

*Material Safety Data Sheet***METGLAS[®] 2714A Cobalt Based Alloy****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****PRODUCT NAME:** METGLAS[®] 2714A Cobalt Based Alloy**OTHER/GENERIC NAMES:** 2714AZ Ribbon
2714A Ribbon is the magnetic component of the following:
MagAmp Square Loop Core
MagnaPerm[™] Flat Loop Core**PRODUCT USE:** Manufacture of electric transformers**MANUFACTURER:** Metglas[®], Inc.
440 Allied Dr.
Conway, SC - 29526**FOR MORE INFORMATION CALL:**
(Monday-Friday, 8:00am-5:00pm)
1-800-581-7654**IN CASE OF EMERGENCY CALL:**
(24 Hours/Day, 7 Days/Week)
1-800-581-7654 or Chemtrec 1-800-424-9300**2. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Boron	7440-42-8	1 - 5
Cobalt	7440-48-4	75 - 90
Iron	7439-89-6	7 - 13
Nickel	7440-02-0	1 - 5
Silicon	7440-21-3	7 - 13

Trace impurities and additional material names not listed above may also appear in Section 15 toward the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: A silver to gray metallic foil. As shipped, the primary hazard is the sharp edges of the product. Some individuals may develop allergic skin reactions after repeated handling. If melted in a fire, toxic fumes may be released.

POTENTIAL HEALTH HAZARDS

SKIN: Handling of sharp edges may cause cuts. Repeated contact may cause allergic skin reaction resulting in irritation or dermatitis.

EYES: Not a normal route of entry. Solid particles generated by grinding and sanding may cause irritation.

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INHALATION: Vapors and fumes resulting from the grinding, sanding, cutting and/or welding of this material are harmful if inhaled. Symptoms may include irritation of throat and respiratory tract. Exposures may result in "metal fume fever" which can produce flu-like symptoms. Repeated exposure may result in allergic reactions that may include asthma in some individuals.

INGESTION: Not a route of entry.

DELAYED EFFECTS: Repeated inhalation of vapors and fumes may result in toxic effects to the lungs. Cobalt and cobalt compounds and nickel and nickel compounds have caused cancer in laboratory animals and should be treated as a 'possible' carcinogen. At present there is no reliable evidence that cobalt or nickel metal has caused cancer in humans. Long term nickel exposure may affect kidney function.

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
Cobalt	None	2b - possible carcinogen	None
Nickel	Suspect carcinogen	2b - possible carcinogen	None

4. FIRST AID MEASURES

SKIN: Wash hands with soap and water.

EYES: For irritation caused by particles of dust flush eyes with running water. Seek medical assistance if irritation persists.

INHALATION: Remove to fresh air immediately. If breathing is difficult, get immediate medical assistance. Oxygen may be given by a person trained and qualified to administer it.

INGESTION: Not a route of entry.

ADVICE TO PHYSICIAN: Treat symptomatically.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: None
FLASH POINT METHOD: Not applicable
AUTOIGNITION TEMPERATURE: Not applicable
UPPER FLAME LIMIT (volume % in air): Not applicable
LOWER FLAME LIMIT (volume % in air): Not applicable
FLAME PROPAGATION RATE (solids): Not determined.
OSHA FLAMMABILITY CLASS: None

EXTINGUISHING MEDIA:

Use any standard agent for surrounding fire but flooding amounts of water is recommended if the metallic ribbon starts to burn.

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UNUSUAL FIRE AND EXPLOSION HAZARDS:

Product may burn if involved in a structural fire.

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Toxic and irritating vapors may be released if the product melts or burns in a fire. Use self-contained respiratory protection.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE:

Material is shipped as an article. Pick up and place into proper storage. Use caution in handling as edges are very sharp.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)

Handle with care. Edges of material are very sharp.

STORAGE RECOMMENDATIONS:

Store in a facility that will protect product from physical damage and/or contamination with foreign material. (Do not exposure to moisture or any other substance.)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

Use mechanical ventilation when cutting, grinding, sanding and/or welding product.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:

Wear cut-resistant gloves.

EYE PROTECTION:

Wear safety glasses when grinding, sanding, cutting and/or welding product.

RESPIRATORY PROTECTION:

If necessary to meet exposure limits listed in section 8, wear an air-purifying respirator during grinding, sanding, cutting and/or welding activities.

ADDITIONAL RECOMMENDATIONS:

A safety shower, eyewash or another source of running water should be available in areas where grinding, sanding, cutting and/or welding operations take place.

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<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
Cobalt	0.02 mg/m ³ (TWA)	0.1 mg/m ³ (TWA)	***End of shift: 15 ug/l - urine 1 ug/l - blood
Iron	5 mg/m ³ (TWA) as iron oxide	10 mg/m ³ (TWA) as iron oxide fume	None
Nickel	1.5 mg/m ³ (TWA) inhalable fraction	1 mg/m ³ (TWA)	None
Silicon	10 mg/m ³ (TWA)	15 mg/m ³ (TWA) as total dust. 5 mg/m ³ (TWA) as respirable dust.	None

* = Limit established by Honeywell International, Inc.

** = Workplace Environmental Exposure Level (AIHA).

*** = Biological Exposure Index (ACGIH).

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

None

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	A shiny silver to gray metallic ribbon.	
PHYSICAL STATE:	Solid	
MOLECULAR WEIGHT:	Metal alloy mixture	
CHEMICAL FORMULA:	Metal alloy mixture	
ODOR:	None	
SPECIFIC GRAVITY (water = 1.0):	7.59	
SOLUBILITY IN WATER (weight %):	None	
pH:	Not applicable	
CURIE TEMPERATURE:	437 °F (225 °C)	
CRYSTALLIZATION TEMP:	1022 °F (550 °C)	
VAPOR PRESSURE:	Not applicable	
VAPOR DENSITY (air = 1.0):	Not applicable	
EVAPORATION RATE:	Not applicable	COMPARED TO:
% VOLATILES:	None	
FLASH POINT:	None	

(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY**NORMALLY STABLE? (CONDITIONS TO AVOID):**

Normally stable.

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INCOMPATIBILITIES:

Product can be attacked by moisture and corrosive materials.

HAZARDOUS DECOMPOSITION PRODUCTS:

Toxic vapors and metallic fumes may be released if melted or ignited in a fire (see section 3).

HAZARDOUS POLYMERIZATION:

Not applicable.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

Cobalt: LD₅₀ (oral, rat) 6.17 g/kg Cobalt may cause both dermal and respiratory sensitization.

Iron: LD₅₀ (oral, rat) 30 g/kg

Nickel: LD₅₀ (dermal, rabbit) >2 g/kg Nickel may cause dermal sensitization.

Silicon: LD₅₀ (oral, rat) 3.16 g/kg

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Cobalt: IARC lists cobalt as a class 2b possible carcinogen based on animal test data.

Nickel: IARC lists cobalt as a class 2b possible carcinogen based on animal test data. Listed as a 'suspect carcinogen by NTP. Chronic inhalation may cause pneumoconiosis and kidney effects.

Silicon: Repeated inhalation of silicon may cause lung effects.

OTHER DATA:

None

12. ECOLOGICAL INFORMATION

Not anticipated to present an ecological hazard.

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? No

If yes, the RCRA ID number is:

OTHER DISPOSAL CONSIDERATIONS: Observe all Federal, State, and Local Environmental regulations. Some local regulations may restrict disposal of metallic waste based on composition. Recycling of metallic products is recommended where recycling programs are available.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT PROPER SHIPPING NAME: Not regulated

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US DOT HAZARD CLASS: Not regulated
US DOT ID NUMBER: Not regulated

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION**TOXIC SUBSTANCES CONTROL ACT (TSCA)**

TSCA INVENTORY STATUS: An article manufactured from ingredients listed on the TSCA Inventory.
OTHER TSCA ISSUES: None

SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

<u>INGREDIENT NAME</u>	<u>SARA/CERCLA RQ (lb)</u>	<u>SARA EHS TPQ (lb)</u>
Nickel	100	None

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Immediate

SARA 313 TOXIC CHEMICALS:

The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
Cobalt	None
Nickel	None

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
Cobalt	75 - 90	Listed as California Proposition 65 carcinogen.
Nickel	1 - 5	Listed as California Proposition 65 carcinogen.

ADDITIONAL REGULATORY INFORMATION:

This product can be exported under the Export Control Classification Number: EAR99. This product cannot be exported to the following countries: Cuba, Libya, Iraq, Iran and Sudan.

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WHMIS CLASSIFICATION (CANADA):

D2B (sensitizer) Basis: Product as shipped.

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

FOREIGN INVENTORY STATUS:

Article: Ingredients are listed on Canadian DSL and European EINECS.

16. OTHER INFORMATION

OTHER INFORMATION: Contact Metglas[®], Inc. if you have specific questions regarding the handling of or applications for this product.

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Date	Rev. Number	Revision Description
October 2003	00	Initial release
02/06/13	01	Content review per J. Schwindel (system revised to maintain all Material Safety Data Sheets within ISODOC system and require minimum, a three year content review)

Issue Date: October 2003	Rev. Date: 02/06/13	Confidential	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<u>HS&E Leader</u> J. Schwindel	<u>Quality Manager</u> J. Smith			