
COPPER SILVER NICKEL ZINC ALLOY

SAFETY DATA SHEET

SECTION 1: IDENTIFICATION

PRODUCT IDENTIFIER: COPPER SILVER NICKEL ZINC ALLOY (SHOT)

SYNONYMS: COPPER SILVER NICKEL ZINC 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

SECTION 2: HAZARD IDENTIFICATION

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**

SECTION 3 : COMPOSITION / INFORMATION ON INGREDIENTS

<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
ZINC	Zn	2 % - 60 %	7440-66-6
NICKEL	Ni	1 % - 12 %	7440-02-0

ADDITIVES:

PHOSPHORUS	P	0 % - 0.01 %	7723-14-0
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SECTION 4 : FIRST AID MEASURES

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

SECTION 5 : FIRE FIGHTING MEASURES

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.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

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.

SECTION 7 : HANDLING AND STORAGE

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).

SECTION 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS:

INGREDIENT EXPOSURE LIMITS:

COPPER:	ACGIH TLV: 0.2 mg/m ³ TWA (FUME) ACGIH TLV: 1 mg/m ³ TWA (DUSTS AND MISTS) OSHA PEL: .01 mg/m ³ TWA (FUME) OSHA PEL: 1 mg/m ³ TWA (DUSTS AND MISTS)
SILVER:	ACGIH TLV: 0.1 mg/m ³ TWA (METAL) OSHA PEL: 0.01 mg/m ³ TWA
ZINC	ACGIH: TLVs (2000) 5.0 mg/m ³ TWA (ZnO fume) 10 mg/m ³ STEL (ZnO fume) 10 mg/m ³ TWA (ZnO dust) OSHA PEL: 5.0 mg/m ³ TWA
NICKEL	ACGIH: TLVs (2008) 1.5 mg/m ³ TWA (metal) (inhalable fraction) 0.2 mg/m ³ TWA (insoluble compounds, as Ni) (inhalable fraction) OSHA PEL: 1.0 mg/m ³ 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

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	GRAIN; VARIOUS COLORS
ODOUR	NONE
ODOUR THRESHOLD	NOT APPLICABLE
PH	NOT APPLICABLE
MELTING/FREEZING POINT (C)	600 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	7 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

SECTION 10 : STABILITY AND REACTIVITY

REACTIVITY	NONE UNDER NORMAL USE
CHEMICAL STABILITY	PRODUCT IS STABLE
POSSIBILITY OF HAZARDOUS REACTIONS	NONE KNOWN UNDER NORMAL USE: SEE CONDITIONS TO AVOID
CONDITIONS TO AVOID	DO NOT ADD TO MOLTEN METAL: MOISTURE ON PRODUCT CAN RESULT IN A STEAM EXPLOSION
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.

SECTION 11 : TOXOLOGICAL INFORMATION

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 CHRONIC	MAY CAUSE DISCOLOURATION OF MUCOUS MEMBRANES MAY CAUSE ARGYRIA, PERMANENT BLUE-GREY DISCOLOURATION OF THE SKIN, EYES, MUCOUS MEMBRANES AND RESPIRATORY TRACT
	COPPER: ACUTE CHRONIC	MAY CAUSE RESPIRATORY TRACT IRRITATION, FEVER, MUSCLE ACHE, CHILLS, COUGH, WEAKNESS, METALLIC TASTE IN THE MOUTH. MAY DAMAGE THE LIVER, KIDNEY, SPLEEN, PANCREAS AND BRAIN
	NICKEL: ACUTE CHRONIC	MAY CAUSE HEADACHE, NAUSEA, VERTIGO, ASTHMA, PULMONARY FIBROSIS AND PULMONARY EDEMA MAY INCREASE THE RISK OF CANCER TO THE NASOPHARYNX, LUNGS, PROSTATE AND KIDNEY
	ZINC: ACUTE CHRONIC	INHALATION OF QUANTITIES OF ZINC OXIDE FUME CAN RESULT IN A CONDITION CALLED METAL FUME FEVER. THE SYMPTOMS OCCUR WITHIN 3 TO 10 HOURS AND INCLUDE DRYNESS AND IRRITATION OF THE THROAT, TIGHTNESS OF THE CHEST AND COUGHING. MAY LATER BE FOLLOWED BY FLU-LIKE SYMPTOMS OF FEVER, MALAISE, PERSPIRATION, FRONTAL HEADACHE, MUSCLE CRAMPS, LOW BACK PAIN, OCCASIONALLY BLURRED VISION, NAUSEA AND VOMITING. SYMPTOMS ARE TEMPORARY AND GENERALLY DISAPPEAR, WITHOUT MEDICAL INTERVENTION, WITHIN 24 TO 48 HOURS OF ONSET. THERE ARE NO RECOGNIZED COMPLICATIONS, AFTER AFFECTS, OR CHRONIC AFFECTS THAT RESULT FROM METAL FUME FEVER. IN RARE INSTANCES AN ACUTE INCIDENT MAY BE FOLLOWED BY COMPLAINTS SUCH AS BRONCHITIS OR PNEUMONIA.
INGESTION		(PARTICULARLY IN FINELY-DIVIDED FORMS)
	ACUTE CHRONIC	MAY CAUSE NAUSEA, VOMITING, ABDOMINAL PAIN, DIARRHEA, HEMORRHAGE AND GASTROINTESTINAL IRRITATION. 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

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.
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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
ZINC	LD50: 7,950 mg/kg (mouse-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)

SECTION 12 : ECOLOGICAL INFORMATION

NO ECOLOGICAL DATA IS AVAILABLE FOR THIS PRODUCT

SECTION 13 : DISPOSAL CONSIDERATIONS

HANDLING PROCEDURES: SEE SECTION 7

DISPOSAL	CONSULT MANUFACTURER FOR DISPOSAL OF UNUSED OR UNUSABLE PRODUCT.
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SECTION 14 : TRANSPORT INFORMATION

NO SPECIAL HANDLING OR SHIPPING REQUIREMENTS.

NOT REGULATED UNDER WHMIS OR TDG REGULATIONS.

SECTION 15 : REGULATORY INFORMATION

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

SECTION 16 : OTHER INFORMATION

DATE OF LATEST REVISION OF THIS SDS:

MARCH 2, 2020
