



## SAFETY DATA SHEET

MAY BE USED TO COMPLY WITH OSHA'S HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200 AND SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) OF 1986 PUBLIC LAW 99-499. STANDARD SHOULD BE CONSULTED FOR SPECIFIC REQUIREMENTS.

### SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**NAME OF PRODUCT:** US FORGE – Liquid Flux  
**PART NUMBER:** 03051

**MANUFACTURER/  
SUPPLIER:** US FORGE  
N94 W14355 GARWIN MACE DRIVE  
MENOMONEE FALLS, WI 53051 USA

**TELEPHONE NUMBER** (262) 255-5157 or Toll Free (800) 343-3758  
**FAX NUMBER:** (262) 255-2374  
**US FORGE WEBSITE:** [www.us-forge.com](http://www.us-forge.com)

**PRODUCT CLASSIFICATION:** Liquid Flux for Non-electrical Soldering of copper, brass, galvanized iron, steel, nickel alloys and nickel/tin plate.

### SECTION 2: HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW:** Chemically stable and inert. Does not pose a fire hazard as shipped. **Non-Flammable:** Flames used for brazing / soldering can ignite combustibles. Refer to American National Standard Z49.1 for fire prevention during welding. In case of fire, use NIOSH/MSHA self contained breathing apparatus.

**ROUTES OF ENTRY:** Primary route of entry is the respiratory system. Other possible routes are eyes and/or skin contact.

#### POTENTIAL HEALTH EFFECTS:

**EYES:** Inert foreign body hazard only.  
**SKIN:** Rashes/irritations due to drying of the skin and/or mechanical abrasion related to skin-to-clothing contact or skin-to-skin contact. Spatter from soldering may cause burns.  
**INGESTION:** Not an expected route of entry, but if ingested product could cause serious injury.  
**INHALATION:** Danger of serious damage to health by prolonged exposure through inhalation.

**WARNING:** avoid breathing welding fumes and gases; they may dangerous to your health. Always use adequate ventilation and use appropriate personal protection equipment.

#### CARCINOGENICITY

**WELDING FUMES** (not otherwise specified) are considered to be carcinogenic defined with no further categorization by NIOSH and IARC.

**GHS Pictograms:** Not applicable.

#### Safety Advice

S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

#### Precautionary statements

P285 In case of inadequate ventilation wear respiratory protection.  
P314 Get medical advice/attention if you feel unwell.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P202 Do not handle until all safety precautions have been read and understood.  
P260 Do not breathe dust/fume/gas/mist/vapors/spray.  
P501 Dispose of contents/container to waste treatment facility in accordance with local and national regulations.



**NOTE:** Before using this product, contact your doctor to determine if exposure to product or use of this product will aggravate your medical conditions. Spatter and flames from soldering may cause burns and start fires.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

**IMPORTANT:** This section covers the materials from which these products are manufactured. Any of the chemicals or compounds subject to reporting under Title III, in Section 313, of the Superfund Amendments and Reauthorization Act (SARA) are marked by the symbol #.

#### Exposure Limit (mg/m<sup>3</sup>)

INGREDIENTS	CAS NUMBER	OSHA PEL	ACGIH TLV	Percent Ingredients (by weight)
Glutamic Acid Hydrochloride	138-15-8	Not Listed	Not Listed	5 – 10

Unlisted percentages are non-hazardous stabilizers, activators, and water. None of the materials in this product are listed in NTP, IARC, or OSHA as carcinogens.

### SECTION 4: FIRST AID MEASURES

**EMERGENCY & FIRST AID PROCEDURES:** Call for medical aid and inform them of the ingredients from Section 3. Employ first aid techniques recommended by The American Red Cross.

**EYES:** Flush with a large amount of fresh water for at least 15 minutes. Get medical attention.

**SKIN:** Wash affected area with soap and water to remove flux. If rash develops, see a physician. Get medical attention for irritations that persist.

**INGESTION:** If conscious, give two glasses of water. Seek medical attention immediately.

**INHALATION:** Remove to fresh air. If breathing is difficult administer oxygen. If breathing has stopped, begin artificial respiration and obtain medical assistance immediately.

**GENERAL:** Move to fresh air and call for medical aid.

### SECTION 5: FIRE FIGHTING MEASURES

**Non-Flammable.** This product, as shipped, is non-hazardous, nonflammable, non-explosive, and non-reactive. In case of fire, use NIOSH/MSHA self contained breathing apparatus.

**NFPA HAZARD CLASSIFICATION:**

Health: 1                      Flammability: 0                      Reactivity: 0

Other: In case of fire, use NIOSH/MSHA self contained breathing apparatus.

**HMIS HAZARD CLASSIFICATION:**

Health: 1                      Flammability: 0                      Reactivity: 0

Protection: In case of fire, use NIOSH/MSHA self contained breathing apparatus.

**EXTINGUISHING MEDIA:** water, dry chemical extinguisher, CO<sub>2</sub> suitable for material that is burning.

**SPECIAL FIRE FIGHTING PROCEDURES:** In case of fire, use NIOSH/MSHA self contained breathing apparatus.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** None

**HAZARDOUS DECOMPOSITION PRODUCTS:** Emits small amounts of HCl

**HAZARDOUS POLYMERIZATION:** Will not occur.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**ACCIDENTAL RELEASE MEASURES:** First, neutralize with soda ash or sodium bicarbonate. Dilute with water and dispose of in accordance with EPA regulations. Wash spill area with plenty of water.

**PERSONAL PRECAUTIONS:** Wear safety glasses or goggles. Wear NIOSH approved gloves when prolonged contact with skin is likely.

**ENVIRONMENTAL PRECAUTIONS:** Do not flush residue into waterways.

## SECTION 7: HANDLING AND STORAGE

**HANDLING:** Avoid exposure to flux, do not ingest and avoid contact with eyes. Some individuals can develop an allergic reaction to certain materials. Do not eat, drink, or smoke when using this product. Wash thoroughly after using this product.

**STORAGE:** Keep material sealed before use and do not remove product identification label or warning label. After using, keep remaining product sealed and do not remove product identification label or warning label. Store away from heat at 32 °F to 90 °F (0 °C to 32 °C) and in original plastic container.

## SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION



**Read and understand the manufacturer's instructions and precautionary label on this product.**

**ENGINEERING CONTROLS:** Proper ventilation **must** be maintained.

**VENTILATION:** Use enough ventilation, local exhaust at the work area, or both, to keep the fumes and gases below the TLV's in the workers breathing and the general area. Train the worker to keep his head out of the fumes. Monitor fume levels and do not exceed permissible exposure limits or values.

**RESPIRATORY PROTECTION:** Do NOT breathe fumes. Use respirable fume respirator or air supplied respirator when soldering in a confined space or where local exhaust or ventilation does not keep exposure below the TLV's.

**EYE PROTECTION:** Wear appropriate safety glasses with side shield or goggles. Do not wear contact lenses.

**PROTECTIVE CLOTHING:** Wear NIOSH approved gloves when using or prolonged contact with skin or repeated contact with skin is likely. Wear hand and body protection to prevent injury. Remove and professionally wash contaminated clothing before a reuse. See ANSI Z49.1.

**OTHER PROTECTIVE EQUIPMENT:** Full protective equipment normally used in soldering / brazing operation so as to prevent any contact. Review operations to avoid contact with hazardous gas, liquid, or solid. See also:

29CFR 1910.132 - 29 CFR 1910.140 Personal Protective Equipment  
29 CFR 1910.251 - 29 CFR 1910.257 Welding, Cutting and Brazing

**WORK HYGIENIC PRACTICES:** Food and drink should not be consumed or tobacco products used, nor cosmetics applied in area where flux exposures are possible.

**EXPOSURE GUIDELINES:** Use industrial hygiene monitoring equipment to ensure that exposure does not exceed applicable national exposure limits.



**EFFECTS OF OVEREXPOSURE** – brazing/soldering may create one or more of the following health hazards:

**FUMES AND GASES** can be dangerous to your health.

**PRIMARY ROUTES OF ENTRY** are the respiratory system. Other possible routes are eyes and/or skin contact.

**PREEXISTING** respiratory or allergic conditions may be aggravated in some individuals (i.e. asthma, emphysema).

Soldering fumes cannot be classified simply. The composition and quantity of both are dependent upon the metal being soldered, the process, procedure, and the solder used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being soldered (such as paint, plating, or galvanizing), the volume of the work area, the quality and the amount of ventilation, position of the worker's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the material is consumed, fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Fume and decomposition products, not the ingredients in the rod, are important. Decomposition products include those originating from the volatilization, reaction, or oxidation of materials in Section 3, plus those from the base metal and coating, etc., as noted above. These components are virtually always present as complex oxides and not as metals (Characterization of Arc Welding Fume: American Welding Society).

**MONITOR FUME LEVELS.** One recommended way to determine the composition and quantity of fumes and gas to which workers are exposed is to take an air sample in the worker's breathing zone (see ANSI/AWS F1.1, F1.2, F1.3, F1.4, and F1.5, available from the "American Welding Society," 550 N.W. LeJeune Road, Miami, FL 33126).

Gaseous reaction products may include carbon monoxide and carbon dioxide.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Blue liquid, citrus odor

**Boiling Temperature:** Approximately 220 °F (100 °C)

**Solubility in Water:** Unlimited

**pH-Value:** Not determined

**Specific Gravity (water =1):** 1.04

**Reactivity in Water:** None

## SECTION 10: STABILITY AND REACTIVITY

**GENERAL:** This item is only intended for soldering applications.

**STABILITY:** Product is chemically stable and non-reactive.

**INCOMPATIBILITY / CONDITIONS TO AVOID:** Keep product away from high heat.

**MATERIALS TO AVOID:** Strong oxidizers, metals.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**REACTIVITY:** None.

**HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:** Small amounts of HCl.

In other countries the exposure limits listed in Section 3 may be different and the appropriate country standards should be used.

## SECTION 11: TOXICOLOGICAL INFORMATION

**Threshold Limit Value:** The ACGIH recommended general limit for welding fume NOS (not otherwise specified) is 5 mg/m<sup>3</sup>. The ACGIH 1999 preface states: "The TLV-TWA should be used as guides in the control of health hazards and should not be used as firm lines between safe and dangerous concentrations." See Section 8 for specific fume constituents that may modify the TLV.



Brazing/welding vapors and fumes from brazing/welding may cause metal fume fever.

**SHORT TERM (ACUTE) OVEREXPOSURE:** FUMES AND GASES can be dangerous to your health. Primary routes of entry are the respiratory system, and/or skin. Preexisting respiratory or allergic conditions may be aggravated in some individuals. brazing/welding may cause metal fumes fever. Symptoms can appear 4 to 12 hours after (headache, dizziness, dryness, cough, nausea and fever). May cause irritation of respiratory tract. Repeated or prolonged exposure may cause irritation of eyes and skin. Fumes may result in discomfort such as sneezing, and coughing, and should be considered as an irritant to the respiratory system. Existing lung disorders may be aggravated. If swallowed, nausea, vomiting, and diarrhea may result. Skin contact may result in mild dermatitis or irritation, with existing skin disorders possibly being aggravated. Upon eye contact, mild irritation to eye surfaces may result, and existing eye disorders possibly being aggravated.

**LONG TERM (CHRONIC EXPOSURE):** No specific information available.

**Avoid direct inhalation of fumes during heating and use. Monitor fume levels.**

## SECTION 12: ECOLOGICAL INFORMATION

**MATERIAL:** Welding consumables and materials can degrade into the components used to manufacture the product. Avoid exposure to conditions that could lead to accumulation in soils and groundwater.

**CONTAMINATED PACKAGING:** Empty containers should be taken for local recycling, recovery, or waste disposal.

## SECTION 13: DISPOSAL CONSIDERATION

**WASTE DISPOSAL METHOD:** Dispose of any rod and waste residues in accordance with EPA or local regulations.

Review U.S. Federal Hazardous Waste Regulations §40 CFR261 to determine if this is hazardous in USA. Please be advised that state and local requirements, or other country requirements, for waste disposal may be more restrictive or otherwise different than U.S. Federal regulations. It is not possible to give this product a waste code number according to the European waste catalogue because only the intended use of the user consents the assignment of a specific code number.

## SECTION 14: TRANSPORTATION INFORMATION

**DOMESTIC TRANSPORT REGULATIONS (USA):** DOT - not regulated.

**DOMESTIC TRANSPORT REGULATIONS (CANADA):** TDG - not regulated.

**DOMESTIC TRANSPORT REGULATIONS (MEXICO):** MEX - not regulated.

**INTERNATIONAL TRANSPORT REGULATIONS:**

ICAO – not regulated

IATA – not regulated

IMDG / IMO – not regulated

**OTHER AGENCIES:** No international regulations or restrictions are applicable.

Handle with care to avoid damaging the product. Do not remove product identification label or warning label and store in original container. Keep material away from heat. Do not store near food materials.

## SECTION 15: REGULATORY INFORMATION

**Read and understand the manufacturer's Safety Data Sheet before handling or disposing of this product.**

See American National Standard Z49.1, Safety in Welding and Cutting, published by the "American Welding Society," 550 N.W. LeJeune Road, Miami, FL 33126 and OSHA Publication 2206 (29CFR 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 for more information. Before using this product, understand and your employer's safety practices.



**U.S. EPA TSCA (TOXIC SUBSTANCE CONTROL ACT):** All constituents of these products are on the TSCA inventory list or are excluded from listing.

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center and to our Local Emergency Planning Committee.

**EPCRA/SARA TITLE III 313 TOXIC CHEMICALS:**

The following metallic components are listed as SARA 313 "TOXIC CHEMICALS" and are potentially subject to annual SARA 313 reporting. See Section 3 if the ingredient is present and for percent.

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>DISCLOSURE THRESHOLD</u>
Chromium & chromium compounds	7440-47-3	1.0 % de minimis concentration
Chromium VI	Not listed	0.1 % de minimis concentration
Barium compounds	Not listed	1.0 % de minimis concentration
Cobalt	7440-48-4	0.1 % de minimis concentration
Copper	7440-50-8	1.0 % de minimis concentration
Manganese	7439-96-5	1.0 % de minimis concentration
Nickel	7440-02-0	0.1 % de minimis concentration
Aluminum (fume or dust)	7429-90-5	1.0 % de minimis concentration
Silver	7440-22-4	1.0 % de minimis concentration

**Package Labeling:**

Additional advice on labeling

As a finished article the product does not need to be labeled in accordance with EC-directives or respective national laws.

International rules may vary and the appropriate regulations should be followed as defined by the country where the product is used.

**SECTION 16: OTHER INFORMATION**

This Safety Data Sheet has been revised due to modifications to several paragraphs and/or new format.

Prepared by: US Forge, USA.

**SUPPLEMENTAL INFORMATION – DEFINITIONS:**

IARC: International Agency for the Research on Cancer  
 NIOSH: National Institute for Occupational Safety and Health  
 OSHA: U.S. Occupational Safety and Health Administration  
 ACGIH: American Conference of Governmental Industrial Hygienists  
 CAS: Chemical Abstracts Service Registry Number  
 EINECS: European Inventory of Existing Chemical Substances

PEL: Permissible Exposure Limit  
 NTP: National Toxicology Program  
 TLV: Threshold Limit Value  
 ECD: European Council Directive  
 GHS: Globally Harmonized System

The information in this SDS was obtained from sources we believe are reliable. However, this information is provided without any representation or warranty, expressed or implied, regarding accuracy or correctness. The conditions or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons we do not assume responsibility and expressly disclaim liability of loss, damage, or expense arising from it or any way connected with the handling, storage, use, or disposal of the product.