39003 39001 39008
39016 39015 39009
39002 39005
39017 39006

Alcoa Inc.



**Material Safety Data Sheet**
According to 91/155 EC

Printing date 11/21/2000 Reviewed on 11/21/2000

* **1 Identification of substance:**

· **Product Name: FOIL AND SHEET, PLAIN AND COATED** **980CDN**
· **Other Designations:**
Alloys 1100, 1145, 3003, 7072, Coated web and fin stock scrap

· **Manufacturer/Supplier:**
Alcoa Inc.
201 Isabella Street
Pittsburgh, PA 15212-5858 USA
Health & Safety: +1-412-553-4649

Alcoa Inc.
Lebanon Works
3000 State Drive
Lebanon, PA 17042 USA
+1-717-273-7661

· **Emergency Information:**
USA: Chemtrec: +1-703-527-3887 +1-800-424-9300 ALCOA: +1-412-553-4001

* **2 Composition/Data on components:**

| CAS No. | Components: | |
|---|---|---|
| 7429-90-5 | Aluminum | >96.7 % |
| 7439-96-5 | manganese | <1.6 % |
| 7440-66-6 | Zinc | <1.4 % |
| | Coatings* | 0-15 % |

· **Additional information**
Additional compounds which may be formed (during processing) are listed in Section 8.
* Coatings include vinyl, epoxy, polyester, adhesives and inks.

* **3 Hazards identification**

· **EMERGENCY OVERVIEW:**
Non-flammable as supplied.
Small chips, fine turnings and dust from processing may ignite readily. Explosion/fire hazards may be present when (See Sections 5, 7 and 10 for additional information):
* Dust or fines are dispersed in the air.
* Chips, fines or dust are in contact with water.
* Fines or dust are in contact with other metal oxides (e.g., rust).
* Molten metal is in contact with water/moisture or other metal oxides.

Combustion of the coatings can generate toxic and irritating gases.

· **Potential Health Effects**
(if processing occurs which generates dust/fumes):

(Contd. on page 2)


16 pgs

**Material Safety Data Sheet**
According to 91/155 EC

Printing date 11/21/2000 Reviewed on 11/21/2000

**Product Name: FOIL AND SHEET, PLAIN AND COATED** **980CDN**

(Contd. of page 1)

· **EYES:** Can cause irritation to the eyes.
· **SKIN:** Can cause skin irritation.
· **INHALATION:**
Can cause upper respiratory tract irritation or metal fume fever.
Prolonged or repeated inhalation may cause lung damage.

· **Chemical ingredient and possible processing hazards:**
HEALTH EFFECTS OF INGREDIENTS:

Manganese dust or fumes: Chronic overexposures: Can cause inflammation of the lung tissues, scarring of the lungs (pulmonary fibrosis), central nervous system damage, Secondary Parkinson's Disease and reproductive harm in males.

Aluminum dust/fines and fumes: Low health risk by inhalation. ACGIH: Listed as a nusiance dust (milling, cutting, grinding).

HEALTH EFFECTS OF ADDITIONAL COMPOUNDS WHICH MAY BE FORMED:

Manganese oxide fumes: Can cause irritation of the eyes, skin, and respiratory tract. Acute overexposures: Can cause nausea, fever, chills, shortness of breath and malaise (metal fume fever).

Zinc oxide fumes: Can cause irritation of upper respiratory tract. Acute overexposures: Can cause nausea, fever, chills, shortness of breath and malaise (metal fume fever). Zinc oxide dust: Expected to be a low health risk by inhalation.

Alumina: Low health risk by inhalation. ACGIH: Listed as a nuisance dust.

Combustion of the coatings can generate hydrogen chloride.

Hydrogen chloride: Can cause severe irritation and corrosive burns of eyes, skin and upper respiratory tract. Acute overexposures: Can cause fluid in the lungs (pulmonary edema).

· **Hazard description:**
· **Medical conditions aggravated by exposure to the product:**
Asthma, chronic lung disease, and skin rashes.
Parkinson's disease
· **Information pertaining to particular dangers for man and environment**
· See item 11.

## 4 First aid measures

· **After inhalation**
Remove to fresh air.
Check for clear airway, breathing, and presence of pulse.
Provide cardiopulmonary resuscitation for persons without pulse or respirations.
Consult a physician.
· **After skin contact**
Wash with soap and water for at least 15 minutes.
Consult a physician if irritation persists.

(Contd. on page 3)

**Material Safety Data Sheet**
According to 91/155 EC

Printing date 11/21/2000 Reviewed on 11/21/2000

**Product Name: FOIL AND SHEET, PLAIN AND COATED** 980CDN

(Contd. of page 2)

· **After eye contact**
Flush eyes with plenty of water or saline for at least 15 minutes.
Consult a physician.

## 5 Fire fighting measures

· **Suitable extinguishing agents**
Use Class D extinguishing agents on fines, dust or molten metal.
Use coarse water spray on chips and turnings.
· **For safety reasons unsuitable extinguishing agents**
DO NOT use halogenated extinguishing agents on small chips/fines.

DO NOT use water in fighting fires around molten metal.

· **Special hazards caused by the material, its products of combustion or resulting gases:**
This product does not present fire or explosion hazards as shipped. Small chips, fine turnings, sawings, buffing fines, and dust may ignite readily.

May be a potential hazard under the following conditions:
* Dust clouds may be explosive. Even a minor dust cloud can explode violently.
* Chips, fines and dust in contact with water can generate flammable/explosive hydrogen gas. These gases could present an explosion hazard in confined or poorly ventilated spaces.
* Fines and dust in contact with certain metal oxides (e.g., rust). A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source.
* Molten metal in contact with water/moisture or other metal oxides (e.g., rust). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with other metal oxides can initiate a thermite reaction.

· **Protective equipment:**
Fire fighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

* 

## 6 Accidental release measures

· **Person-related safety precautions:**

Wear protective clothing.

· **Measures for environmental protection:** No special measures required.
· **Measures for cleaning/collecting:**

Collect scrap for recycling.
If molten: Contain the flow using dry sand or salt flux as a dam. Do not use shovels or hand tools to halt the flow of molten metal. Allow the spill to cool before remelting as scrap.

**Material Safety Data Sheet**
According to 91/155 EC

Printing date 11/21/2000 Reviewed on 11/21/2000

**Product Name: FOIL AND SHEET, PLAIN AND COATED** 980CDN

* 7 Handling and storage

· **Handling**
· **Information for safe handling:**
Keep material dry.
Prevent formation of dust.
Avoid contact with sharp edges or heated metal.
Hot and cold aluminum are not visually different.
· **Information about protection against explosions and fires:**
REQUIREMENTS FOR PROCESSES WHICH GENERATE DUSTS OR FINES

If processing of this product generates dust or if extremely fine particulate is generated, obtain and follow the safety procedures and equipment guides contained in Aluminum Association Bulletin F-1 and National Fire Protection Association (NFPA) brochures listed in Section 16.

Use non-sparking handling equipment. Cover and reseal partially empty containers. Provide grounding and bonding where necessary to prevent accumulation of static charges during metal dust handling and transfer operations (See Section 15).

Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used. Dust collection systems must be dedicated to aluminum dust only and should be clearly labeled as such. Do not co-mingle fines of aluminum with fines of iron, iron oxide (rust) or other metal oxides.

Do not allow chips, fines or dust to contact water, particularly in enclosed areas.

Avoid all ignition sources. Good housekeeping practices must be maintained.

REQUIREMENTS FOR REMELTING OF SCRAP MATERIAL AND/OR INGOT

Molten aluminum and water can be an explosive combination. The risk is greatest when there is sufficient molten metal to entrap or seal off the water.

Water and other forms of contamination on or contained in aluminum scrap or remelt ingot are known to have caused explosions in melting operations. While the products may have minimal surface roughness and internal voids, there remains the possibility of moisture contamination or entrapment. If confined, even a few drops of water can lead to violent explosions.

All tooling and containers which come in contact with molten metal must be preheated or specially coated and rust free. Molds and ladles must be preheated or oiled prior to casting. Any surfaces that may contact molten metal (i.e., concrete) should be specially coated.

Drops of molten aluminum in water (e.g. from plasma arc cutting), while not normally an explosion hazard, can generate enough flammable hydrogen gas to present an explosion hazard. Circulation of the water

(Contd. on page 5)

**Material Safety Data Sheet**
According to 91/155 EC

Printing date 11/21/2000 Reviewed on 11/21/2000

**Product Name: FOIL AND SHEET, PLAIN AND COATED** **980CDN**

(Contd. of page 4)

and removal of the metal particles minimize the hazards.

During melting operations, the following minimum guidelines should be observed:
* Inspect all materials prior to furnace charging and completely remove surface contamination such as water, ice, snow, deposits of grease and oil or other surface contamination resulting from weather exposure, shipment, or storage.
* Store materials in dry, heated areas with any cracks or cavities pointed downwards.
* Preheat and dry large items such as ingot adequately before charging into a furnace containing molten aluminum. This is typically done by use of a drying oven or homogenizing furnace. The drying cycle should bring the metal temperature of the coldest item of the batch to 200°C and then hold at that temperature for 6 hours.

· **Storage**
· **Requirements to be met by storerooms and receptacles:**
No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** None.

* 8 **Exposure controls and personal protection**

· **Additional information about design of technical systems:**
Use with adequate explosion-proof ventilation to reduce dust or vapor concentrations.

**Components with limit values that require monitoring at the workplace:**
7429-90-5 Aluminum
TLV (Canada): 5 mg/m³
ACGIH TLV (USA): 5*, 10** mg/m³
as Al; * Welding fumes, ** Metal dust
OSHA PEL (USA): 15*; 5** mg/m³
*Total dust **Respirable fraction

7439-96-5 manganese
TLV (Canada): 5 mg/m³
ACGIH TLV (USA): 0.2 mg/m³
OSHA PEL (USA): Short-term value: C 5 mg/m³
Manganese fume & elemental, as Mn

· **Additional Occupational Exposure Limit Values for possible hazards during processing:**
1344-28-1 Aluminum oxide (non fibrous)
TLVEV (Canada): 10 mg/m³
ACGIH TLV (USA): 10 mg/m³
OSHA PEL (USA): 15*;5** mg/m³
*Total dust **Respirable fraction

7647-01-0 Hydrogen chloride
TLV (Canada): 7.4 mg/m³, 5 ppm
ACGIH TLV (USA): Short-term value: C 5 ppm
OSHA PEL (USA): Short-term value: C 7 mg/m³, C 5 ppm

Manganese inorganic compounds
ACGIH TLV (USA): 0.2 mg/m³

(Contd. on page 6)

**Material Safety Data Sheet**
According to 91/155 EC

Printing date 11/21/2000 Reviewed on 11/21/2000

**Product Name: FOIL AND SHEET, PLAIN AND COATED** 980CDN

(Contd. of page 5)

as Mn
OSHA PEL (USA): Short-term value: 5 mg/m³
as Mn, Ceiling

1314-13-2 zinc oxide
TLV (Canada): Short-term value: 10 mg/m³
Long-term value: 5 mg/m³
ACGIH TLV (USA): Short-term value: 10* mg/m³
Long-term value: 5*; 10** mg/m³
* fume; ** dust
OSHA PEL (USA): 15*; 5** mg/m³
*Total dust **Respirable dust or fume

· **Personal protective equipment**
· **Breathing equipment:**
Use suitable respiratory protective device in case of insufficient ventilation.
Short term filter device:
Filter NIOSH N95.
Acid gas cartridges - hydrogen chloride
· **Protection of hands:** Wear appropriate gloves to avoid any skin injury.
· **Eye protection:**
Safety glasses with full side shields or goggles recommended.
· **Body protection:**
Personnel who handle and work with molten aluminum should utilize primary protective clothing like face shields, fire resistant tapper's jackets, leggings, spats and similar equipment to prevent burn injuries. In addition to primary protection, secondary or day-to-day work clothing that is fire resistant and sheds metal splash is recommended for use with molten aluminum.

* 9 **Physical and chemical properties:**

· **Form:** Solid.
· **Colour:** Various colours
· **Odour:** Odourless

| | Value/Range | Unit | Method |
|---|---|---|---|
| · **Change in condition** | | | |
| · **Melting point/Melting range:** | 482-660 | ° C | |
| · **Boiling point/Boiling range:** | Not applicable | | |
| · **Flash point:** | Not applicable | | |
| · **Self igniting:** | Product is not selfigniting. | | |

· **Danger of explosion:**
Product does not present an explosion hazard.

· **Density:** at 20 ° C 2.63-3.12 g/cm³

· **Solubility in / Miscibility with**
· **Water:** Insoluble

· **pH-value:** Not applicable

· **Solvent content:**

(Contd. on page 7)

**Material Safety Data Sheet**
According to 91/155 EC

Printing date 11/21/2000 Reviewed on 11/21/2000

**Product Name: FOIL AND SHEET, PLAIN AND COATED** **980CDN**

(Contd. of page 6)

· **Organic solvents:** 0.0 %

· **Solids content:** 100.0 %

## 10 Stability and reactivity

· **Thermal decomposition / conditions to be avoided:**
Stable under normal conditions of use, storage, and transportation as shipped.
· **Reactions**
Chips, fines, dust and molten metal are considerably more reactive with the following:
* With water: Slowly generates flammable/explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Molten metal can react violently/explosively with water or moisture, particularly when the water is entrapped.
* With heat: Oxidizes at a rate dependent upon temperature and particle size.
* With strong oxidizers: Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) when heated or molten.
* With acids and alkalis: Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).
* With halogenated compounds: Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided aluminum.
* With iron oxide (rust) and other metal oxides (e.g., copper and lead oxides): A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation. Molten aluminum can react violently with iron oxide without external ignition source.
* With iron powder and water: Explosive reaction forming hydrogen gas when heated above 800°C.
· **Dangerous products of decomposition:**
Combustion of the coatings can generate toxic and irritating gases.
Carbon monoxide and carbon dioxide
Hydrogen chloride (HCl)
Halogenated hydrocarbons
Formaldehyde
· **Additional information:** Non-corrosive.

* 

## 11 Toxicological information

· **Acute toxicity:**
**LD/Lc50 values that are relevant for classification:**
7439-96-5 manganese
Oral: LD50: 9000 mg/kg (rat)
· **Primary irritant effect:**
· **on the skin:** Can cause skin irritation.
· **on the eye:** Can cause irritation to the eyes.
· **Inhalation:** Can cause upper respiratory tract irritation.

## 12 Ecological information:

· **General notes:** Generally not hazardous for water.

**Material Safety Data Sheet**
According to 91/155 EC

Printing date 11/21/2000 Reviewed on 11/21/2000

**Product Name: FOIL AND SHEET, PLAIN AND COATED** 980CDN

* **13 Disposal considerations**

· **Product:**
· **Recommendation** Reuse or recycle material whenever possible.

· **Uncleaned packagings:**
· **Recommendation:** No special measures required.

**14 Transport information**

· **DOT regulations:**
· **Remarks:**
U.S.A. DOT: Not regulated - Enter the proper freight classification. "MSDS Number," and "Product Name" on the shipping paperwork.

Canadian TDG Hazard Class & PIN: Not regulated.

· **Land transport ADR/RID (cross-border)**
· **ADR/RID class:** -
· **Remarks:** Not regulated

· **Maritime transport IMDG:**
· **IMDG Class:** -
· **Marine pollutant:** No
· **Remarks:** Not regulated

· **Air transport ICAO-TI and IATA-DGR:**
· **ICAO/IATA Class:** -
· **Remarks:** Not regulated

* **15 Regulations**

· **U.S. Federal Regulations:**
· **TSCA STATUS:**
All components of this product are listed on the TSCA inventory.
· **OTHER INFORMATION:**
All electrical equipment must be suitable for use in hazardous atmospheres involving aluminium powder in accordance with 29 CFR 1910.307. The National Electrical Code, NFPA 70, contains guidelines for determining the type and design of equipment and installation which will meet this requirement.
In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone-depleting chemicals.

· **National regulations**

· **Water hazard class:** Generally not hazardous for water.
· **International Regulations:**
· **CANADIAN DOMESTIC SUBSTANCES LIST:**
All components of this product are listed on the Canadian DSL.
· **AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES:**
All components of this product are listed on the AISC.

**Material Safety Data Sheet**
According to 91/155 EC

Printing date 11/21/2000 Reviewed on 11/21/2000

**Product Name: FOIL AND SHEET, PLAIN AND COATED** 980CDN

* **16 Other information:**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing MSDS:**
Hazardous Materials Control Committee
Alcoa Inc., 201 Isabella Street, Pittsburgh, PA 15212-5858 USA
21.11.00 Supersedes 05.11.97

· **Appendix:**
- NFPA 65, Standard for Processing and Finishing of Aluminum (NFPA phone: +1-800-344-3555)
- NFPA 651, Standard for Manufacture of Aluminum and Magnesium Powder
- Aluminum Association's Bulletin F-1, "Guidelines for Handling Aluminum Fines Generated During Various Aluminum Fabricating Operations." The Aluminum Association, 900 19th Street, N.W., Washington, DC 20006.
- Aluminum Association, "Guidelines for Handling Molten Aluminum, The Aluminum Association, 900 19th Street, N.W., Washington, DC 20006.
- NFPA 70, Standard for National Electrical Code (Electrical Equipment, Grounding and Bonding)
- NFPA 77, Standard for Static Electricity
- Guide to Occupational Exposure Values 2000, Compiled by the American Conference of Governmental Industrial Hygienists (ACGIH).
- Documentation of the Threshold Limit Values and Biological Exposure Indices, Sixth Edition, 1991, Compiled by the American Conference of Governmental Industrial Hygienists, Inc. (ACGIH).
- NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, June 1994.
- Dangerous Properties of Industrial Materials, Sax, N. Irving, Van Nostrand Reinhold Co., Inc., 1984.
- Patty's Industrial Hygiene and Toxicology: Volume II: Toxicology, 4th ed., 1994, Patty, F. A.; edited by Clayton, G. D. and Clayton, F. E.: New York: John Wiley & Sons, Inc.
- TOMES CPS(TM), MICROMEDEX, Inc., 1999

· **LEGEND:**

| | |
|---|---|
| ACGIH | American Conference of Governmental Industrial Hygienists |
| AICS | Australian Inventory of Chemical Substances |
| CAS | Chemical Abstract Services |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Regulations |
| CPR | Cardio-pulmonary Resusitation |
| DOT | Department of Transportation |
| DSL | Domestic Substances List (Canada) |
| EINECS | European Inventory of Existing Commercial Chemical Substances |
| ENCS | Japan - Existing and New Chemical Substances |
| EWC | European Waste Catalogue |
| EPA | Environmental Protective Agency |
| IARC | International Agency for Research on Cancer |
| LC | Lethal Concentration |
| LD | Lethal Dose |
| MAK | Maximum Workplace Concentration (Germany) "maximale Arbeitsplatz-Konzentration" |
| NDSL | Non-Domestic Substances List (Canada) |

(Contd. on page 10)

**Material Safety Data Sheet**
According to 91/155 EC

Printing date 11/21/2000 Reviewed on 11/21/2000

**Product Name: FOIL AND SHEET, PLAIN AND COATED** 980CDN

(Contd. of page 9)

| | |
|---|---|
| NIOSH | National Institute for Occupational Safety and Health |
| NTP | National Toxicology Program |
| OEL | Occupational Exposure Limit |
| OSHA | Occupational Safety and Health Administration |
| PIN | Product Identification Number |
| RCRA | Resource Conservation and Recovery Act |
| SARA | Superfund Amendments and Reauthorization Act |
| STEL | Short Term Exposure Limit |
| TCLP | Toxic Chemicals Leachate Program |
| TDG | Transportation of Dangerous Goods |
| TLV | Threshold Limit Value |
| TSCA | Toxic Substances Control Act |
| TWA | Time Weighted Average |

m meter, cm centimeter, mm millimeter, in inch,
g gram, kg kilogram, lb pound, µg microgram,
ppm parts per million, ft feet

CDN

Additional for
39003 & 39016

**HUSSEY COPPER LTD.**
BY: HUSSEY COPPER CORP., GENERAL PARTNER
LEETSDALE, PA 15056

**M.S.D.S. HC-85-700**

DATE: 3/26/85
REV. DATE: 12/15/88
REVISION NO.: 3

## MATERIAL SAFETY DATA SHEET

### *SECTION I*

**MANUFACTURER'S NAME:** HUSSEY COPPER LTD.

**ADDRESS:** WASHINGTON STREET, LEETSDALE, PA 15056

**EMERGENCY PHONE NO.:** 412-857-4200

**CHEMICAL NAME AND SYNONYMS:** COPPER, NICKEL

**TRADE NAME AND SYNONYMS:** CUPRO NICKEL, 90/10, 70/30, CDA ALLOY 706, 715

**CHEMICAL FAMILY:** COPPER AND NICKEL

### *SECTION II - HAZARDOUS INGREDIENTS*

| INGREDIENT | PERCENT 706 | PERCENT 715 | CAS NO. | OSHA-PEL/ACGIH-TLV |
|---|---|---|---|---|
| * COPPER | 86.5 | 65.0 MIN | 7440-50-8 | |
| * NICKEL | 9.0-11.0 | 29.0-32.0 | 7440-02-0 | Exposure Levels |
| IRON | 1.0-1.75 | 1.0 MAX | IRON (Oxide) 1309-37-1 | See Section V |
| * MANGANESE | .75 MAX | .25-1.0 | 7439-96-5 | |

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GASES: If exposure to copper dust/fume are kept below Permissible Exposure Limits (PEL) / Threshold Limit Value (TLV) all trace elements should not pose any health risk.
* Chemical(s) listed as a toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

### *SECTION III - PHYSICAL DATA*

| | | |
|---|---|---|
| MELTING | Alloy 706/2010° (F) | Alloy 715/2140° (F) |
| Vapor Pressure (mm Hg.) | Not Applicable | Not Applicable |
| Solubility in Water | Negligible | Negligible |
| Specify Gravity ($H^2O = 1$) | 8.94 | 8.94 |

### *SECTION IV - FIRE AND EXPLOSION HAZARD DATA*

| | |
|---|---|
| Flash Point (Method Used) | Not Applicable * |
| Extinguishing Media | Not Applicable |
| Special Fire Fighting Procedures | Not Applicable |
| Unusual Fire and Explosion Hazards | Not Applicable |

* Under normal conditions. Heavy concentrations of fine copper dust may cause flash fire if exposed to ignition source.

## SECTION V - HEALTH HAZARD DATA

EXPOSURE LEVELS: Copper dust and mists - OSHA (PEL): TWA = 1 MG/M³. ACGIH (TLV): TWA = 1 MG/M³.
Copper fumes - OSHA (PEL): TWA = 0.1 MG/M³. ACGIH (TLV): TWA = 0.2 MG/M³.
Nickel - OSHA (PEL): TWA = 1 MG/M³. ACGIH (TLV): TWA = 1 MG/M³. *
Iron Oxide fumes ($FE_2O_3$) - OSHA (PEL): TWA = 10 MG/M³. ACGIH (TLV): TWA = 5 MG/M³.
Manganese fume - OSHA (PEL): TWA = 1 MG/M³. STEL = MG/M³.
Manganese dust - OSHA (PEL): Ceiling = 5 MG/M³.

CARCINOGENICITY: Nickel is listed by NTP as an anticipated human carcinogen and by IARC as a probable human carcinogen. Other ingredients not listed.

EFFECT OF OVEREXPOSURE: Gingivitis, stomatitis, sneezing, cough, congestion, nausea, metallic tastes, chills, fever, muscular pain, marked thirst, irritation of upper respiratory tract.

EMERGENCY FIRST AID PROCEDURES: Skin: Flush throughly with water.
Eyes: Flush with water, call Physician.
Ingestion: Call Physician.
Inhalation: Remove victim to fresh air, call Physician.
Nickel and Copper fumes, dusts and mists are listed by OSHA as air contaminants (29 CFR 1910.1000 Sub-part Z)

PRIMARY ROUTE(S) OF ENTRY: Inhalation.

## SECTION VI - REACTIVITY DATA

STABILITY: Stable

INCOMPATABILITY (material to avoid): (Dust and fumes) = acetylane, chlorine - (metals) = acids and oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Copper fume/dust. Nickel fume/dust. Iron Oxide fume. Manganese fume/dust.

HAZARDOUS POLYMERIZATION: Will not occur.

## SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Dust or Fume - wear respirator follow OSHA use instructions, shovel up, or vacuum and place in approved DOT container and seal. Wash contaminated clothing.

WASTE DISPOSAL METHOD: Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Follow federal, state and local regulations for disposal.

## SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify Type): Dust or fume - NIOSH/MSHA approved.
Dust/fume respirator.
VENTILATION - Local Exhaust: Dust/fume - if exposure levels exceeded.

EYE PROTECTION: (dust) goggles.

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid breathing dust or fumes. Do not take internally. Preclude from exposure to fume and dust those individuals with diseases of the skin, sinuses and lungs.

Additional for 39003, 39016
39002 & 39017

# HUSSEY COPPER LTD.

BY: HUSSEY COPPER CORP., GENERAL PARTNER
LEETSDALE, PA 15056

M.S.D.S. HC-85-200

DATE: 3/26/85
REV. DATE: 4/21/86
REVISION NO.: 2

## MATERIAL SAFETY DATA SHEET

### SECTION I

| | |
|---|---|
| MANUFACTURER'S NAME: | HUSSEY COPPER LTD. |
| ADDRESS: | Washington Street LEETSDALE, PA. 15056 |
| EMERGENCY PHONE NO.: | 412-857-4200 |
| CHEMICAL NAME AND SYNONYMS: | COPPER/ZINC (yellow Brass) |
| TRADE NAME AND SYNONYMS: | Gilding, commercial bronze, red brass, low brass, cartridge brass, yellow brass, CDA Alloy 210, 220, 226, 230, 240, 260, 268 |
| CHEMICAL FAMILY: | COPPER AND ZINC |

### SECTION II – HAZARDOUS INGREDIENTS

| INGREDIENT | PERCENT | CAS NO. | OSHA-PEL/ACGIH-TLV |
|---|---|---|---|
| Copper | 96.0 to 65.0 | 7440-50-8 | Exposure Levels See Section V |
| Zinc | 4.0 to 35.0 | 7440-66-6 | |

HAZARDOUS MIXTURES OF OTHERS LIQUIDS, SOLIDS, OR GASES:

If exposure to copper and zinc dust/fume are kept below Permissible Exposure Limits (PEL)/ Threshold Limit Value (TLV) all trace elements should not pose any health risk.

### SECTION III – PHYSICAL DATA

| ALLOY | 210 | 220 | 226 | 230 | 240 | 260 | 268 |
|---|---|---|---|---|---|---|---|
| MELTING | 1920 | 1870 | 1840 | 1810 | 1770 | 1680 | 1660 |
| Vapor Pressure (mm Hg.) | Not applicable | | | | | | |
| Solubility in Water | negligible | | | | | | |
| Specific Gravity ($H^2$ O = 1) | 8.86 | 8.80 | 8.78 | 8.75 | 8.67 | 8.53 | 8.47 |

### SECTION IV – FIRE AND EXPLOSION HAZARD DATA

| | |
|---|---|
| Flash Point (Method Used) | Not applicable* |
| Extinguishing Media | Not Applicable |
| Special Fire Fighting Procedures | Not applicable |
| Unusual Fire and Explosion Hazards | Not applicable |

* Under normal conditions. Heavy concentrations of fine copper dust may cause flash fire if exposed to ignition source.

(over)

## SECTION V – HEALTH HAZARD DATA

**EXPOSURE LEVELS:** Copper dusts and mists - OSHA (PEL): TWA - 1MG/M$^3$, ACGIH (TLV): TWA - 1 MG/M$^3$. Copper fume - OSHA (PEL): TWA - 0.1 MG/M3, ACGIH (TLV): TWA - 0.2 MG/M$^3$. Zinc oxide fume - OSHA (PEL): TWA - 5 MG/M$^3$, ACGIH (TLV): TWA - 5 MG/M$^3$. STEL - 10 MG/M$^3$. Zinc oxide dust - ACGIH (TLV) TWA - 10 MG/M3 of total dust.

**CARCINOGENICITY:** Not listed as a carcinogenic in NTP or IARC monographs.

**EFFECT OF OVERDOSE:** Fume and dust - sneezing, cough, congestion, nausea, metallic tastes, chills, fever, muscular pain, marked thirst.

**EMERGENCY AND FIRST AID PROCEDURES:** Skin: Flush thoroughly with water. Eyes - flush with water, call Physician. Ingestion - drink water induce vomiting, call Physician. Inhalation - remove victim to fresh air, call Physician. Copper and Zinc Fume, dusts and mists are listed by OSHA as air contaminants.

**PRIMARY ROUTE(S) OF ENTRY:** Inhalation

## SECTION VI – REACTIVITY DATA

**STABILITY** - Stable

**INCOMPATABILITY** (material to avoid) : (Dust & Fume) acetylene, chlorine

**HAZARDOUS DECOMPOSITION PRODUCTS** : Copper Fume & dust/Zinc Fume & dust

**HAZARDOUS POLYMERIZATION** - Will Not Occur

## SECTION VII – SPILL OR LEAK PROCEDURES

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:**

Dust or Fume – wear respirator follow OSHA use instructions, shovel up, or vacuum and place in approved DOT container and seal. Wash contaminated clothing.

**WASTE DISPOSAL METHOD:**
Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Follow federal, state and local regulations for disposal.

## SECTION VIII – SPECIAL PROTECTION INFORMATION

**RESPIRATORY PROTECTION** (Specify Type) : dust or fume - NIOSH/MSHA approved dust/fume respirator

**VENTILATION** - Local Exhaust: dust/fume - if exposure levels exceeded.

**EYE PROTECTION:** (dust) goggles

## SECTION IX – SPECIAL PRECAUTIONS

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:** Avoid breathing dust or fumes. Do not take internally. Preclude from exposure to fume and dust those individuals with pulmonary and cardiac diseases.

Additional for 39001 & 39015

# Copper and Brass Sales INC

## MATERIAL SAFETY DATA SHEET
## ALUMINUM ALLOYS

| COMPANY | RE-ISSUE DATE | IDENTIFICATION NUMBER |
|---|---|---|
| Copper and Brass Sales, Inc.<br>17401 Ten Mile Road<br>East Detroit, Michigan 48021 | September 1, 1990 | N/A |

| TRADE NAME (Common Name or Synonym) | EMERGENCY PHONE NUMBER |
|---|---|
| Aluminum Alloys | 313-775-7710 |

| CHEMICAL NAME | FORMULA | DOT IDENTIFICATION NUMBER |
|---|---|---|
| Aluminum (does not include lithium and nickel alloys) | Al | N/A |

## I. INGREDIENTS

| MATERIAL OR COMPONENT<br>BASE METAL | CAS NUMBER | % COMPOSITION BY WEIGHT | ACGIH TWA (mg/m³) | OSHA 1910.1000 TWA (mg/m³) | WISHA PEL (mg/m³) |
|---|---|---|---|---|---|
| Aluminum, Al | 7429-90-5 | 80.0-99.7 | 10.0, as metal dust and oxide<br>5.0, as welding fume | 15.0, as total dust<br>5.0, as respirable fraction | 10.0, as metal dust and oxide<br>5.0, as welding fume |

| ALLOYING ELEMENT | CAS NUMBER | MAXIMUM % COMPOSITION BY WEIGHT 0.1-1.0 | 1.0-10.0 | 10.0-20.0 | ACIGIH TWA (mg/m³) | OSHA 1910.1000 TWA (mg/m³) | WISHA PEL (mg/m³) |
|---|---|---|---|---|---|---|---|
| Chromium, Cr | 7440-47-3 | W, P | | | 0.5, as metal | 1.0, as metal | 0.5, as metal |
| Cobalt, Co | 7440-48-4 | P | W | | 0.05, as dust and fume | 0.05, as fume and dust | 0.05, as fume and dust |
| Copper, Cu | 7440-50-8 | | W | P | 0.2, as fume<br>1.0, as dust | 0.1, as fume<br>1.0, as dust | 0.1, as fume<br>1.0, as dust |
| Iron, Fe | 1309-37-1 | | W, P | | 5.0, as oxide fume | 10.0, as oxide dust and fume | 5.0, as oxide dust and fume |
| Magnesium, Mg | 1309-48-4 | | W | P | 10.0, as oxide fume | 10.0, as total dust oxide fume<br>5.0, as respirable fraction oxide fume | 10.0, as total dust oxide fume<br>5.0, as respirable oxide fume |
| Manganese, Mn | 7439-96-5 | | W | | 1.0, as fume<br>3.0 STEL, as fume<br>5.0, as dust | 1.0, as fume | 5.0, Ceiling |
| Silicon, Si | 7440-21-3 | | | W, P | 10.0, as total dust | 10.0, as total dust<br>5.0, as respirable fraction | 10.0, as total dust<br>5.0, as respirable fraction |
| Silver, Ag | 7440-22-4 | P | | | 0.1, as metal | 0.01, as metal dust and fume | 0.01, as metal |
| Tin, Sn | 7440-31-5 | | P | | 2.0, as oxide and metal | 2.0, as oxide | 2.0, as oxide fume |
| Zinc, Zn | 1314-13-2 | | W, P | | 5.0, as oxide fume<br>10.0 STEL, as oxide fume<br>10.0, as total dust | 5.0, as oxide fume<br>10.0, as zinc oxide total dust<br>5.0, as zinc oxide respirable fraction | 5.0, as oxide fume<br>10.0 STEL, as oxide fume |

Key: W = Wrought aluminum (fabricated products)
P = Prime and ingot hardener aluminum
STEL = Short Term Exposure Limit
TWA = Time Weighted Average
PEL = Permissible Exposure Limit

Note: Aluminum alloys may be comprised of all or variations of the alloys shown here. In addition, the welding of aluminum alloys may produce the products listed in Section VII, #7. See Section VII, #8 for comments concerning aluminum scrap.

## II. PHYSICAL DATA

| MATERIAL IS (At Normal Conditions). | APPEARANCE AND ODOR |
|---|---|
| ☐ Liquid ☒ Solid ☐ Gas ☐ Other | Metallic appearance; no odor |

| ACIDITY/ALKALINITY | | | VAPOR PRESSURE (mm Hg at 20°C) |
|---|---|---|---|
| pH = NA | Melting Point 440-1215 °F<br>Boiling Point NA °F | Specific Gravity ($H_2O$ = 1) 2.5 - 2.9<br>Solubility in water (% by weight) nil | NA |

## III. PERSONAL PROTECTIVE EQUIPMENT

Appropriate personal protective equipment is required when melting, casting, machining, forging, or otherwise processing. The nature of the processing activity will determine what form of equipment is necessary, i.e., glasses, respirator, protective clothing, and ear protection.

## IV. EMERGENCY MEDICAL PROCEDURES

**For Skin contact,** remove particles by thoroughly washing with soap and water.

**For eye contact,** flush with water for at least 15 minutes. Get medical attention if irritation persists.

## V. HEALTH/SAFETY INFORMATION

**Health**

| | |
|---|---|
| Inhalation | Not likely unless material machined, welded or remelted. Short term overexposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of throat and nose. |
| Ingestion | Not likely. |
| Skin | Not likely. |
| Eyes | May irritate eyes when welding or plasma cutting. |

THRESHOLD LIMIT VALUE
See Ingredients Section.

**Fire and Explosion**

| Flash Point | AUTO IGNITION TEMPERATURE | FLAMMABLE LIMITS IN AIR | EXTINGUISHING MEDIA |
|---|---|---|---|
| NA °F | NA °F | Lower NA %<br>Upper % | Dry powder or sand. |

UNUSUAL FIRE AND EXPLOSION HAZARDS
Damp aluminum dust may spontaneously heat with liberation of hydrogen to form explosive air mixtures. SEE ADDITIONAL INFORMATION.

EXTINGUISHING MEDIA NOT TO BE USED
Do not use water or halogen on dust fires.

**Reactivity**

STABILITY
☒ Stable ☐ Unstable

INCOMPATABILITY (Materials to Avoid)
Anhydrous bromine.

CONDITIONS TO AVOID
See Fire and Explosion Section. SEE ADDITIONAL INFORMATION.

HAZARDOUS DECOMPOSITION PRODUCTS
See Fire and Explosion Section. SEE ADDITIONAL INFORMATION.

## VI. ENVIRONMENTAL

SPILL OR LEAK PROCEDURES
NA

WASTE DISPOSAL METHODS*
Used or unused product should be tested to determine hazard status and disposal requirements under federal, state, or local laws and regulations.

*Disposer must comply with Federal, State and Local disposal or discharge laws.

## VII. ADDITIONAL INFORMATION

1. Halogen acids and sodium hydroxide in contact with aluminum may generate explosive mixtures of hydrogen.
2. Finely divided aluminum will form explosive mixtures in air. It will also form explosive mixtures in air in the presence of bromates, iodates, or ammonium nitrate.
3. When remelting aluminum scrap, entrapped moisture or the presence of strong oxidizers such as ammonium nitrate could cause an explosion. This applies to the collection of moisture in sow cavities as well. Moisture must be driven off prior to remelting.
4. Do not touch cast aluminum metal or heated aluminum product without knowing metal temperature. Aluminum experiences no color change during heating. If metal is hot and touched, burns can result.
5. Aluminum powder must be packaged and shipped as a Flammable Solid, UN1396.
6. Hard alloy ingots in the 2000 and 7000 series must be stress-relieved to prevent explosion when sawed.
7. The welding of aluminum alloys may generate carbon monoxide, carbon dioxide, ozone, nitrogen oxides, infrared radiation and ultra-violet radiation.



Data sheets of individual manufacturers may be obtained by contacting Copper & Brass Sales, Inc., 17401 Ten Mile Rd., E. Detroit, MI 48021.