SAFETY DATA SHEET

Tuffaloy - 88 Alloy, RWMA Class 1, C15000
Tuffaloy - 77 Alloy, RWMA Class 2, C18200
Tuffaloy - Z Alloy, RWMA Class 2, C18150
Tuffaloy – 55A Alloy, RWMA Class 3, C18000

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

1.1 PRODUCT NAME:	Tuffaloy - 88 Alloy, RWMA Class 1, C15000 Tuffaloy - 77 Alloy, RWMA Class 2, C18200 Tuffaloy - Z Alloy, RWMA Class 2, C18150 Tuffaloy – 55A Alloy, RWMA Class 3, C18000
PRODUCT CODE:	Not Available
CHEMICAL FAMILY NAME:	Alloy
U.N. NUMBER:	Not Regulated
U.N. DANGEROUS GOODS CLASS:	N/A
1.2 PRODUCT USE:	Various
1.3 SUPPLIER/MANUFACTURER'S NAME:	**Tuffaloy Products, Inc.**
ADDRESS:	1400 S. Batesville Rd, Greer, SC 29650
1.4 EMERGENCY PHONE:	864-879-0763
1.5 DATE OF LATEST PREPARATION:	October 4, 2019
DATE OF PRIOR REVISION:	New

SECTION 2 - HAZARDS IDENTIFICATION

2.1 Classification of the mixture:

This product does meet the definition of a hazardous substance or preparation as defined by 29 CFR 1910. 1200 and WHMIS 2015.

2.2 GHS Label elements, including precautionary statements:

Pictogram(s):

Signal Word:

Danger!

GHS Hazard Classification(s):

Acute Toxicity Category 4 (Inhalation)
Respiratory Sensitization Category 1
Skin Sensitization Category 1
Carcinogenicity Category 1
Reproductive Toxicity Category 1A
Specific Target Organ Toxicity – Repeated Exposure Category 1

Hazard Statement(s):

H332: Harmful if inhaled.
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317: May cause an allergic skin reaction.
H350: May cause cancer.
H360: May damage fertility or the unborn child.
H372: May causes damage to organs through prolonged or repeated exposure.

Prevention Statement(s):

P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P260: Do not breathe dust/fume/gas/mist/vapours/spray.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P264: Wash hands thoroughly after handling.
P272: Contaminated work clothing should not be allowed out of the workplace.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P281: Use personal protective equipment as required.
P284: In case of inadequate ventilation wear respiratory protection.

Response Statement(s):

P314: Get medical attention if you feel unwell.
P308 + P313: IF exposed or concerned: Get medical attention.
P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a
P312: POISON CENTER or physician if you feel unwell.
P342 + P311: If experiencing respiratory symptoms: Call a POISON CENTER or physician.
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.
P321: Specific Treatment (See Section 4 of this SDS).
P362+P364: Take off contaminated clothing and wash it before reuse.
P314: Get medical advice/attention if you feel unwell.

Storage Statement(s):

P405 Store locked up.
(Manufacturer Note) Rods, Bars and fabricated product should be stored inside away from weather exposure.

Disposal Statement(s):

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other Hazards:

None applicable.

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

3.1 Substances: Not applicable

3.2 Mixtures:

INGREDIENTS:	CAS #	WT %
Copper	7440-50-8	90-99%
Nickel	7440-02-0	1-3%
Lead	7439-92-1	0-0.05%
Silicon	7440-21-3	0.1-1%
Chromium	7440-47-3	0.1-1.5%
Iron	7439-89-6	0-0.15%
Zirconium	7440-67-7	0-0.3%
Balance of other ingredients are non-hazardous or hazardous below the applicable cut-off level. Chemical concentrations have been withheld as trade secret.		

SECTION 4 - FIRST-AID MEASURES

4.1 Description of first aid measures:

Contaminated individuals of chemical exposure must be taken for medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take copy of label and SDS to health professional with contaminated individual.

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek medical attention if irritation persists.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder before re-use.

INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or SDS with the victim to the health professional.

4.2 Most important symptoms and effects, both acute and delayed:

May cause skin and eye irritation. May be harmful if inhaled. May cause an allergic respiratory and skin reaction. Contains a chemical which is reported as a carcinogen and reproductive hazard. May cause organ damage through prolonged or repeated exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin problems may be aggravated by prolonged or repeated contact. See section 11 for additional information.

4.3 Indication of immediate medical attention and special treatment needed:

Treat symptoms and reduce over-exposure.

SECTION 5 - FIRE-FIGHTING MEASURES

5.1 Extinguishing media:

Use media suitable for surrounding area. Carbon dioxide, foam, dry chemical, halon, water spray.

5.2 Specific hazards arising from the chemical:

Decomposition products may include the following materials: metal oxide/oxides.

Explosion Sensitivity to Mechanical Impact:	Not Sensitive.
Explosion Sensitivity to Static Discharge:	Not Sensitive
Minimum Ignition Energy (M.I.E.)	No Data at this time

5.3 Special firefighting Procedure:

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

No action shall be taken involving any personal risk or without suitable training. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Use appropriate respirator when ventilation is inadequate and use personal protective clothing as described in Section 8 of this safety data sheet. See section 11 for additional information on health hazards.

6.2 Environmental precautions:

Do not let product enter drains, do not allow to sewers/surface or ground water. See Section 12, Ecological information.

6.3 Methods and material for containment and cleaning up:

Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

SECTION 7 - HANDLING and STORAGE

7.1 Precautions for safe handling:

As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Use in a well-ventilated location. Remove contaminated clothing immediately

7.2 Conditions for safe storage, including any incompatibilities:

Store in accordance with local regulations.

7.3 Specific end uses:

See section 1.2.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

8.1. Control parameters:

EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS#	ACGIH TWA	OSHA TWA	Mexico
Copper	7440-50-8	TWA: 1 mg/m³, (Cu) 8 hours. Form: Dusts and mists TWA: 0.2 mg/m³ 8 hours. Form: Fume	TWA: 1 mg/m³ 8 hours. Form: Dusts and mists TWA: 0.1 mg/m³ 8 hours. Form: Fume	LMPE-PPT: 1 mg/m³, (as Cu) 8 hours. Form: powder and fog LMPE-CT: 2 mg/m³, (as Cu) 15 minutes. Form: powder and fog LMPE-CT: 2 mg/m³, (as Cu) 15 minutes. Form: smoke LMPE-PPT: 0.2 mg/m³, (as Cu) 8 hours. Form: smoke
Nickel	7440-02-0	TWA: 1.5 mg/m³ 8 hours. Form Inhalable fraction	TWA: 1 mg/m³, (Ni) 8 hours.	LMPE-PPT: 1 mg/m³ 8 hours.
Lead	7439-92-1	TWA: 0.05 mg/m³	Not Listed	Not Listed
Silicon	7440-21-3	Not Listed	Not Listed	Not Listed
Chromium	7440-47-3	TWA: 0.5 mg/m³	TWA: 1 mg/m³	TWA: 0.5 mg/m³
Iron	7439-89-6	Not Listed	Not Listed	Not Listed
Zirconium	7440-67-7	TWA: 5 mg/m³	TWA: 1 mg/m³	TWA: 0.5 mg/m³

8.2 Exposure Controls:

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above. Use local exhaust ventilation to control airborne vapor. Ensure eyewash/safety shower stations are available near areas where this product is used.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses or chemical goggles are required as appropriate to prevent eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Use of chemical resistant gloves is required to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

PHYSICAL STATE:	Solid
APPEARANCE & ODOR:	Copper colored with no odor
ODOR THRESHOLD (PPM):	Not Available
pH:	Not Available
MELTING / FREEZING POINT (C°):	1796 – 1997°F
BOILING POINT (C°):	Not Applicable
FLASH POINT:	Not Applicable
EVAPORATION RATE (nBuAc = 1):	Not Applicable

FLAMMABILITY (solid, gas):	Not Applicable
FLAMMABLE LIMITS (in air by volume, %):	Not Applicable
VAPOR PRESSURE (mmHg):	Not Applicable
VAPOR DENSITY (AIR=1):	Not Applicable
RELATIVE DENSITY	Not Applicable
SOLUBILITY IN WATER (%)	Not Applicable
PARTITION COEFFICIENT: N-OCTANOL/WATER:	Not Applicable
AUTOIGNITION TEMPERATURE:	Not Applicable
DECOMPOSITION TEMPERATURE:	Not Applicable
VISCOSITY:	Not Applicable
EXPLOSIVE PROPERTIES:	Not Applicable
OXIDISING PROPERTIES:	Not Applicable
9.2 Other Information:	
PACKING DENSITY:	Not Applicable
SPECIFIC GRAVITY 4°C: (Water = 1)	8.89 Vapor
VOC:	Not Applicable

SECTION 10 - STABILITY and REACTIVITY

10.1 Reactivity: No data available for this product.
10.2 Chemical Stability: Product is stable
10.3 Possibility of Hazardous Reactions: Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid: Exposure to strong acids, oxidizing agents.
10.5 Incompatible materials: Mercury, ammonia, acetylene.
10.6 Hazardous Decomposition Products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11 - TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects:

TOXICITY DATA:

Nickel
LD50 Inhalation - Rat - 10.2 mg/L (1 hr)
LD50 Oral - Rat - >9,000 mg/kg

11.1.2 Mixtures:

Acute toxicity	Acute Toxicity Category 4 (Inhalation)
Skin corrosion / irritation	Based on available data, the classification criteria are not met
Serious eye damage / irritation	Based on available data, the classification criteria are not met
Respiratory or skin sensitization	Respiratory Sensitization Category 1 Skin Sensitization Category 1
Germ cell mutagenicity	Based on available data, the classification criteria are not met
Carcinogenicity	Carcinogenicity Category 1
Reproductive toxicity	Reproductive Toxicity Category 1
STOT-single exposure	Based on available data, the classification criteria are not met
STOT-repeated exposure	Specific Target Organ Toxicity – Repeated Exposure Category 1
Aspiration hazard	Based on available data, the classification criteria are not met

Other Information

POTENTIAL HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE:

EYE CONTACT: Direct contact with eye may cause irritation.
SKIN CONTACT: Prolonged or repeated **e**xposure to skin can cause irritation and / or sensitization.
INHALATION HAZARDS: May be harmful if inhaled. May cause respiratory sensitization.
INGESTION HAZARDS: May be harmful if swallowed.

CHRONIC: Prolonged or repeated exposure may cause organ damage.

TARGET ORGANS: ACUTE: Skin, Eye, Respiratory System CHRONIC: Organs

SUSPECTED CANCER AGENT: This product does contain ingredients which are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore are considered to be, or suspected to be a cancer-causing agent by these agencies.

Nickel 7440-02-0 (IRC: Cat 2B, NTP: Anticipated human carcinogen, ACGIH: A5)

IRRITANCY OF PRODUCT: May cause skin and eye irritation.

SENSITIZATION OF PRODUCT: This product is considered a sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: This product does contain a chemical suspected to be hazardous to the reproductive system. Lead CAS# 7439-92-1

MUTAGENICITY INFORMATION: This product does not contain chemicals which are reported to be germ cell mutagen hazards.

SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE: Data not sufficient for classification.

SPECIFIC TARGET ORGAN TOXICITY – REPEATED EXPOSURE: May cause damage to organs through prolonged or repeated exposure

ASPIRATION HAZARD: Data not sufficient for classification.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

12.1 Toxicity:
No specific data available on this product.

12.2 Persistence and Degradability:
No specific data available on this product.

12.3 Bioaccumulative Potential:
No specific data available on this product.

12.4 Mobility in Soil:
No specific data available on this product.

12.5 Results of PBT and vPvB Assessment:
No specific data available on this product.

12.6 Other Adverse Effects:
No specific data available on this product.

12.7 Water Endangerment Class:
Not believed to be water endangering in accordance with EU Guideline 91/155-EWG. At present, there are no ecotoxicological assessments for this product**.**

SECTION 13 - DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods:
Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

SECTION 14 - TRANSPORTATION INFORMATION

14.1 Transport Information:

US DOT; IATA; IMO; ADR:

THIS PRODUCT IS NOT CLASSIFIED AS DANGEROUS GOODS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Not Regulated
HAZARD CLASS NUMBER and DESCRIPTION: N/A
UN IDENTIFICATION NUMBER: N/A
PACKING GROUP: N/A
DOT LABEL(S) REQUIRED: N/A
NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2016): N/A
MARINE POLLUTANT: This product does not contain ingredients that are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):
This product is not classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:
This product is not classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):
This product is not classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture:

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act: Nickel, Cobalt, Beryllium

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute Health: Yes Chronic Health: No Fire: No Reactivity: No

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): None

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):

WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and / or reproductive / development issues. For more information go to www.P65Warnings.ca.gov

CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as per WHMIS 2015 Hazardous Product Regulations.

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

U.S. TSCA:	Listed
Mexican Inventory of chemical substances (NOM 010 STPS 2015)	Listed

15.2 Chemical Safety Assessment:

A chemical safety assessment has not been performed on this product.

SECTION 16 - OTHER INFORMATION

HMIS Rating (Scale 0-4)	**NFPA Rating (Scale 0-4)**
Health hazard: 2	Health hazard: 2
Flammability: 1	Flammability: 1
Physical Hazard: 0	Physical Hazard: 0

Caution: HMIS and NFPA ratings are based on a 0-4 rating scale

0= Minimal Hazard
1= Slight
2= Moderate
3= High
4= Extreme

Abbreviations and acronyms

ACGIH	*American Conference of Governmental Industrial Hygienists*
CFR	*Code of Federal Regulations*
DOT	*Federal Department of Transportation*
GHS	*The Globally Harmonized System of Classification and Labelling of Chemicals*
HMIS	*Hazardous Material Identification System*
HCS	*Hazard Communication Standard*
IARC	*International Agency for Research on Cancer*
IATA	*The International Air Transport Association*
ICAO	The *International Civil Aviation Organization*
IMDG	*International Maritime Dangerous Goods*
IMO	*International Maritime Organization*
LD50/LC50	*Lethal Concentration/Dose, 50 percent*
NFPA	*National Fire Protection Association*
NIOSH	*National Institute for Occupational Safety and Health*
NTP	*National Toxicology Program*
OSHA	*Occupational Safety and Health*
PEL	*OSHA Permissible Exposure Limit*
SARA	*Superfund Amendments and Reauthorization Act*
TLV	*ACGIH Threshold Limit Value*
TWA	*Time-Weighted Average*
IRRIT	*Irritation*
CAT	*Category*
FLAM	*Flammable*
TOX	*Toxicity*

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End of SDS Sheet