 mg/kg bw/day	
Ethane-1,2-diol 107-21-1	Workers	inhalation	Long term exposure - local effects		35 mg/m3	
Ethane-1,2-diol 107-21-1	general population	dermal	Long term exposure - systemic effects		53 mg/kg bw/day	
Ethane-1,2-diol 107-21-1	general population	inhalation	Long term exposure - local effects		7 mg/m3	

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
Filter type: A (EN 14387)

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.
Avoid eye contact.
Protective eye equipment should conform to EN166.

Skin protection:
Suitable protective clothing
Protective clothing that covers arms and legs.
apron
Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

Advices to personal protection equipment:
Wash off any dirt that gets onto the skin with lots of soap and water, skin care.
Do not breathe dust and vapors.
The information provided on personal protective equipment is for guidance purposes only. A full risk assessment should be conducted prior to using this product to determine the appropriate personal protective equipment to suit local conditions.
Personal protective equipment should conform to the relevant EN standard.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	liquid Aqueous colourless
Odor	mild
Odour threshold	No data available / Not applicable
pH	acidic
Initial boiling point (1.013 hPa)	100 °C (212 °F)
Flash point	No flash point up to 100°C. Aqueous preparation.
Decomposition temperature	No data available / Not applicable
Vapour pressure (20,0 °C (68 °F))	23,3 mbar
Density (25 °C (77 °F))	1,055 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) (20 °C (68 °F); Solvent: Water)	Miscible
Solidification temperature	No data available / Not applicable
Melting point	0 °C (32 °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	No data available / 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
Reaction with amines, alkalis, metals.
Reaction with strong acids.
Reaction with strong oxidants.

10.2. Chemical stability
Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions
See section reactivity

10.4. Conditions to avoid
After the water evaporates and further heating.
Danger of decomposition if exposed to heat.
Stable under normal conditions of storage and use.

10.5. Incompatible materials
See section reactivity

10.6. Hazardous decomposition products
Thermal decomposition can lead to release of irritating gases and vapors.
Hydrogen bromide
At higher temperature carbon oxides and nitrogen oxides may be generated.
See section 5.

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 (EC) No 1272/2008. Relevant available health/ecological information for the substances listed under Section 3 is provided in the following.

Oral toxicity:
May cause irritation to the digestive tract.

Inhalative toxicity:
Fumes evolved at soldering temperatures will irritate the nose, throat and lungs. Prolonged or repeated exposure to flux fumes may result in sensitisation in sensitive workers.

Skin irritation:
Prolonged or repeated contact may cause skin irritation.

Eye irritation:
Prolonged or repeated contact may cause eye irritation.
Fumes emitted during soldering may irritate the eyes.

Acute oral toxicity:

Hazardous components CAS-No.	Value type	Value	Route of application	Exposure time	Species	Method
Ethane-1,2-diol 107-21-1	Acute toxicity estimate (ATE)	500 mg/kg	oral			Expert judgement
Ethane-1,2-diol 107-21-1	LD50	> 2.000 mg/kg			rat	EU Method B.1 (Acute Toxicity (Oral))

Acute inhalative toxicity:

Hazardous components CAS-No.	Value type	Value	Route of application	Exposure time	Species	Method

Acute dermal toxicity:

Hazardous components CAS-No.	Value type	Value	Route of application	Exposure time	Species	Method

Respiratory or skin sensitization:

Hazardous components CAS-No.	Result	Test type	Species	Method
Ethane-1,2-diol 107-21-1	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
Ethane-1,2-diol 107-21-1	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		

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 (EC) No 1272/2008. Relevant available health/ecological information for the substances listed under Section 3 is provided in the following.

12.1. Toxicity

Ecotoxicity:
Do not empty into drains / surface water / ground water.

Hazardous components CAS-No.	Value type	Value	Acute Toxicity Study	Exposure time	Species	Method
Ethane-1,2-diol 107-21-1	NOEC	15.380 mg/l	Fish	28 d	Oryzias latipes	OECD Guideline 204 (Fish, Prolonged Toxicity Test: 14-day Study)
	LC50	72.860 mg/l	Fish	96 h	Pimephales promelas	OECD Guideline 203 (Fish, Acute Toxicity Test)
Ethane-1,2-diol 107-21-1	EC50	34.400 mg/l	Daphnia	48 h	Ceriodaphnia sp.	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Ethane-1,2-diol 107-21-1	EC50	> 20.000 mg/l	Algae		Microcystis aeruginosa	OECD Guideline 201 (Alga, Growth Inhibition Test)
Ethane-1,2-diol 107-21-1	EC0	> 10.000 mg/l	Bacteria	16 h		
Ethane-1,2-diol 107-21-1	NOEC	8.590 mg/l	chronic Daphnia	7 d	Ceriodaphnia sp.	OECD 211 (Daphnia magna, Reproduction Test)

12.2. Persistence and degradability

Persistence and Biodegradability:
No data available.

Hazardous components CAS-No.	Result	Route of application	Degradability	Method
Ethane-1,2-diol 107-21-1	readily biodegradable	aerobic	83 - 96 %	OECD Guideline 301 C (Ready Biodegradability: Modified MITI Test (I))

12.3. Bioaccumulative potential / 12.4. Mobility in soil

Mobility:
No data available.

Bioaccumulative potential:
Does not bioaccumulate.

Hazardous components CAS-No.	LogKow	Bioconcentration factor (BCF)	Exposure time	Species	Temperature	Method
Ethane-1,2-diol 107-21-1	-1,36					

12.5. Results of PBT and vPvB assessment

Hazardous components CAS-No.	PBT/vPvB
Ethane-1,2-diol 107-21-1	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:
Dispose of in accordance with local and national regulations.

Disposal of uncleaned packages:
Use packages for recycling only when totally empty.
Packaging that cannot be cleaned are to be disposed of in the same manner as the product.

Recommended cleaning agents
Water, if necessary with added cleaning agent.

Waste code

070704

16 10 02 - aqueous liquid wastes other than those mentioned in 16 10 01

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

Not hazardous according to RID, ADR, ADN, IMDG, IATA-DGR.

14.2. UN proper shipping name

Not hazardous according to RID, ADR, ADN, IMDG, IATA-DGR.

14.3. Transport hazard class(es)

Not hazardous according to RID, ADR, ADN, IMDG, IATA-DGR.

14.4. Packing group

Not hazardous according to RID, ADR, ADN, IMDG, IATA-DGR.

14.5. Environmental hazards

Not hazardous according to RID, ADR, ADN, IMDG, IATA-DGR.

14.6. Special precautions for user

Not hazardous according to RID, ADR, ADN, IMDG, IATA-DGR.

14.7. Transport in bulk according to Annex II of Marpol 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) < 1 %

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:

H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.

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.

Label elements (DPD):

The product is not subject to classification according to the calculation methods of the "General Classification Guideline for Preparations of the EC" as issued in the last version.

Additional labeling:
Safety data sheet available for professional user on request.

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.