Safety Data Sheet
Aluminum Bare Wire

SDS Revision Date: **09/18/2015**

1. Identification

1.1. Product identifier

Product Identity	Aluminum Bare Wire
Alternate Names	ER4043, ER5356

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

Intended use	See Technical Data Sheet.
Application Method	See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name	Midalloy 630 Axminister Drive St. Louis, MO 63026
Emergency **24 hour Emergency Telephone No.**	(636) 349-6000
Customer Service: Midalloy	(800) 776-3300

2. Hazard(s) identification

2.1. Classification of the substance or mixture

Skin Sens. 1;H317	May cause an allergic skin reaction.
Resp. Sens. 1;H334	May cause allergy or asthma symptoms of breathing difficulties if inhaled.

2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.

Danger

H317 May cause an allergic skin reaction.
H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.
[Prevention]:
P261 Avoid breathing dust / fume / gas / mist / vapors / spray.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves / eye protection / face protection.
P285 In case of inadequate ventilation wear respiratory protection.
[Response]:

P302+352 IF ON SKIN: Wash with plenty of soap and water.

P304+341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

P313 Get medical advice / attention.

P321 Specific treatment (see information on this label).

P333+313 If skin irritation or a rash occurs: Get medical advice / attention.

P342+311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor / physician.

P363 Wash contaminated clothing before reuse.

[Storage]:

No GHS storage statements

[Disposal]:

P501 Dispose of contents / container in accordance with local / national regulations.

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Aluminum **CAS Number: 0007429-90-5**	**75 - 100**	**Not Classified**	**[1][2]**
Silicon **CAS Number: 0007440-21-3**	**5 - 10**	**Not Classified**	**[1][2]**
Copper **CAS Number: 0007440-50-8**	**5 - 10**	**Not Classified**	**[1][2]**
Magnesium **CAS Number: 0007439-95-4**	**1 - 5**	**WaterReact. 1;H260** **Pyr. Sol. 1;H250**	**[1]**
Chromium compounds (as Cr (III)) **CAS Number: 0007440-47-3**	**0.10 - 1.0**	**Skin Sens. 1;H317** **Resp. Sens. 1;H334** **Eye Irrit. 2;H319** **Aquatic Chronic 4;H413**	**[1][2]**

In accordance with paragraph (i) of §1910.1200, the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.
[1] Substance classified with a health or environmental hazard.
[2] Substance with a workplace exposure limit.
[3] PBT-substance or vPvB-substance.
*The full texts of the phrases are shown in Section 16.

4. First aid measures

4.1. Description of first aid measures

General In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

Inhalation Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth.

Eyes	Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention.
Skin	Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.
Ingestion	If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

4.2. Most important symptoms and effects, both acute and delayed

Overview

Effects of Overexposure:

Inhalation of welding fumes and gases can be dangerous to your health. Short-term (acute) overexposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes. Chromium (VI) compounds present in the fume may cause severe irritation of the bronchial tubes and lungs. Ingesting Chromium (VI) salts may cause injury or death. Chromium (VI) compounds may burn eyes. Chromium compounds may cause allergic reactions in some people. Beryllium in fume or dust form is highly toxic. Inhalation of excessive levels of beryllium and beryllium compounds can cause pneumonitis (inflammation of the lung tissues).

Long-term (chronic) over-exposure to welding fumes can lead to siderosis (iron deposits in lung) and is believed to affect pulmonary function. Constant inhalation of chromium (VI) compounds may cause an ulceration and perforation of the nasal septum as well as liver and kidney damage. Workers exposed to chromium (VI) compounds and beryllium has a higher incidence of lung and nasal cancers. Long-term exposure to beryllium by inhalation can cause berylliosis (progressive lung disease) and systemic beryllium disease.

Chromium and Beryllium compounds are on the IARC (International Agency for Research of Cancer) list as posing a carcinogenic risk to humans.

Arc Rays can injure eyes and burn skin. Electric shock can kill. See Section 8.

See section 2 for further details.

Inhalation	May cause allergy or asthma symptoms of breathing difficulties if inhaled.
Skin	May cause an allergic skin reaction.

5. Fire-fighting measures

5.1. Extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used. Workers should be aware that the composition & quantity of fumes and gases to which they may be exposed include: coatings on the metal being welded (i.e. paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (i.e. chlorinated hydrocarbon vapors from cleaning & degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in % and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originated from the

volatilization, reaction or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above. It is understood, however, that the elements and/or oxides to be mentioned are virtually always present as complex oxides and not as metals (See Characterization of Arc Welding Fume, from the American Welding Society).

Reasonably expected constituents of the fume include: complex oxides of aluminum, iron, manganese, silicon, titanium, chromium, magnesium, zinc, beryllium, copper. Fume limit for Cr(VI) may be reached before limit for general welding fumes. Other complex oxides may be present when using fluxes.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn, or in the worker's breathing zone. See ANSI/AWS F1.1, available from the American Welding Society.

Avoid breathing dust / fume / gas / mist / vapors / spray.

5.3. Advice for fire-fighters

Non-flammable - Welding arc and sparks can ignite combustibles and flammables. Refer to American National Standard Z49.1 for fire prevention during the use of welding and allied procedures.

ERG Guide No. ----

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Put on appropriate personal protective equipment (see section 8).

6.2. Environmental precautions

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up

Prevent waste from contaminating surrounding environment. Discard any product residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with Federal, State and Local regulations.

7. Handling and storage

7.1. Precautions for safe handling

See section 2 for further details. - [Prevention]:

7.2. Conditions for safe storage, including any incompatibilities

Handle containers carefully to prevent damage and spillage.

Incompatible materials: No data available.

See section 2 for further details. - [Storage]:

7.3. Specific end use(s)

No data available.

SDS Revision Date: **09/18/2015**

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

CAS No.	Ingredient	Source	Value
0007429-90-5	Aluminum	OSHA	TWA 15 mg/m3 (total) TWA 5 mg/m3 (resp)
		ACGIH	TWA: 1.o mg/m3Revised 2008,
		NIOSH	TWA 10 mg/m3 (total) TWA 5 mg/m3 (resp)
		Supplier	No Established Limit
0007439-95-4	Magnesium	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
0007440-21-3	Silicon	OSHA	TWA 15 mg/m3 (total) TWA 5 mg/m3 (resp)
		ACGIH	No Established Limit
		NIOSH	TWA 10 mg/m3 (total) TWA 5 mg/m3 (resp)
		Supplier	No Established Limit
0007440-47-3	Chromium compounds (as Cr (III))	OSHA	TWA 1 mg/m3 [*Note: The PEL also applies to insoluble chromium salts.]
		ACGIH	TWA: 0.5 mg/m3 (III)
		NIOSH	TWA 0.5 mg/m3
		Supplier	No Established Limit
0007440-50-8	Copper	OSHA	TWA 1 mg/m3 [*Note: The PEL also applies to other copper compounds (as Cu) except copper fume.]
		ACGIH	TWA: 0.2 mg/m3 (fume) 1 mg/m3 (dusts and mists)
		NIOSH	TWA 1 mg/m3 [*Note: The REL also applies to other copper compounds (as Cu) except Copper fume.]
		Supplier	No Established Limit

Carcinogen Data

CAS No.	Ingredient	Source	Value
0007429-90-5	Aluminum	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007439-95-4	Magnesium	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-21-3	Silicon	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-47-3	Chromium compounds (as Cr (III))	OSHA	Select Carcinogen: No

		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: Yes; Group 4: No;
0007440-50-8	Copper	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

8.2. Exposure controls

Respiratory	Use respirable fume respirator or air supplied respirator when welding in a confined space or where local exhaust or ventilation does not keep exposure below the recommended exposure limit.
Eyes	Wear a helmet or face shield with a filter lens shade number 12-14 or darker. Shield other workers by providing screens and flash goggles.
Skin	Wear hand, head, and body protection, which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.
Engineering Controls	Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.
Other Work Practices	Read and understand the manufacturer's instructions and the precautionary label on the product. Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details. - [Prevention]:

9. Physical and chemical properties

Appearance	Solid
Odor	Not Specified
Odor threshold	Not determined
pH	Not Measured
Melting point / freezing point	Not Measured
Initial boiling point and boiling range	Not Measured
Flash Point	Non-Flammable
Evaporation rate (Ether = 1)	Not Measured
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	**Lower Explosive Limit:** Not Measured **Upper Explosive Limit:** Not Measured
Vapor pressure (Pa)	Not Measured
Vapor Density	Not Measured
Specific Gravity	Not Measured

SDS Revision Date: **09/18/2015**

Solubility in Water	Not Measured
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	Not Measured
Decomposition temperature	Not Measured
Viscosity (cSt)	Not Measured

9.2. Other information

No other relevant information.

10. Stability and reactivity

10.1. Reactivity

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

No data available.

10.5. Incompatible materials

No data available.

10.6. Hazardous decomposition products

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used. Workers should be aware that the composition & quantity of fumes and gases to which they may be exposed include: coatings on the metal being welded (i.e. paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (i.e. chlorinated hydrocarbon vapors from cleaning & degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in % and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originated from the volatilization, reaction or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above. It is understood, however, that the elements and/or oxides to be mentioned are virtually always present as complex oxides and not as metals (See Characterization of Arc Welding Fume, from the American Welding Society).

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Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn, or in the worker's breathing zone. See ANSI/AWS F1.1, available from the American Welding Society.

SDS Revision Date: **09/18/2015**

11. Toxicological information

Acute toxicity

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Aluminum - (7429-90-5)	No data available	No data available	No data available	No data available	No data available
Silicon - (7440-21-3)	No data available	No data available	No data available	No data available	No data available
Copper - (7440-50-8)	2,500.00, Rat - Category: 5	>2,000.00, Rat - Category: 5	No data available	5.11, Rat - Category: NA	No data available
Magnesium - (7439-95-4)	No data available	No data available	No data available	No data available	No data available
Chromium compounds (as Cr (III)) - (7440-47-3)	422.00, Rat - Category: 4	No data available	No data available	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	---	Not Applicable
Serious eye damage/irritation	---	Not Applicable
Respiratory sensitization	1	May cause allergy or asthma symptoms of breathing difficulties if inhaled.
Skin sensitization	1	May cause an allergic skin reaction.
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	---	Not Applicable
Aspiration hazard	---	Not Applicable

12. Ecological information

12.1. Toxicity

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Aluminum - (7429-90-5)	Not Available	Not Available	Not Available
Silicon - (7440-21-3)	Not Available	Not Available	Not Available
Copper - (7440-50-8)	0.0103, Pimephales promelas	0.0025, Daphnia magna	0.018 (72 hr), Pseudokirchneriella subcapitata
Magnesium - (7439-95-4)	Not Available	Not Available	Not Available
Chromium compounds (as Cr (III)) - (7440-47-3)	77.50, Pimephales promelas	1.20, Daphnia magna	580.00 (72 hr), Chlorella pyrenoidosa

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available.

13. Disposal considerations

13.1. Waste treatment methods

Observe all federal, state and local regulations when disposing of this substance.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not Applicable	Not Regulated	Not Regulated
14.2. UN proper shipping name	Not Regulated	Not Regulated	Not Regulated
14.3. Transport hazard class(es)	**DOT Hazard Class:** Not Applicable	**IMDG:** Not Applicable **Sub Class:** Not Applicable	**Air Class:** Not Applicable
14.4. Packing group	Not Applicable	Not Applicable	Not Applicable

14.5. Environmental hazards

SDS Revision Date: **09/18/2015**

IMDG Marine Pollutant: No

14.6. Special precautions for user

No further information

15. Regulatory information

Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

Toxic Substance Control Act (TSCA) All components of this material are either listed or exempt from listing on the TSCA Inventory.

WHMIS Classification D2A

US EPA Tier II Hazards

Fire: No
Sudden Release of Pressure: No
Reactive: No
Immediate (Acute): Yes
Delayed (Chronic): No

EPCRA 311/312 Chemicals and RQs (lbs):

Copper (5,000.00)

EPCRA 302 Extremely Hazardous:
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:

Aluminum

Copper

Proposition 65 - Carcinogens (>0.0%):

Beryllium

Proposition 65 - Developmental Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%):

Aluminum

Copper

Magnesium

Silicon

Pennsylvania RTK Substances (>1%):

Aluminum

Copper

Magnesium

Silicon

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H250 Catches fire spontaneously if exposed to air.

H260 In contact with water releases flammable gases which may ignite spontaneously.

H261 In contact with water releases flammable gases.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

H413 May cause long lasting harmful effects to aquatic life.

Midalloy believes that the information contained in this SDS is accurate. However, Midalloy does not express or imply any warranty with respect to this information.

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