

SAFETY DATA SHEET

GHS SDS Date: 06/24/2017

SDS Name: Kapp LIQUID Golden Flux for Aluminum Soldering 350°F TO 550°F

SDS Number: 551

Page 1 of 7

SECTION I: PRODUCT AND COMPANY INFORMATION

Product Name: Kapp LIQUID Golden Flux for Aluminum Soldering 350°F TO 550°F

Product Number: 551

Company Identification: Kapp Alloy and Wire, 1 Klein Street / PO Box 1188, Oil City, PA 16301 USA

Contact: Telephone: 1-800-327-6533 or 814-676-0613, Fax: 814-676-5565, Email: info@kappalloy.com**SECTION II: HAZARD INFORMATION****Classification of the mixture according to Regulation (EC) No. 1272/2008 and OSHA 29 CFR 1910**

GHS05 Corrosion Eye Damage

H290 – May be corrosive to metals

H314 - Causes serious skin burns & eye damage

H318 – Causes serious eye damage



GHS07 Skin Irritation

H301 – Toxic if swallowed.

H302 – Harmful if swallowed.

H315 - Causes skin irritation.

H317 – May cause an allergic skin reaction



GHS08 Health Hazard

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.



GHS09 Aquatic Toxicity

H400 – Very toxic to aquatic life

H401 – Very toxic to aquatic life with long lasting effects.

Label Elements according to Regulation (EC) No. 1272/2008 and OSHA 29 CFR 1910

Hazard Pictograms:



GHS05



GHS07



GHS08



GHS09

Signal Word: **DANGER**

Hazard-determining components of labeling:

Aminoethylethanolamine, Zinc Oxide, Ammonium Fluoborate, Diethanolamine, Triethanolamine, Stannous Fluoborate, Zinc Fluoborate, Fluoroboric Acid

Hazard Statements:

H290 May be corrosive to metals

H301 Toxic if swallowed.

H302 Harmful if swallowed.

H314 Causes serious skin burns & eye damage

H315 Causes skin irritation.

H317 May cause an allergic skin reaction

H318 Causes serious eye damage.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H400 Very toxic to aquatic life

H401 Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

P220 - Wear protective gloves, clothing, eye, face, and respiratory protection.

P234 - Keep only in original container.

P260 - Do not breathe dust, mist, or fumes.

P264 - Wash thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P271 - Use only outdoors or in a well-ventilated area.

P273 - Avoid release to the environment.

SAFETY DATA SHEET

GHS SDS Date: 06/24/2017

SDS Name: Kapp LIQUID Golden Flux for Aluminum Soldering 350°F TO 550°F

SDS Number: 551

Page 2 of 7

P305+P351+P338 –	IF IN EYES: Flush with water for at least 15 minutes to remove irritant. Remove contact lenses, if present and easy to do. Continue rinsing. Consult a physician immediately.
P304+P341 –	IF INHALED: Terminate exposure and remove to fresh air. Call physician; advise of chemical composition (section III).
P303+P353+P361	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin and hair with soap & water / shower. If a rash develops, call a physician.
P301 + P310	IF SWALLOWED: Call a physician or Poison Control Center IMMEDIATELY;
P330 + P331	Rinse mouth. DO NOT induce vomiting. Advise of chemical composition. (Section III) and Potential Health Effects, (section VIII). Corrosive to mucous membranes. May contain corrosive hydrofluoric acid solution.
P363 -	Wash contaminated clothing before reuse.
P390+P391 -	Absorb spillage to prevent material damage. Collect spillage.
P405+P406 -	Store locked up, in original container or corrosive resistant stainless steel with a resistant inner liner.
P501 -	Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards:

PBT: Does not meet criteria for persistent – bio cumulative – toxic.

vPvB: Does not meet criteria for very persistent – very bio cumulative.

SECTION III: COMPOSITION / INGREDIENTS

*(Hazardous components 1% or greater; Carcinogens 0.1% or greater)

Component	CAS No.	EINECS No.	Weight %
Aminoethanolamine	111-41-1	203-867-5	25-35
Zinc Oxide	1314-13-2	215-222-5	0-10
Stannous Fluoroborate	13814-97-6	237-487-6	0-5
Diethanolamine	111-42-2	203-868-0	0-10
Ammonium Fluoroborate	13826-83-0	237-531-4	10-20
Triethanolamine	102-71-6	203-049-8	20-30
Zinc Fluoroborate	13826-88-5	237-534-0	0-1
Fluoroboric Acid	16872-11-0	240-898-3	0-10

SECTION IV: FIRST AID MEASURES

Ingestion:	Call a physical or Poison Control Center IMMEDIATELY; Advise of chemical composition. (Section III) and Potential Health Effects, (section VIII). Corrosive to mucous membranes. May contain corrosive hydrofluoric acid solution.
Skin:	Promptly flush with water to remove any residue. If a rash or burn develops, consult a physician. Product is corrosive. Hydrofluoric acid possible.
Inhalation:	Terminate exposure and remove to fresh air. If fumes are inhaled, call physician immediately; over-inhalation may be harmful.
Eyes:	Flush with water for at least 20 minutes to remove any residue. Get medical help NOW. Blindness can result. Hydrofluoric acid possible.

SECTION V: FIRE FIGHTING MEASURES

Flash point (°F):	> 275,
Flammability Limits:	(in air, % by volume) <ul style="list-style-type: none"> ▪ LEL: 1.6 estimated ▪ UEL: 10.0 estimated
Extinguisher Media:	Water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.
Special Hazards:	Toxic ammonia, boron oxides, or fluoride fumes. Oxides of nitrogen. Hydrofluoric acid solution may be formed within water runoff.
Special Fire Fighting Procedures	Wear self-contained breathing apparatus. Fire fighters must wear fire resistant personnel protective equipment & chemical resistant over suit.
Unusual Fire and Explosion Hazards	Avoid splashing this material and solutions of it onto personnel. Hydrofluoric acid solution may be formed within water runoff.

SAFETY DATA SHEET

GHS SDS Date: 06/24/2017

SDS Name: Kapp LIQUID Golden Flux for Aluminum Soldering 350°F TO 550°F

SDS Number: 551

Page 3 of 7

SECTION VI: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

- Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas.
- Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
- For personal protection see section 8.

Environmental precautions: Do not let product enter drains.

Methods and materials for containment and cleaning up: In case of accidental release or spill, immediately notify the appropriate authorities if required by Federal, State/Provincial and local laws and regulations. Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal. Keep in properly labeled containers. Prevent product from entering drains. Clean spill area thoroughly. Local authorities should be advised if significant spillages cannot be contained.

SECTION VII: HANDLING AND STORAGE

Precautions to be taken in handling and storage:

- Store flux at temperatures 35 °F to 100 °F in original container, keep tightly closed and away from food.
- Wash hands thoroughly after handling to remove any residue.
- No eating or smoking in work area.
- Avoid contact with skin and eyes.
- Do not breathe fumes. Professionally wash contaminated clothing before re-use.
- Existing lung disorders will have increased toxic susceptibility.

SECTION VIII: EXPOSURE CONTROLS / PERSONAL PROTECTION

Skin Protection: Wear protective gloves of Nitrile Rubber or Natural Rubber to protect hands and wrists. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Respiratory Protection: If the work station is not properly ventilated to exhaust all fumes and dusts, use NIOSH-approved fullface respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Eye Protection: Chemical tight safety goggles or face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Ventilation: Maintain air flow away from user to remove all fumes and vapors, so that the PEL is never exceeded. Adhere to Environmental regulations for exhausts. Conform to applicable regulatory statutes.

Other: Full protective equipment normally used in soldering (/applicable) operations so as to prevent any contact. Review operations to avoid contact with hazardous gas, liquids or solids.

Component	CAS No.	EINECS No.	SARA III	OSHA PEL	ACGIH TLV
Aminoethanolamine	111-41-1	203-867-5	---	N/E	Hazard: Corrosive
Zinc Oxide	1314-13-2	215-222-5	<10%	5.0 mg/m ³	2.0 mg/m ³
Stannous Fluoroborate	13814-97-6	237-487-6	---	2.5 mg/m ³ as F*	2.5 mg/m ³ as F* 2.0 mg/m ³ as Sn
Diethanolamine	111-42-2	203-868-0	---	---	5.0 mg/m ³
Diethanolamine	111-42-2	203-868-0	---	---	1.0 mg/m ³ SKIN
Ammonium Fluoroborate	13826-83-0	237-531-4	<20%	2.5 mg/m ³ as F*	2.5 mg/m ³ as F*
Triethanolamine	102-71-6	203-049-8	---	---	5.0 mg/m ³
Zinc Fluoroborate	13826-88-5	237-534-0	---	2.5 mg/m ³ as F*	2.5 mg/m ³ as F*
Fluoroboric Acid	16872-11-0	240-898-3	---	2.5 mg/m ³ as F*	2.5 mg/m ³ as F*

***Ammonium Fluoborate:**

- The PEL for fluoride as F is 2.5 mg/m³. Chronic fluoride absorption can result in osseous fluorosis, increased radiographic density of the bones and mottling of the teeth. Read OSHA 29 CFR 1910.1000, July 1, 1980, standard for fluorides.
- The PEL for boron oxide is: 10 mg/m³, B₂O₃ as a fume. This compound when used as intended will generate fumes of boron oxide. Contact your industrial hygiene department.

SAFETY DATA SHEET

GHS SDS Date: 06/24/2017

SDS Name: Kapp LIQUID Golden Flux for Aluminum Soldering 350°F TO 550°F

SDS Number: 551

Page 4 of 7

See also: 29 CFR 1910.132 - 29 CFR 1910.140. *Personal Protective Equipment*
 29 CFR 1910.251 - 29 CFR 1910.257. *Welding, Cutting and Brazing*

SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Viscous Liquid
 Odor: Ammoniac
 Color: Yellow
 Specific Gravity: 1.3
 Flash Point (@ 760 mmHg): >275°F
 Solubility in Water (100 = complete): 100
 Active Temperature Range: Active between 350 – 550 °F
 Percent volatiles by volume: 8.6
 pH: 10-11
 Use: General purpose low temperature aluminum soldering flux

SECTION X: STABILITY AND REACTIVITY

Stability: Stable
 Conditions to avoid: Excessive heat; decomposes forming corrosive, skin penetrating, toxic gases
 Incompatibility (materials to avoid): Strong acids, bases cyanides, sulfides, strong oxidants.
 Hazardous Combustion / Decomposition: Toxic hydrofluoric acid, ammonia, and boron trifluoride.

SECTION XI: TOXICOLOGY INFORMATION**Component toxicity**

Components	LC50/Inhalation/1h/Rat	LD50/Rabbit	LD50/Oral/Rat
Triethanolamine	No Data	No Data	5530 mg/kg
Diethanolamine	No Data	2000 mg/kg	4000 mg/kg
Aminoethylethanolamine	No data	2200 mg/kg	3000 mg/kg

Reproductive toxicity

No data available

Chronic Toxicity and Carcinogenicity

Based on information for component(s): Triethanolamine. Findings from a chronic skin painting study by NTP include liver tumors in mice. Mechanistic studies indicate that tumor formation is of questionable relevance to humans. Findings from a chronic diethanolamine skin painting study by NTP include liver and kidney tumors in mice; no tumors were observed in rats. Mechanistic studies indicate that tumor formation is of questionable relevance to humans. A number of factors may have influenced the results and are being considered in their interpretation.

Carcinogenicity:

Triethanolamine - IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (2,2',2"-Nitrilotriethanol)

Diethanolamine- IARC Possibly carcinogenic to humans.; 2B ACGIH Confirmed animal carcinogen with unknown relevance to humans.; Group A3

Developmental Toxicity

For the major component(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. However, the relevance of this to humans is unknown. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

Reproductive Toxicity

For the minor component(s): In animals, effects have been reported on the following organs: Male reproductive organs. Repeated excessive exposures to high amounts may cause effects on testes and fertility in males.

Genetic Toxicology

Based on information for component(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea.

Swallowing: Can cause damage to digestive system. Corrosive to mucous membranes. May cause salivation, nausea, vomiting, diarrhea, and abdominal pain. Fluoride ion can reduce serum calcium levels, possibly causing fatal hypocalcaemia. Systemic toxicity and shock.

Skin Absorption / Contact: None currently known. Fumes may penetrate / absorb into skin.

Inhalation: **Highly irritating to respiratory system.** Coughing & sneezing. Existing lung disorders will be aggravated. Inhalation may yield: chills, labored breathing, fevers, and unproductive cough. The fluoride ion may cause hypocalcaemia – calcium deficiency in the blood. Inflammation and necrosis of mucous membranes.

Eye Contact: Strong irritation to eyes, tearing, burn of eye surface, corrosive to eyes. May cause blindness.

	*0 = Insignificant	1 = Slight	2 = Moderate	3 = High	4 = Extreme
		Health	Flammability	Reactivity	Special
NFPA Rating		3	0	0	0
HMIS Rating		3	0	0	0

SECTION XII: ECOLOGY INFORMATION**12.1 Toxicity**

Toxicity to fish LC50 - Danio rerio (zebra fish) - 2,600 mg/l - 96 h (OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates - EC50 - Daphnia magna (Water flea) - > 100 mg/l

Remarks: Information given is based on data on the components and the ecotoxicology of similar products.

Toxicity to algae NOEC - Pseudokirchneriella subcapitata (green algae) - > 100 mg/l – 72 hr.

Remarks: Information given is based on data on the components and the eco-toxicology of similar products.

12.2 Persistence and degradability

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

Indirect Photo degradation with OH Radicals

Rate Constant Atmospheric Half-life Method

1.20E-10 cm³/s 1.1 h Estimated OECD Biodegradation Tests: Biodegradation

Exposure Time Method > 97 % 28 d OECD 301F Test

12.3 Bio-accumulative potential

No data available

12.4 Mobility in soil

Potential for mobility in soil is very high (Koc between 0 and 50). Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

SAFETY DATA SHEET

GHS SDS Date: 06/24/2017

SDS Name: Kapp LIQUID Golden Flux for Aluminum Soldering 350°F TO 550°F

SDS Number: 551

Page 6 of 7

Henry's Law Constant (H): 8.8E-10 atm*m3/mole; 25 °C Estimated Partition coefficient, n-octanol/water (log Pow): -1.46 Measured Partition coefficient, soil organic carbon/water (Koc): 3.5 Estimated

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 Other adverse effects

No data available

SECTION XIII: DISPOSAL CONSIDERATION**Waste Disposal Method**

- Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- Disposal must be made according to official regulations. Dispose of according to federal, state, local, international, and OSHA regulations. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
- Dispose of contaminated packaging as unused product.

SECTION XIV: TRANSPORT INFORMATION**US Department of Transportation – GROUND ONLY**

Proper shipping name: Corrosive Liquid, N.O.S.(Aminoethylethanolamine, Ammonium Fluoborate)
 Hazard Class: 8
 ID & Packing Group Number: UN 1760, PG II
 ERG Guide Number: 154
 Marine Pollutant: No
 Reportable Quantity: None

International Air Transportation (ICAO/IATA):

Proper shipping name: Corrosive Liquid NOS (aminoethylethanolamine, Ammonium Fluoroborate)
 UN No.: 1760
 Packaging Groups: II
 Hazard Class: 8
 Hazard labels: Corrosive
 IATA PKG Inst# 855, Cargo Aircraft Only
 ERG Guide Number: 154

International Maritime Organization (IMO/IMDG):

Proper Shipping name: Corrosive Liquid NOS (aminoethylethanolamine, ammonium fluoroborate)
 UN No.: 1760
 Packaging Groups: II
 Hazard Class: 8
 Hazard labels: Corrosive
 IMDG – Marine Pollutant: No

SECTION XV: REGULATORY INFORMATION**SARA Title III 313 Reportable Substances**

This product contains the following chemicals which are subject to the reporting requirements of the Act and of Title 40 of the Code of Federal Regulations, Part 372

Chemical	CAS No.	% by Weight	Section 311/312 Categories
Zinc Compounds	N982	11	Acute Health Hazard
N,N-Diethanolamine	111-42-2	5	Acute Health Hazard

SAFETY DATA SHEET

GHS SDS Date: 06/24/2017

SDS Name: Kapp LIQUID Golden Flux for Aluminum Soldering 350°F TO 550°F

SDS Number: 551

Page 7 of 7

CERCLA Section 103

This product contains the following substances which are subject to CERCLA Section 103 reporting requirements and which are listed on 40 CFR 302.4: Diethanolamine 111-42-2

Toxic Substance Control Act (TSCA)

If listed below, non-proprietary substances are subject to export notification Section 12 (b) of TSCA: None listed

State Regulations (RTK)**Pennsylvania and New Jersey Right to Know Components:**

Component	CAS No.
Fluoroboric Acid	16872-11-0
Ammonium Fluoroborate	13826-83-0
Diethanolamine	111-42-2
Triethanolamine	102-71-6
Zinc Oxide	1314-13-2
Aminoethylamino)ethanol	111-41-1

California Proposition 65

This product contains a chemical known in the State of California to cause cancer: Diethanolamine, CAS 111-42-2

RoHS, REACH, and REACH-SVHC Compliance:

This Product is RoHS and REACH Compliant. This product is free of REACH-SVHC substances.

Hazardous Communications Program: Hazardous warnings and training requirements as mandated for corrosive material.

SECTION XVI: OTHER INFORMATION

This information must be included in all SDS that are copied and distributed for this material.

**GOOD HOUSEKEEPING PROCEDURES SHOULD BE MAINTAINED.
PERSONNEL SHOULD WASH THOROUGHLY BEFORE SMOKING OR EATING
FOOD AND DRINK SHOULD NOT BE CONSUMED, TOBACCO PRODUCTS USED, OR COSMETICS
APPLIED IN AREAS WHERE EXPOSURES EXIST.**

Please retain this sheet for your files. Kapp Alloy maintains a file of Safety Data Sheets (SDS) for each alloy produced in compliance with Federal OSHA Hazard Communication Standard (29 CFR 1910.1200), Regulation (EC) No. 1272/2008, and various right-to-know laws.

The information and recommendations contained within this publication have been compiled from sources believed to be reliable and to represent the best information available to Kapp Alloy and Wire, Inc. at the time of issue. It is our policy to include an SDS with initial orders for each product. This submission is to become a matter of record and need not accompany subsequent shipments for the same product to the same customer. The information contained on this sheet is intended solely for employee health and safety education and not for contract specification purposes. No warranty, guarantee, or representation is made by Kapp Alloy and Wire, Inc., nor does Kapp Alloy and Wire, Inc. assume any responsibility in connection there within; nor can it be assumed that all acceptable safety measures or other safety measures may not be required under particular or exceptional conditions or circumstances. Should you need additional information, contact us.