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## COPPER SILVER NICKEL ALLOY

### SAFETY DATA SHEET

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#### SECTION 1: IDENTIFICATION

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PRODUCT IDENTIFIER: COPPER SILVER NICKEL ALLOY (SHOT)

SYNONYMS: COPPER SILVER NICKEL GRAIN, BINDER ALLOY

RECOMMENDED USE: CASTING, BRAZING

RESTRICTIONS ON USE: NONE KNOWN

MANUFACTURER: CANADIAN SILVER REFINERS LTD.  
P.O. BOX 51  
FALUN, ALBERTA T0C 1H0

EMERGENCY PHONE: 780-586-2846

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#### SECTION 2: HAZARD IDENTIFICATION

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HAZARD CLASSIFICATION: NONE

LABEL SYMBOL: NONE

LABEL SIGNAL WORD: NONE

LABEL HAZARD STATEMENT: NONE

LABEL PRECAUTIONARY STATEMENT(S): NONE

OTHER HAZARDS: **SEE SECTION 10: CONDITIONS TO AVOID**

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#### SECTION 3 : COMPOSITION / INFORMATION ON INGREDIENTS

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<u>COMPONENT</u>	<u>FORMULA</u>	<u>RANGE</u>	<u>CAS NUMBER</u>
SILVER	Ag	5 % - 90 %	7440-22-4
COPPER	Cu	20 % - 90 %	7440-50-8
NICKEL	Ni	1 % - 12 %	7440-02-0
<b>ADDITIVES:</b>			
PHOSPHORUS	P	0 % - 0.01 %	7723-14-0

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#### SECTION 4 : FIRST AID MEASURES

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INHALATION REMOVE TO FRESH AIR. IF IRRITATION DEVELOPS OR SYMPTOMS OF TOXICITY ARE OBSERVED, GET MEDICAL ATTENTION.

SKIN CONTACT WASH SKIN WITH SOAP AND WATER. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS

EYE CONTACT	FLUSH EYES WITH LARGE AMOUNTS OF RUNNING WATER FOR AT LEAST 15 MINUTES. HOLD EYELIDS APART TO ENSURE RINSING OF THE ENTIRE SURFACE OF THE EYE AND LIDS WITH WATER. IF IRRITATION OR BURNING OCCUR, GET MEDICAL ATTENTION.
INGESTION	IF SUBJECT IS CONSCIOUS, INDUCE VOMITING. IF UNCONSCIOUS OR CONVULSIVE, GET MEDICAL ATTENTION.
MOST IMPORTANT SYMPTOMS AND EFFECTS:	NONE OF THE COMPONENTS ARE ACUTELY TOXIC BY INGESTION NOR ARE THEY ABSORBED THROUGH THE SKIN. PROLONGED OR EXTENSIVE SKIN CONTACT MAY CAUSE DERMATITIS AND/OR ARGYRIA

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## **SECTION 5 : FIRE FIGHTING MEASURES**

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SUITABLE EXTNGUISHING MEDIA:	PRODUCT DOES NOT BURN: USE MEDIA APPROPRIATE FOR WHAT IS BURNING  USE DRY CHEMICAL OR SAND ON PRODUCT
UNSUITABLE EXTNGUISHING MEDIA:	DO NOT USE WATER IF MOLTEN METAL IS PRESENT
SPECIFIC HAZARDS:	BULK METAL IS NOT FLAMMABLE. HOWEVER, DUST, POWDER OR FUME MAY BE FLAMMABLE OR EXPLOSIVE WHEN MIXED WITH AIR OR BY REACTION WITH INCOMPATIBLE MATERIALS
FIREFIGHTING EQUIPMENT AND PRECAUTIONS:	WHEN FIGHTING A FIRE WHERE THE PRODUCT IS PRESENT FIREFIGHTERS SHOULD USE APPROVED SELF CONTAINED BREATHING APPARATUS.

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## **SECTION 6 : ACCIDENTAL RELEASE MEASURES**

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PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES:	WEAR GLOVES APPROPRIATE TO HOW THE MATERIAL IS BEING USED.  A RESPIRATOR SHOULD BE WORN IF NEEDED OR IF THERE IS ANY DUST OR FUME PRESENT. USE A NIOSH/MSHA APPROVED MECHANICAL FILTER RESPIRATOR.  SAFETY GLASSES, GOGGLES OR FULL FACE SHIELD APPROPRIATE TO HOW THE MATERIAL IS BEING USED.  WEAR FULL COVER CLOTHING APPROPRIATE TO HOW THE MATERIAL IS BEING USED.
METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP:	ENSURE ADEQUATE VENTILATION TO CONTROL ANY DUST OR FUME PRODUCED.  IF MOLTEN, ALLOW METAL TO SOLIDIFY AND COOL  SWEEP UP SPILLED MATERIAL AND PLACE IN A SUITABLE CONTAINER. AVOID GENERATING DUST.

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## SECTION 7 : HANDLING AND STORAGE

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### PRECAUTIONS FOR SAFE HANDLING:

WEAR GLOVES APPROPRIATE TO HOW THE MATERIAL IS BEING USED.

A RESPIRATOR SHOULD BE WORN IF NEEDED OR IF THERE IS ANY DUST OR FUME PRESENT. USE A NIOSH/MSHA APPROVED MECHANICAL FILTER RESPIRATOR.

SAFETY GLASSES, GOGGLES OR FULL FACE SHIELD APPROPRIATE TO HOW THE MATERIAL IS BEING USED.

WEAR FULL COVER CLOTHING APPROPRIATE TO HOW THE MATERIAL IS BEING USED.

ENSURE ADEQUATE VENTILATION TO CONTROL ANY DUST OR FUME PRODUCED.

PRACTICE GOOD HOUSEKEEPING; KEEP CONCENTRATIONS OF DUST AND FUMES AS LOW AS PRACTICAL.

PRACTICE GOOD PERSONAL HYGIENE; SINKS, SHOWERS AND EYEWASH STATIONS SHOULD BE PROVIDED

FOR CONDITIONS TO AVOID: **SEE SECTION 10**

### CONDITIONS FOR SAFE STORAGE

STORE IN A DRY LOCATION

DO NOT STORE IN PROXIMITY TO INCOMPATIBLE MATERIALS (SEE SECTION 10).

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## SECTION 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

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### CONTROL PARAMETERS:

#### INGREDIENT EXPOSURE LIMITS:

COPPER:	ACGIH TLV: 0.2 mg/m <sup>3</sup> TWA (FUME) ACGIH TLV: 1 mg/m <sup>3</sup> TWA (DUSTS AND MISTS) OSHA PEL: .01 mg/m <sup>3</sup> TWA (FUME) OSHA PEL: 1 mg/m <sup>3</sup> TWA (DUSTS AND MISTS)
SILVER:	ACGIH TLV: 0.1 mg/m <sup>3</sup> TWA (METAL) OSHA PEL: 0.01 mg/m <sup>3</sup> TWA
NICKEL	ACGIH: TLVs (2008) 1.5 mg/m <sup>3</sup> TWA (metal) (inhalable fraction) 0.2 mg/m <sup>3</sup> TWA (insoluble compounds, as Ni) (inhalable fraction) OSHA PEL: 1.0 mg/m <sup>3</sup> TWA (metal & insoluble compounds as Ni)

INGREDIENT BIOLOGICAL LIMITS: NONE KNOWN

#### APPROPRIATE ENGINEERING CONTROLS:

VENTILATION: ADEQUATE VENTILATION TO CONTROL ANY DUST OR FUME PRODUCED.

PERSONAL PROTECTION: WEAR GLOVES APPROPRIATE TO HOW THE MATERIAL IS BEING USED.

A RESPIRATOR SHOULD BE WORN IF NEEDED OR IF THERE IS ANY DUST OR FUME PRESENT. USE A NIOSH/MSHA APPROVED MECHANICAL FILTER RESPIRATOR.

SAFETY GLASSES, GOGGLES OR FULL FACE SHIELD APPROPRIATE TO HOW THE MATERIAL IS BEING USED.

WEAR FULL COVER CLOTHING APPROPRIATE TO HOW THE MATERIAL IS BEING USED.

PRACTICE GOOD HOUSEKEEPING; KEEP CONCENTRATIONS OF DUST AND FUMES AS LOW AS PRACTICAL.  
PRACTICE GOOD PERSONAL HYGIENE; SINKS, SHOWERS AND EYEWASH STATIONS SHOULD BE PROVIDED

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## SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

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APPEARANCE	GRAIN; VARIOUS COLORS
ODOUR	NONE
ODOUR THRESHOLD	NOT APPLICABLE
PH	NOT APPLICABLE
MELTING/FREEZING POINT (C )	800 TO 1150 DEPENDING ON COMPOSITION
BOILING POINT (C )	NOT APPLICABLE
FLASH POINT (C)	NOT APPLICABLE
EVAPORATION RATE	NOT APPLICABLE
FLAMMABILITY	NOT FLAMMABLE
VAPOUR PRESSURE	NOT APPLICABLE
VAPOUR DENSITY	NOT APPLICABLE
RELATIVE DENSITY	9 TO 10.5 DEPENDING ON COMPOSITION
SOLUBILITY IN WATER	NOT SOLUBLE
PARTITION COEFFICIENT	NOT APPLICABLE
AUTO-IGNITION TEMP.	NOT APPLICABLE
DECOMPOSITION TEMP.	NOT APPLICABLE
VISCOSITY	NOT APPLICABLE

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## SECTION 10 : STABILITY AND REACTIVITY

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REACTIVITY	NONE UNDER NORMAL USE
CHEMICAL STABILITY	PRODUCT IS STABLE
POSSIBILITY OF HAZARDOUS REACTIONS	NONE KNOWN UNDER NORMAL USE: <b>SEE CONDITIONS TO AVOID</b>
CONDITIONS TO AVOID	<b>DO NOT ADD TO MOLTEN METAL: MOISTURE ON PRODUCT CAN RESULT IN A STEAM EXPLOSION</b>
INCOMPATIBLE MATERIALS	COPPER AND SILVER CAN FORM UNSTABLE ACETYLIDES IF IN CONTACT WITH ACETYLENE GAS  OTHER INCOMPATIBLE MATERIALS INCLUDE AMMONIA; AMMONIUM NITRATE; AZIDES; LITHIUM; OXYGEN DIFLUORIDE; NITRIC ACID; ETHYLENE IMINE; CHLORINE TRIFLUORIDE; SULFURIC ACID; INORGANIC AND ORGANIC PEROXIDES; PEROXYFORMIC ACID; OXALIC ACID; TARTARIC ACID; 1-BROMO-2-PROPENE; PERMONOSULFURIC ACID; BROMATES, CHLORATES AND IODATES OF ALKALI AND ALKALI EARTH METALS.
HAZARDOUS PRODUCTS OF DECOMPOSITION	HEATING TO ELEVATED TEMPERATURES MAY PRODUCE METAL / METAL OXIDE FUMES.

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**SECTION 11 : TOXOLOGICAL INFORMATION**


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LIKELY ROUTES OF EXPOSURE, SYMPTOMS AND IMMEDIATE, DELAYED AND CHRONIC EFFECTS FROM SHORT-TERM AND LONG-TERM EXPOSURE:

SKIN CONTACT		MAY CAUSE IRRITATION, ARGYRIA, DISCOLORATION AND/OR CONTACT DERMATITIS
SKIN ABSORPTION		NOT AVAILABLE
EYE CONTACT		MAY CAUSE IRRITATION, CONJUNCTIVITIS, ULCERATION OF THE CORNEA AND/OR ARGYRIA, A PERMANENT BLUE-GRAY DISCOLORATION OF THE EYES, SKIN AND MUCOUS MEMBRANES
INHALATION		INHALATION OF THE COMPONENTS IS NOT KNOWN TO PRESENT A SIGNIFICANT HEALTH RISK WHEN USED WITH APPROPRIATE PROTECTIVE MEASURES (SEE SECTION 8). INHALATION OF COMPONENT ELEMENTS HAS BEEN REPORTED TO CAUSE ONE OR MORE OF THE FOLLOWING EFFECTS UPON EXCESSIVE OR PROLONGED EXPOSURE:
	SILVER: ACUTE	MAY CAUSE DISCOLOURATION OF MUCOUS MEMBRANES
	CHRONIC	MAY CAUSE ARGYRIA, PERMANENT BLUE-GREY DISCOLOURATION OF THE SKIN, EYES, MUCOUS MEMBRANES AND RESPIRATORY TRACT
	COPPER: ACUTE	MAY CAUSE RESPIRATORY TRACT IRRITATION, FEVER, MUSCLE ACHE, CHILLS, COUGH, WEAKNESS, METALLIC TASTE IN THE MOUTH.
	CHRONIC	MAY DAMAGE THE LIVER, KIDNEY, SPLEEN, PANCREAS AND BRAIN
	NICKEL: ACUTE	MAY CAUSE HEADACHE, NAUSEA, VERTIGO, ASTHMA, PULMONARY FIBROSIS AND PULMONARY EDEMA
	CHRONIC	MAY INCREASE THE RISK OF CANCER TO THE NASOPHARYNX, LUNGS, PROSTATE AND KIDNEY
INGESTION		(PARTICULARLY IN FINELY-DIVIDED FORMS)
	ACUTE	MAY CAUSE NAUSEA, VOMITING, ABDOMINAL PAIN, DIARRHEA, HEMORRHAGE AND GASTROINTESTINAL IRRITATION.
	CHRONIC	MAY DAMAGE THE LIVER, KIDNEYS, GASTROINTESTINAL SYSTEM, MUSCULOSKELETAL SYSTEM AND NERVOUS SYSTEM
IRRITANCY		NOT AVAILABLE
SENSITIZING CAPABILITY		NOT AVAILABLE
CARCINOGENICITY		ALLOY: UNKNOWN NICKEL IS CLASSIFIED AS A POTENTIAL HUMAN CARCINOGEN BY: IARC (GROUP 2B) NTP (GROUP 2B) NEITHER COPPER NOR SILVER ARE CLASSIFIED AS POTENTIAL OR DEMONSTRATED HUMAN CARCINOGENS BY IARC, NIOSH, NTP, OSHA OR ACGIH
REPRODUCTIVE TOXICITY		NOT AVAILABLE
TERATOGENICITY		NOT AVAILABLE NICKEL HAS PRODUCED FETOTOXIC AND TERATOGENIC EFFECTS IN ANIMAL STUDIES
MUTAGENICITY		NOT AVAILABLE NICKEL HAS PRODUCED MUTAGENIC RESPONSES IN MAMMALIAN CELL CULTURES
SYNERGISTIC MATERIALS		NOT AVAILABLE

CONDITIONS AGGRAVATED BY OVEREXPOSURE PRE-EXISTING PULMONARY DISEASES, SUCH AS BRONCHITIS OR ASTHMA, MAY BE AGGRAVATED BY INHALATION EXPOSURE, PARTICULARLY AS FUME. CHRONIC EXPOSURE BY INHALATION AND/OR INGESTION MAY AGGRAVATE PRE-EXISTING DISEASES OF THE LIVER, KIDNEYS, GASTROINTESTINAL SYSTEM AND NERVOUS SYSTEM.

NUMERICAL MEASURES OF TOXICITY: INGREDIENTS TOXOLOGICAL DATA

COPPER:	LD50: 470 mg/kg (mouse/oral)	LC50: NOT AVAILABLE
SILVER:	LD50: >2,000 mg/kg (rat/oral)	LC50: NOT AVAILABLE
NICKEL	LD50: 50mg/kg (mouse – subcutaneous)	LC50: N/OT AVAILABLE
PHOSPHORUS:	LD50: >15,000 mg/kg (rat/oral)	LC50: 4,300 mg/kg/hr. (rat)

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**SECTION 12 : ECOLOGICAL INFORMATION**

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NO ECOLOGICAL DATA IS AVAILABLE FOR THIS PRODUCT

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**SECTION 13 : DISPOSAL CONSIDERATIONS**

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HANDLING PROCEDURES: SEE SECTION 7

DISPOSAL CONSULT MANUFACTURER FOR DISPOSAL OF UNUSED OR UNUSABLE PRODUCT.

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**SECTION 14 : TRANSPORT INFORMATION**

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NO SPECIAL HANDLING OR SHIPPING REQUIREMENTS.

NOT REGULATED UNDER WHMIS OR TDG REGULATIONS.

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**SECTION 15 : REGULATORY INFORMATION**

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NO SAFETY, HEALTH OR ENVIRONMENTAL REGULATIONS SPECIFIC TO THE PRODUCT.

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**SECTION 16 : OTHER INFORMATION**

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DATE OF LATEST REVISION OF THIS SDS:

MARCH 2, 2020

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