1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT NAME: Aluminum Solder 83-410

MANUFACTURER: Kimball Midwest
4800 Roberts Road
Columbus, OH 42328
Phone: 800-233-1294

EMERGENCY TELEPHONE NUMBER: Chemtrec 800-424-9300

2. HAZARD IDENTIFICATION:

Emergency Overview: This product is normally not considered hazardous as shipped. Avoid eye contact or inhalation of dust from the product. When this product is used in a welding process, the most important hazards are welding fumes and heat.

Classification of the Substance/Mixture

CLP/GHS Classification (1272/2008):
Acute Toxicity – Inhalation, Category 2
Germ Cell Mutagenicity, Category 2
Carcinogenicity, Category 1B
Reproductive Toxicity, Category 2
Specific Target Organ Toxicity (Repeated Exposure), Category 1
Hazardous to the Aquatic Environment – Acute Hazard, Category 1
Hazardous to the Aquatic Environment – Long-Term Hazard, Category 1

EU Classification (67/548/EEC):
Toxic (T), Harmful (Xn), Dangerous for the Environment (N), R26, R45, R48/23/25, R62, R63, R68, R50/53

Labelling:

Symbols: 

Signal Word: Danger

Hazard Statements:

H330 – Fatal if inhaled.
H341 – Suspected of causing genetic defects.
H350 – May cause cancer.
H361 – Suspected of damaging fertility or the unborn child.
H372 – Cause damage to respiratory system, eyes, kidney, brain and nervous system through prolonged or repeated exposure.
H400 – Very toxic to aquatic life.
H410 – Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

P201 – Obtain special instructions before use.
P202 – Do not handle until all safety precautions have been read and understood.
P260 – Do not breathe dust/fume/gas/mist/vapours/spray.
P264 – Wash skin and hair thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product.

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P271 – Use only outdoors or in a well-ventilated area.
P273 – Avoid release to the environment.
P281 – Use personal protective equipment as required.
P284 – Wear respiratory protection.
P304+P340 – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P308+P313 – IF exposed or concerned: Get medical advice/attention.
P310 – Immediately call a POISON CENTER or doctor/physician.
P314 – Get medical advice/attention if you feel unwell.
P391 – Collect spillage.
P403+P233 – Store in a well-ventilated place. Keep container tightly closed.
P405 – Store locked up.
P501 – Dispose of contents/container in accordance with local/regional/national/international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS:

Chemical Identity	CAS #	Range %	OSHA PEL (mg/m3)	ACGIH-TLV (mg/m3)	Carcinogenicity	EU Classification (67/548/EEC)	CLP/GHS Classification (1272/2008)
#Zinc	7440-66-6	20-30	10	10	No	(N),R50/53	(H400) Aquatic Acute 1 (H410) Aquatic C. 1
Tin	7440-31-5	35-45	2	2	No	Not Dangerous	Not Hazardous
#Cadmium	7440-43-9	30-40	.1 (as Fume)	.01	Yes	(T) R26, R45, R48/23/25 (Xn) R62, R63, R68 (N) R50/53	(H330) Acute Tox. 2 (H350) Carc. 1B (H372) STOT RE 1 (H341) Muta. 2 (H361FD) Repr. 2 (H400) Aquatic Acute 1 (H410) Aquatic Chronic 1

Important This section covers the materials of which the products manufactured. The fumes and gases produced during normal use of this product are covered in section 10. The term "Hazardous" in "Hazardous Material" should be interpreted as a term required and defined in OSHA Hazard Communication Standard 29CFR 1910-1200 and it does not necessarily imply the existence of hazard. The chemicals or compounds reportable by Section 313 of SARA are marked by the symbol #.

4. FIRST AID MEASURES:

Inhalation: Remove to fresh air immediately or administer oxygen. Get medical attention immediately.
Skin: Flush skin with large amounts of water and soap. If irritation develops and persists, get medical attention.
Eye: Flush eyes with water for at least 15 minutes. Get medical attention.
Ingestion: Obtain medical attention immediately if ingested. Rinse mouth.

5. FIRE-FIGHTING MEASURES:

Suitable Extinguishing Media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Welding arcs and sparks can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning material and fire situation.
Unsuitable Extinguishing Media: Do not use water on molten metal. Large fires may be flooded with water from a distance.
Specific Hazards Arising From Chemical: Cadmium oxides, tin oxides, carbon oxides, zinc oxides
Protective Equipment: Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES:

Personal Precautions: Refer to section 8.
Environment Precautions: Refer to section 13.

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Cleaning Measures: Solid objects may be picked up and placed into a container. Liquids or pastes should be scooped up and placed into a container. Wear proper protective equipment while handling these materials. Do not discard as refuse.

7. HANDLING AND STORAGE:

Precautions for Safe Handling: Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk; evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe dust. Keep away from incompatibles such as oxidizing agents, acids, alkalis. Dispose of according to Federal, State, Local and OSHA regulations.

Conditions for Safe Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 25ºC (77ºF).

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION:

Engineering Controls: The usual precautionary measures for handling chemicals should be followed. Keep away from food, beverages and feed. Remove all soiled and contaminated clothing immediately. Wash hands before break and at the end of the work. Store all protective clothing separately. Maintain an ergonomically appropriate working environment. Wear protective equipment. Keep unprotected persons away. Avoid causing dust.

Exposure limits: Use industrial hygiene equipment to ensure that exposure does not exceed applicable national exposure limits. The limits defined under section 3 can be used as guidance. Unless noted, all values are for 8 hour time weighted average.

Biological limits: No available data

Personal protection:

Respiratory protection: Use an air purifying dust respirator when welding or brazing in a confined space, or when local exhaust or ventilation is not sufficient to keep exposure values within safe limits.

Hands protection: Wear appropriate gloves to prevent skin contact.

EN 12477: Protection gloves for welders

Requirements (EN Levels)	Type A	Type B
Abrasion (Cycles)	2 (500)	1 (100)
Cut (Factor)	1 (1.2)	1 (1.2)
Tear (Newton)	2 (25)	1 (10)
Puncture (Newton)	2 (60)	1 (20)
Burning Behaviour	3	2
Contact Heat	1	1
Convective Heat	2	-
Small Splashes	3	2
Dexterity	1 (11)	4 (6.5)

Type B gloves are recommended when high dexterity is required as for TIG welding, while type A gloves are recommended for other welding processes. The contact temp (ºC) is 100 and the threshold time (seconds) >15.

Eyes protection: Welder's helmet or face shield with colour absorbing lenses. Shield and filter to provide protection from harmful UV radiation, infra red and molten metal approved to standard EN379. Filter shade to be a minimum of shade 9.

Skin protection: Heat-resistant protective clothing. Wear safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry. Clothing should be selected to suit the level, duration and purpose of the welding activity.

Class 1	
Impact of Spatter	15 Drops
Heat Transfer (radiation)	RHTI 24 ≥ 7 seconds

Process	**Manual welding with light formation of spatter and drops** • **Gas Welding** • **TIG Welding** • **MIG Welding** • **Micro plasma welding** • **Brazing** • **Spot Welding** • **MMA Welding (with rutile-covered electrode)**
Environmental Conditions	**Operation of machines** • **Oxygen cutting machines** • **Plasma cutting machines** • **Resistance welding machines** • **Machines for thermal spraying** • **Bench welding**

Class 2	
Impact of Spatter	**25 Drops**
Heat Transfer (radiation)	**RHTI 24 ≥ 16 seconds**
Process	**Manual welding with heavy formation of spatter and drops** • **MMA welding (with basic or cellulose-covered electrodes)** • **MAG welding (with CO2 or mixed gases)** • **MIG Welding (with high current)** • **Self shielded flux core arc welding** • **Plasma cutting** • **Gouging** • **Oxygen cutting** • **Thermal spraying**
Environmental Conditions	**Operation of machines** • **In confined spaces** • **At overhead welding/cutting or in comparable constrained positions**

9. PHYSICAL AND CHEMICAL PROPERTIES:

Appearance: Solid.
Color: None
Odour: Odourless
Odour Threshold: Not Available
pH Value: Not Available
Melting Point/Melting Range: 1560-2000° F, 850-1100° C
Freezing Point: Not Available
Boiling Point/Boiling Range: : Not Available
Flash point: Not Available
Evaporation Rate: Not Available
Self-in flammability: Not Available
Explosion limits: Not Available
Vapour pressure: Not Available
Vapour density: Not Available
Density at 20ºC: Not Available
Relative density: 6-9 g/cm3
Solubility: Insoluble in water.

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Partition coefficient: Not Available
Auto-ignition temperature: Not Available
Decomposition temperature: Not Available
Other Information: No available data.

10. STABILITY AND REACTIVITY:

Chemical Stability: This product is stable under normal conditions.
Hazardous Reactions: Reactive with oxidizing agents, acids, alkalis.
Conditions to Avoid: Not applicable.
Incompatible Materials: Incompatible with Bromine, Bromine Trifluoride Chlorine, Chlorine Trifluoride + Carbon, Water + Cupric Nitrate, Sodium Peroxide, Water Vapour + Carbon Tetrachloride, Disulfur Dichloride, fused Ammonium Nitrate, Potassium Dioxide, Tellurium, Turpentine, Acids (Nitric Acid, Sulfuric Acid, Hydrochloric Acid, Acetic Acid), caustic Alkali, Iodine Bromide. In presence of water vapour, the interaction between Tin and Carbon Tetrachloride is violent. The interaction between Tin and Disulfur Dichloride is violent. Tin reacts violently with Iodine Bromide.
Hazardous Decomposition Products: When this product is used in a welding process, hazardous decomposition product would include those from volatilization*, reaction* or oxidation of the material listed in section 3 and those from the base metal and coating. The amount of fumes generated from this product varies with welding parameters and dimensions.
Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in section 3. Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone. Air contaminants around the welding area can be affected by the welding process and influence the composition and quality of fumes and gases produced.

11. TOXICOLOGICAL INFORMATION:

Signs and Symptoms of Overexposure: Fumes and gases generated during use of this product, in conjunction with heating, welding, brazing or soldering procedures, can be dangerous to your health. Aggravation of pre-existing respiratory or allergic conditions may occur.
Acute Effects: Tin: May cause skin irritation. May cause eye irritation due to mechanical action. Inhalation of tin dust may cause respiratory tract and mucous membrane tract irritation due to mechanical action. It is poorly absorbed from the digestive tract. It can cause gastrointestinal tract disturbance which may be irritant or astringent on the stomach. Signs and symptoms of zinc exposure are central nervous system depression, cough, chest pain and difficulty breathing. Exposure to high airborne concentrations can cause anesthetic effects. Cadmium: Damage to the lungs. Kidney injury may occur.

LD/LC50 Values that are relevant for classification		
Zinc 7440-66-6		
Oral	LD50	630 mg/kg (rat)

LD/LC50 Values that are relevant for classification		
Cadmium 7440-43-9		
Oral	LD50	225 mg/kg (rat)
Inhalation	LC50	25 mg/m3 (30h) (rat)
	LC50	1.0 µg/l (96h) (fathead minnow)

Chronic Effects: Overexposure to welding fumes may affect pulmonary function. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. Excessive inhalation of zinc oxide fumes may produce symptoms known as “Zinc Shakes” which are flu-like and usually cease when the individual is removed from the source. Prolonged or repeated exposure can cause vomiting, diarrhoea, lung irritation. Severe overexposure of Cadmium can result in death. Carcinogenic to humans (Cadmium) (Classified 1 by IARC and K by NTP).

12. ECOLOGICAL INFORMATION:

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Toxicity: No available data.
Persistence and Degradability: No available data.
Bio accumulative Potential: No available data.
Mobility in Soil: No available data.
Other Adverse Effects: No available data.
Do not allow undiluted product or large quantities to reach ground water, water course or sewage systems. Do not allow product to be released in the environment without proper governmental permits.

13. DISPOSAL CONSIDERATIONS:

Product: For product elimination, dispose of in accordance with EPA regulations.
Package: May be disposed in approved landfills provided local regulations are observed.

14. TRANSPORT INFORMATION:

UN-number: Welding rods are not classified as dangerous goods for transport and has no UN number.
UN proper shipping name: Welding rods are not classified as dangerous goods for transport and has no UN proper shipping name.
Transport hazard class: Welding rods are not classified as dangerous goods for transport.
Packing group: There are not any special precautions with which a user should or must comply or be aware of in connection with transport or conveyance either within or outside premises.
Environmental hazards: Welding rods are not environmentally hazardous according to the criteria of the UN Model Regulations (as reflected in the IMDG Code, ADR, RID and AND) and/or a marine pollutant to the IMDG Code.
Special precautions for users: There are not any special precautions which a user should or must comply or be aware of in connection with transport or conveyance either within or outside premises of the welding rod.
Transport in Bulk According to Annex III MARPOL 73/78 and the IBC Code: Welding rods in massive form do not subject under MARPOL 73/78 and the IBC Code. Not applicable – product is transported only in packaged form.

15. REGULATORY INFORMATION:

Safety, health and environment regulations/legislation specific for the substance or mixture: Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label. Observe any federal and local regulations. Take precautions when welding and protect yourself and others.
Warning: Welding fumes and gases are hazardous to your health and may damage lungs and other organs. Use adequate ventilation. Electric shock can kill. Arc rays and sparks can injure eyes and burn skin. Wear correct hand, head, eye and body protection.
Chemical safety assessment: No
USA: Under the OSHA Hazard Communication Standard, this product is considered hazardous. This product contains or produces a chemical known to the state of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code § 25249.5 et seq.) United States EPA Toxic Substance Control Act: All constituents of this product are on the TSCA inventory list or are excluded from listing.
EPCRA/SARA Title III Toxic Chemicals
The following metallic components are listed as SARA 313 "Toxic Chemicals" and potential subject to annual SARA reporting. See Section 3 for weight percentage.

Ingredient Name	Disclosure Threshold
Zinc	10 mg/m3
Cadmium	.1 (as Fume)

16. OTHER INFORMATION:

The information in this document is believed to be correct as of the date issued. However, no warranty is expressed to be implied regarding the accuracy or completeness of this information. This information and product are furnished on the condition

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that the person receiving them shall make his own determinations as to the suitability of the product for his particular purpose and on the condition that he assumes the risk of his use thereof.

This Material Safety Data Sheet complies with the EC directives 91/155/EEC and 93/112/EEC, including modifications 2001/58/EC.

Complies with OSHA Communication Standard 29 CFR 1910.1200 and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499

Hazard Statements:

H330 – Fatal if inhaled.
H341 – Suspected of causing genetic defects.
H350 – May cause cancer..
H361 – Suspected of damaging fertility or the unborn child.
H372 – Causes damages to organs through prolonged or repeated exposure.
H400 – Very toxic to aquatic life.
H410 – Very toxic to aquatic life with long lasting effects,

R-Phrases:

R26 – Very toxic by inhalation**.**
R45 – May cause cancer**.**
R48/23/25 – Toxic: danger of serious damage to health by prolonged exposure through inhalation and swallowed.
R50/53 – Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R62 – Possible risk of impaired fertility**.**
R63 – Possible risk of harm to the unborn child**.**
R68 – Possible risk of irreversible effects**.**

S-Phrases:

S16 – Keep away from source of ignition – No smoking.
and seek medical advice.
S36/37/39 – Wear suitable protective clothing, gloves and eye/face protection.
S45 – In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S53 – Avoid exposure – obtain special instructions before use.
S60 – This material and its container must be disposed of as hazardous waste.
S61 – Avoid release to the environment.

End of the document.