SAFETY DATA SHEET

Revision: 1.0 Date: 21.10.2015

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

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SECTION 1: IDENTIFICATION

1.1 Product identifier

Product Name	QF-LI Flux
Chemical Name	Mixture
CAS No.	Mixture
EINECS No.	Mixture
REACH Registration No.	None assigned.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified Use(s)	Soldering flux
Uses Advised Against	None known.

1.3 Details of the supplier of the safety data sheet

Company Identification	VISHAY MEASUREMENTS GROUP, INC. Post Office Box 27777 Raleigh, NC 27611 USA
Telephone	919-365-3800
Fax	919-365-3945
E-Mail (competent person)	mm.us@vishaypg.com

1.4 Emergency telephone number

1-800-424-9300
CHEMTREC

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 GHS Classification

Skin Corr. 1A; H314

2.2 Label elements

Product Name: QF-LI Flux

Hazard Pictogram(s):

Signal Word(s): Danger

Contains: L-Glutamic acid, hydrochloride

Hazard Statement(s): H314: Causes severe skin burns and eye damage.

Precautionary Statement(s):

P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
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.
P310: Immediately call a POISON CENTER/doctor.

OSHA Defined Hazards: None.

2.3 Other hazards

Flux fumes during soldering may cause irritation and damage of mucous membranes and respiratory system.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances Not applicable**.**

3.2 Mixtures Substances in preparations / mixtures

GHS Classification

Chemical identity of the substance	%W/W	CAS No.	EC No.	Hazard classification
L-Glutamic acid, hydrochloride	10 - 30	138-15-8	205-315-9	Skin Corr. 1A; H314
Urea	5 - 10	57-13-6	200-315-5	Not classified

For full text of H/P Statements see section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Self-protection of the first aider: If it is suspected that fumes are still present, the responder should wear an appropriate mask or self-contained breathing apparatus. Wear suitable protective clothing. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Avoid all contact.

Inhalation: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. If symptoms develop, obtain medical attention. If breathing is difficult, oxygen should be given by a trained person.

Skin Contact: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Contaminated clothing should be thoroughly cleaned. Immediately call a POISON CENTER/doctor.

Eye Contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. Treatment by an ophthalmologist due to possible caustic burn of the eyes may be required. Continue irrigation until medical attention can be obtained.

Ingestion: IF SWALLOWED: Rinse mouth. Do not give anything by mouth to an unconscious person. Do NOT induce vomiting. If symptoms develop, obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed: Causes severe skin burns and eye damage. Flux fumes during soldering may cause irritation and damage of mucous membranes and respiratory system.

4.3 Indication of any immediate medical attention and special treatment needed: Treat symptomatically.

IF IN EYES: Obtain prompt consultation, preferably from an ophthalmologist. Chemical eye burns may require extended irrigation.

IF ON SKIN: Immediately call a POISON CENTER/doctor.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing media: As appropriate for surrounding fire. Extinguish with carbon dioxide, dry chemical, foam or waterspray.

Unsuitable extinguishing media: Do not use water jet. Direct water jet may spread the fire.

5.2 Special hazards arising from the substance or mixture: May decompose in a fire giving off toxic fumes. Oxides of carbon, Oxides of nitrogen and Aldehydes.

5.3 Advice for fire-fighters: Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1	**Personal precautions, protective equipment and emergency procedures**	Ensure adequate ventilation. Stop leak if safe to do so. Eliminate all ignition sources if safe to do so. Avoid all contact. Do not breathe vapour. Wear suitable respiratory protective equipment. Use personal protective equipment as required. See Section: 8
6.2	**Environmental precautions**	Avoid release to the environment. Do not allow to enter drains, sewers or watercourses.
6.3	**Methods and material for containment and cleaning up**	Ensure full personal protection (including respiratory protection) during removal of spillages. Adsorb spillages onto sand, earth or any suitable adsorbent material. Transfer to a lidded container for disposal or recovery. Ventilate the area and wash spill site after material pick-up is complete. Dispose of this material and its container as hazardous waste.
6.4	**Reference to other sections**	See Section: 8, 13

SECTION 7: HANDLING AND STORAGE

7.1	**Precautions for safe handling**	Ensure adequate ventilation. Avoid all contact. Do not breathe vapour. Avoid breathing smoke fumes during soldering. Use personal protective equipment as required. See Section: 8. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work.
7.2	**Conditions for safe storage, including any incompatibilities**	Keep only in original container. Store in a well-ventilated place. Keep container tightly closed. Keep away from heat and sources of ignition.
	Storage temperature	Keep cool.
	Storage life	Stable under normal conditions.
	Incompatible materials	Keep away from: Strong oxidising agents, Acids and Alkalis.
7.3	**Specific end use(s)**	Soldering flux

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits

No Occupational Exposure Limits assigned.
No OSHA permissible exposure limits (PELs).
No American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs).

8.1.2 Biological limit value

Not established.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Ensure adequate ventilation or use appropriate containment. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Guarantee that the eye flushing systems and safety showers are located close to the working place.

8.2.2 Individual protection measures, such as personal protective equipment (PPE)

General hygiene measures for the handling of chemicals are applicable. Avoid all contact. Do not breathe vapour. Avoid breathing smoke fumes during soldering. Wash hands before breaks and after work. Keep work clothes separately. Do not eat, drink or smoke at the work place.

Eye/ face protection

Wear protective eye glasses for protection against liquid splashes. Wear eye protection with side protection.

Skin protection

Hand protection: Wear impervious gloves. Gloves should be changed regularly to avoid permeation problems. The gloves type used must be chosen based on the work activity and duration as well as concentration/quantity of material being handled. Breakthrough time of the glove material: refer to the information

	provided by the gloves' producer. Recommended: Nitrile rubber or Natural rubber.
	Body protection: Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Respiratory protection 	Provide adequate ventilation if fumes or vapours are likely to be evolved to ensure that the defined occupational exposure limit is not exceeded. A NIOSH approved air-purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.
Thermal hazards	Not applicable.

8.2.3 Environmental Exposure Controls — Avoid release to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Colourless liquid
Odour	Mild odor
Odour threshold	Not available.
pH	1.3 @ 20°C (68°F)
Melting point/freezing point	0°C (32°F)
Initial boiling point and boiling range	100°C (212°F)
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable - Liquid
Upper/lower flammability or explosive limits	Not available.
Vapour pressure	19 mm Hg @ 20°C (68°F)
Vapour density	Not available.
Relative density	1.08 (H2O = 1) @ 20°C (68°F)
Solubility(ies)	Not available.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition Temperature	Not available.
Viscosity	Not available.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

9.2 Other information — None known.

SECTION 10: STABILITY AND REACTIVITY

10.1	**Stability and reactivity**	Stable under normal conditions.
10.2	**Chemical stability**	Stable under normal conditions.
10.3	**Possibility of hazardous reactions**	Hazardous polymerisation will not occur.
10.4	**Conditions to avoid**	Keep away from heat and sources of ignition.
10.5	**Incompatible materials**	Keep away from: Strong oxidising agents, Acids and Alkalis.
10.6	**Hazardous decomposition product(s)**	May decompose in a fire giving off toxic fumes. Oxides of carbon, Oxides of nitrogen and Aldehydes.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects (Substances in preparations / mixtures)

Acute toxicity

Ingestion	Based on available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
Inhalation	Based on available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 20.0 mg/l.
Skin Contact	Based on available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
Skin corrosion/irritation	Skin Corr. 1A: Causes severe skin burns.
Serious eye damage/irritation	Skin Corr. 1A: Causes severe eye damage.
Respiratory or skin sensitization	Based on available data, the classification criteria are not met.
Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.
Reproductive toxicity	Based on available data, the classification criteria are not met.
STOT - single exposure	Based on available data, the classification criteria are not met.
STOT - repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.

11.2 Other information

Likely routes of exposure

Inhalation	Yes
Ingestion	Accidental
Skin Contact	Yes

Further Carcinogenicity Information

NTP Report on Carcinogens	None of the components are listed.
IARC Monographs	None of the components are listed in Groups 1 or 2.
Regulated by OSHA as a Carcinogen	None of the components are listed.

SECTION 12: ECOLOGICAL INFORMATION

12.1	**Ecotoxicity**	Based on available data, the classification criteria are not met. Estimated Mixture LC50 >100 mg/l (Fish)
12.2	**Persistence and degradability**	Part of the components are biodegradable.
12.3	**Bioaccumulative potential**	The product has low potential for bioaccumulation.
12.4	**Mobility in soil**	No data for the mixture as a whole.
12.5	**Other adverse effects**	Not classified as PBT or vPvB. None of the substances in this product fulfil the criteria for being regarded as a PBT or vPvB substance.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1	**Waste treatment methods**	Do not release undiluted and unneutralised to the sewer. This material and its container must be disposed of as hazardous waste. Dispose of wastes in an approved waste disposal facility. Containers of this material may be hazardous when empty since they retain product residue. Dispose of contents in accordance with local, state or national legislation. Recycle only completely emptied packaging.

SECTION 14: TRANSPORT INFORMATION

		ADR/RID / IMDG / IATA
14.1	**UN number**	1760
14.2	**UN Proper Shipping Name**	CORROSIVE LIQUID, N.O.S. (L-Glutamic acid, hydrochloride)
14.3	**Transport hazard class(es)**	8
14.4	**Packing group**	I

14.5	**Environmental hazards**	Not classified as a Marine Pollutant./ Environmentally hazardous substance
14.6	**Special precautions for user**	See Section: 2
14.7	**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**	Not applicable.
14.8	**Additional Information**	None.

SECTION 15: REGULATORY INFORMATION

15.1	**Safety, health and environmental regulations/legislation specific for the substance or mixture**	
15.1.1	**U.S. Federal Regulations**	
	TSCA Inventory Status	All of the components are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).
15.1.2	**US State Regulations**	None known.
15.1.2	**European regulations**	
	Substance(s) of Very High Concern (SVHCs)	None.
	Authorisations and/or Restrictions On Use	None.
	Wassergefährdungsklasse (Germany)	Water hazard class: 1
15.2	**Chemical Safety Assessment**	Not available.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: 1-16.
Version 1.0
Date of Preparation 21.10.15

References: Existing Safety Data Sheet (SDS), Existing ECHA registration(s) for Urea (CAS# 57-13-6), and the Classification and Labelling Inventory for L-Glutamic acid, hydrochloride (CAS# 138-15-8).

GHS Classification of the substance or mixture	Classification Procedure
Skin Corr. 1A; H314	Threshold Calculation/ Mixture pH @ 20°C

LEGEND

ACGIH: American Conference of Governmental Industrial Hygienists
LTEL: Long Term Exposure Limit
STEL: Short Term Exposure Limit
DNEL: Derived No Effect Level
PEL: Permissible Exposure Limit
PNEC: Predicted No Effect Concentration
PBT: Persistent, Bioaccumulative and Toxic
TLV: Threshold Limit Value
vPvB: very Persistent and very Bioaccumulative

Hazard Statement(s)

H314: Causes severe skin burns and eye damage.

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

Disclaimers

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Annex to the extended Safety Data Sheet (eSDS)

No information available.