

## BRASS ALLOYS MATERIAL SAFETY DATA SHEET

<p>MATERIAL IDENTIFICATION AND USE</p> <p>MATERIAL NAME: <b>BRASS ALLOYS</b></p> <p>SYNONYMS: Includes all products, Bar, Plate and Tubular Products.</p> <p>WHMIS CLASS: D2A, D2B</p>		<p>SUPPLIER: RUSSEL METALS INC.</p> <p>ADDRESS: 1900 MINNESOTA COURT, MISSISSAUGA, ONTARIO. CANADA. L5N 3C9.</p> <p>TEL: 905-819-7295 FAX: 905-819-7262</p> <p>FORM #: MSDS-07-2011 DATE: NOVEMBER, 2011</p>
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## 1. PRODUCT INFORMATION

MATERIAL NAME: BRASS ALLOYS

FORM #: MSDS-07-2011

DATE: NOVEMBER, 2011

MATERIAL USE: MANUFACTURE OF ARTICLES

## 2. HAZARDOUS INGREDIENTS

BASE METAL (ALL VALUES ARE EXPRESSED AS WEIGHT PERCENT AND ARE APPROXIMATES)

The exposure limit for copper-containing fumes has been established at 0.2 mg/m<sup>3</sup> with ACGIH's TWA. The individual complex compounds within the fume may have lower exposure limits than the general fume.

COMPONENT	C.A.S. NUMBER	TLV (ACGIH - mg/m <sup>3</sup> )	LD <sub>50</sub>	% WEIGHT
COPPER	7440-50-8	1.0 (Dust) 0.2 (Fume)	U	55-90.0
ZINC	7440-66-6	2.0 (as Zinc Oxide - Respirable)	U	Up to 45.0
TIN	7440-31-5	2.0 (Metal or Oxide)	U	Up to 4.0
LEAD	7439-92-1	0.05 (Elemental & Inorganic Compounds as Lead)	U	Up to 2.0

## 3. HAZARDS IDENTIFICATION

## GENERAL:

Brass alloys in their usual solid form and under normal conditions do not present an inhalation, ingestion, or contact health hazard or fire or explosion hazard. Operations such as welding, brazing, burning, grinding, cutting, heat treating, machining or similar operations may generate dusts, fumes and machine turnings that may create a health or fire or explosion hazard.

## ROUTES OF ENTRY:

None in its natural solid state.  
High concentrations of dusts or fumes may cause irritation to the eyes. Inhalation of metal fumes or dusts generated during welding, burning, grinding or machining may cause irritations of the respiratory tract. Flu-like symptoms such as fever and chills may occur a few hours after excessive exposure. Dusts or fumes can cause irritation to the skin with itching, dermatitis may occur.

## TARGET ORGANS:

Respiratory system, kidney, liver, central nervous system, eyes and skin.

## EFFECTS OF ACUTE EXPOSURE TO MATERIAL:

**COPPER & ZINC** (as Oxide): Inhalation overexposure to copper or zinc oxide may cause metal fume fever characterized by fever and chills (i.e. flu-like symptoms) which appear 4-6 hours after exposure with no long-term effects.

## EFFECTS OF CHRONIC EXPOSURE TO MATERIAL:

**LEAD**: Chronic exposures may cause lead poisoning that can affect the digestive system, nervous system, reproductive systems, muscles and joints. IARC lists lead and its inorganic compounds under its Group 2B category - "possibly carcinogenic to humans".  
**TIN**: Inhalation overexposures may cause a benign pneumoconiosis (stannosis) with few or no symptoms, which is reported not to be disabling.

## NOTES:

- International Agency for Research on Cancer (IARC) - Summaries & Evaluations (2008).
- 3rd Annual Report on Carcinogens as prepared by the National Toxicology Program (NTP).

## 4. FIRST AID MEASURES

## EYES:

FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, HOLDING EYE LIDS OPEN.  
SEEK MEDICAL ATTENTION IF EYE IRRITATION PERSISTS.

## SKIN:

MAINTAIN GOOD PERSONAL HYGIENE. WASH AFFECTED AREA WITH MILD SOAP AND WATER.  
SEEK MEDICAL ATTENTION IF SKIN IRRITATION PERSISTS.

## INHALATION:

REMOVE TO FRESH AIR. CHECK FOR CLEAR AIRWAY, BREATHING AND PRESENCE OF PULSE.  
IF NECESSARY ADMINISTER CPR. CONSULT A PHYSICIAN IMMEDIATELY.

## INGESTION:

RARE IN INDUSTRY. DUST MAY IRRITATE MOUTH AND GASTROINTESTINAL TRACT.  
IF INGESTED, SEEK MEDICAL ATTENTION PROMPTLY.

## 5. FIRE FIGHTING MEASURES

## FLAMMABILITY CLASSIFICATION:

Non-flammable. Will not support combustion.

## MEANS OF EXTINCTION:

Not applicable for solid product. Use extinguishers appropriate for surrounding materials.

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FLASH POINT (°C):	N/A	AUTO-IGNITION TEMP (°C):	N/A
UPPER FLAMMABLE LIMIT % BY VOL.:	N/A	LOWER FLAMMABLE LIMIT % BY VOL.:	N/A
SENSITIVITY TO STATIC DISCHARGE:	N/A	EXPLOSION DATA (SENSITIVITY TO IMPACT):	No
HAZARDOUS COMBUSTION PRODUCTS:	At temperatures above the melting point, fumes containing metal oxides and other alloying elements may be liberated.		
UNUSUAL FIRE HAZARDS:	Finely divided particles or dusts such as those produced during grinding may present an explosion hazard, and should be treated as a Class D combustible metal fire – use a use Class D fire extinguishers (dry powder or sand) for fires involving powders or dusts.		
SPECIAL FIRE FIGHTING:	Do not use water on molten metal.		

### 6. ACCIDENTAL RELEASE MEASURES

LEAK AND SPILL PROCEDURES:	Not applicable to brass alloys in solid state. For spills involving fine dusts, remove by vacuuming or wet sweeping methods to prevent spreading of dust. Do not use compressed air to clean spills of dusts. Avoid inhalation of dusts. Collect spilled materials into suitable labelled containers for disposal.
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### 7. HANDLING AND STORAGE

HANDLING:	Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Practice good housekeeping. Avoid breathing metal fumes and/or dust.
STORAGE:	Store away from oxidizers, acids and other incompatible materials.

### 8. EXPOSURE CONTROLS

ENGINEERING CONTROLS: (e.g. ventilation, enclosures, specify)	General or local exhaust during welding, grinding or other dust generating operations.		
PERSONAL PROTECTIVE EQUIPMENT:	Dependent upon process being performed on material each operation must be addressed for suitable equipment.		
GLOVES (Specify):	Wear gloves as required.	EYES (Specify):	Safety glasses or goggles as required.
CLOTHING (Specify):	N/A	FOOTWEAR (Specify):	N/A
RESPIRATOR (Specify):	If concentrations exceed established limits (up to 10X TLV) use NIOSH/MSHA approved particulate respirators (dust & fume or high efficiency dust & fume cartridge) when grinding or welding.		
OTHER (Specify):	N/A		

### 9. CHEMICAL AND PHYSICAL PROPERTIES

PHYSICAL STATE:	Solid	APPEARANCE:	Yellow-brown, metallic	ODOUR:	Not Applicable
BOILING POINT:	Not Applicable	VAPOUR PRESSURE:	Not Applicable	VAPOUR DENSITY:	Not Applicable
MELTING POINT:	930°C (1706°F)	DENSITY:	8.4-8.8	pH:	Not Applicable
EVAPORATION RATE:	Not Applicable	SOLUBILITY:	Insoluble		
COEFFICIENT WATER/OIL DISTRIBUTION:	Not Applicable				

### 10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:	Stable - Brass alloys are stable under normal storage and handling conditions.
HAZARDOUS POLYMERIZATION:	Hazardous polymerization cannot occur.
INCOMPATIBILITY TO OTHER SUBSTANCES:	Yes. Oxidizers, acids, acetylene, some halogenated compounds.
CONDITIONS OF REACTIVITY:	Contact with oxidizers and/or strong acids will release flammable hydrogen gas.
HAZARDOUS DECOMPOSITION PRODUCTS:	High temperatures can produce toxic metallic and/or metal oxide fumes (mostly Cu <sub>2</sub> O & ZnO).

### 11. TOXICOLOGICAL INFORMATION

IRRITANCY OF MATERIAL:	See Section 3.	SENSITIZATION OF MATERIAL:	Ni/A
LD <sub>50</sub> (of Material):	Not established	LC <sub>50</sub> (of Material):	Not established
MUTAGENICITY OF MATERIAL:	N/A		
REPRODUCTIVE EFFECTS:	N/A		
TERATOGENICITY OF MATERIAL:	N/A		
CARCINOGENICITY OF MATERIAL:	<u>LEAD</u> : IARC lists lead and its inorganic compounds under its Group 2B category - "possibly carcinogenic to humans".		
SYNERGISTIC MATERIALS:	N/A		
NOTE:	Copper containing welding fume has an exposure limit of 0.2 mg/m <sup>3</sup> (ACGIH-TLV's 2011). Welding fume may also contain contaminants from fluxes or welding consumables. Prolonged skin contact may cause reddening and drying of skin or dermatitis in sensitive individuals due to nickel content in product.		

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### 12. ECOLOGICAL INFORMATION

**ECOTOXICITY:** No data available for the material as a whole. However, individual components of the material have been found to be toxic to the environment. Metal dusts may migrate into soil and groundwater and be ingested by wildlife.

**ENVIRONMENTAL FATE:** No data available.

**ENVIRONMENTAL DEGRADATION:** No data available.

### 13. DISPOSAL INFORMATION

**WASTE DISPOSAL:** Brass scrap or solid waste should be recycled or reclaimed whenever possible.

**GENERAL INFORMATION:** Dispose of in accordance with applicable federal, provincial/state or local regulations.

### 14. TRANSPORTATION INFORMATION

**GENERAL SHIPPING INFORMATION:** Material not regulated for shipping.

**SHIPPING NAME AND DESCRIPTION:** N/A  
**UN NUMBER:** N/A  
**CLASS:** N/A  
**PACKING GROUP/RISK GROUP:** N/A

**TRANSPORT REGULATIONS:**  
 Canadian Transportation of Dangerous Goods Regulations (TDG) March 2011.  
 US Department of Transport (DOT) Hazardous Materials shipping information (Title 49 - Transportation March 2011).

### 15. REGULATORY INFORMATION

**REGULATORY INFORMATION:** *The following listing of regulations relating to a Russel Metals Inc. product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities.*

**ADDITIONAL CANADIAN REGULATIONS:**  
**WHMIS CLASSIFICATION:** This product is considered to be a manufactured article, however when product is subjected to welding, burning, melting, brazing, grinding or other similar processes, potentially hazardous airborne particulate and fumes may be generated and therefore subject to WHMIS requirements.  
 Class D2A/D2B: Materials Causing Other Toxic Effects.

**DOMESTIC SUBSTANCES LIST:** The components of this material are on the federal DSL Inventory.  
**OTHER CANADIAN REGULATIONS:** N/A

**ADDITIONAL U.S. REGULATIONS:**  
**SARA:** The components of this material are subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA - Oct. 2006), as follows:

CHEMICAL NAME	SARA 302 (40 CFR 355, Appendix A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)	CERCLA Reportable Quantities
Copper	No	No	Yes	5,000 lbs
Lead	No	No	Yes	10 lbs
Zinc	No	No	No	1,000 lbs

**SARA THRESHOLD PLANNING QUANTITY:** There are no specific Threshold Planning Quantities for the components of this material. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb. (4,540 kg) therefore applies, per 40 CFR 370.20.

**TSCA INVENTORY STATUS:** The components of this material are listed on the Toxic Substances Control Act Inventory.

**CERCLA REPORTABLE QUANTITY (RQ):** RQ's for Hazardous Substances in the Comprehensive Environmental Response, Compensation, and Liability Act are: Copper = 5,000 lb. (2,270 kg); Zinc = 1,000 lb (450 kg); Nickel = 100 lb. (45 kg); Lead = 10 lb (4.5 kg).

**CALIFORNIA (PROPOSITION 65):** The Nickel component of this material is known in the State of California to cause cancer. The Lead component of this material is known in the State of California to cause cancer, and/or birth defects (or other reproductive harm).

**OTHER U.S. FEDERAL REGULATIONS:** Lead is regulated under 29 CFR 1910.1025.

**ADDITIONAL EUROPEAN UNION REGULATIONS:**  
**RoHS & WEEE:** This MSDS follows the European Union Directive "Restriction on the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment" (2002/95/EC) and the "Waste Electrical and Electronic Equipment (WEEE)" Directive (2002/96/EC).  
**Lead (Pb):** Brass alloys may have a lead content of <2.0%, which is above the EU Directive limit of 0.1%.

### 16. OTHER INFORMATION

**HAZARD LABEL RATING SYSTEMS:**  
**NFPA CODE:** H=0 F=0 R=0  
**HMIS CODE:** H=1\* F=0 R=0 PPE: See Section 8  
 \* Denotes possible chronic hazard if airborne dusts or fumes are generated.

**PREPARED BY:** RUSSEL METALS INC. AND ENVIROTEST INC. **DATE:** NOVEMBER, 2011

**TELEPHONE:** 905-819-7295 **NOTE:** CONTACT SUPPLIER FOR ADDITIONAL PRODUCT INFORMATION

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