SAFETY DATA SHEET

ROCKMOUNT Welding Alloys

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: GEMINI GB

ROCKMOUNT RESEARCH & ALLOYS, INC.
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2. HAZARDS IDENTIFICATION

Emergency Overview: These products are normally not considered hazardous as shipped. Avoid inhalation of dust or eye contact from these produces. When these produces are used in a welding process, the most important hazards are heat, radiation, electric shock and inhalation of welding fumes.
Classification of the Substance/Mixture

CLP/GHS Classification (1272/2008):
Skin Irritation, Category 1
Skin Sensitization, Category 1
Carcinogenicity, Category 2
Specific Target Organ Toxicity (Repeated Exposure), Category 2

GHS LABEL WORD(s): DANGER

Labelling:

Symbols:

Signal Word: Danger
Hazard Statements:

H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H319 - Causes serious eye irritation.
H350 - May cause cancer.
H372 - Causes damage to respiratory system, eyes, brain and nervous system through prolonged or repeated exposure.
H400 - Very toxic to aquatic life.
H411 - Toxic to aquatic life with long-lasting effects.

Precautionary Statements:
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/vapors/spray.
P264 – Wash skin and hair thoroughly after handling.
P272 – Contaminated work clothing should not be allowed out of the workplace.
P280 – Wear protective gloves/eye protection/face protection.
P281 - Use personal protective equipment as required.
P302+P352 – IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 – IF exposed or concerned: Get medical advice/attention.
P310 - Immediately call a POISON CENTER or doctor/physician.
P332 + P313 - IF skin irritation occurs: Get medical advice/attention.
P362 - Take off contaminated clothing and wash before reuse.
P402+P404 - Store in dry place. Store in a closed container.
P405 – Store locked up.
P501 – Dispose of contents/container in accordance with local/regional/national/international regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Identity	CAS #	Range %	OSHA PEL	ACGIH-TLV	Carcinogenicity	EU Classification (67/548/EEC)	CLP/GHS Classification (1272/2008)
			(mg/m3)	(mg/m3)			
#Aluminum	7429-90-5	0-12	15 (total dust)	1	A4	(F) R11	(H228) Flam. Sol. 2
#Copper	7440-50-8	45-99	0.1 (Fume)	0.2 (Fume)	EPA: D	(F) R11 (N) R50	(H228) Flam. Sol. 2 (H400) Aquatic Acute 1
Lead	7439-92-1	0-0.1	0.05	0.05	IARC 2B, A3 NTP: R		
#Manganese	7439-96-5	0-14	5	1	No	(Xn) R48	(H373) STOT RE-2
Silicon	7440-21-3	0-4	15 (total dust)	10 (total dust)	No	(F) R11	(H228) Flam. Sol. 2
Phosphorus	7723-14-0	0-8	0.1	0.1	EPA: D	Not Dangerous	Not Hazardous
Silver	7440-22-4	1-60	0.01	0.1	EPA: D	Not Dangerous	Not Hazardous
#Nickel	7440-02-0	35-45	1	1	Yes	Carc. Cat. 3 (Xn) R40 (Xi) R43 (T) R48/23	(H317) Skin Sens. 1 (H351) Carc. 2 (H372) STOT RE 1
Iron	7439-89-6	30-35	10 (as Fe2O3)	10 (as Fe203)	No	Not Dangerous	Not Hazardous
#Chromium	7440-47-3	6-60.	1.0 (Metal) .05 (Cr II & Cr IIII Compounds 0.005 (Cr VI Compounds) 0.01 (Cr VI Insoluble Compounds)	0.5 (Metal) 0.5 (Cr IIII Compounds) 0.05 Cr VI Soluble Compounds)	Yes	Not Dangerous	(H400) Aquatic Acute 1
Tungsten Carbide	12070-12-1	35-65	15	10	No	N/A	N/A
Boron	7440-42-8	1-4	15	10	No	Not Dangerous	Not Hazardous
Zinc (as oxide limits)	7440-66-6	0-45	5 (fume)	2 (fume)	EPA: D	Yes	See section 2

Important: This section covers the materials of which the products manufactured. The fumes and gases produced during normal use of this product are covered in section 10. The term "Hazardous" in "Hazardous Material" should be interpreted as a term required and defined in OSHA Hazard Communication Standard 29CFR 1910-1200 and it does not necessarily imply the existence of hazard. The chemicals or compounds reportable by Section 313 of SARA are marked by the symbol #.

4. FIRST AID MEASURES

Inhalation: Remove to fresh air immediately or administer oxygen. Get medical attention immediately.
Skin: Flush skin with large amounts of water. If irritation develops and persists, get medical attention.
Eye: Flush eyes with water for at least 15 minutes. Get medical attention.
Ingestion: Obtain medical attention immediately if ingested. Do not induce vomiting unless directed by medical personnel. Rinse mouth with water if person is conscious. Never give fluids or induce vomiting if person is unconscious, having convulsions, or not breathing.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Welding arcs and sparks can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning material and fire situation.
Unsuitable Extinguishing Media: Not applicable.
Specific Hazards Arising From Chemical: Not considered flammable.
Explosion Hazard: Product is not explosive. Ensure proper welding procedures to avoid welding explosions.
Protective Equipment: Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Refer to section 8.
Environment Precautions: Refer to section 13.
Cleaning Measures: Clean up spills immediately and dispose of waste safely. Avoid generation of dust during clean-up of spills. Ventilate area. Do not mix with other materials. Transfer spilled material to a suitable container for recycling or appropriate disposal.

7. HANDLING AND STORAGE

Precautions for Safe Handling: Handle with care to avoid stings or cuts. Wear gloves when handling welding consumables. Avoid exposure to dust. Do not ingest. Some individuals can develop an allergic reaction to certain materials. Retain all warning and identity labels.
Conditions for Safe Storage: Store in dry, cool place in closed packages. Keep separate from chemical substances like acids and strong bases, which could cause chemical reactions.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

Engineering Controls: Avoid exposure to welding fumes, radiation, spatter, electric shock, heated materials and dust. Ensure sufficient ventilation, local exhaust, or both, to keep welding fumes and gases from breathing zone and general area. Keep work place and protective clothing clean and dry. Train welders to avoid contact with live electrical parts and insulate conductive parts. Check condition of protective clothing and equipment on a regular basis.
Exposure limits: Use industrial hygiene equipment to ensure that exposure does not exceed applicable national exposure limits. The limits defined under section 3 can be used as guidance. Unless noted, all values are for 8 hour time weighted average. For information about welding fume analysis refer to section 10.
Biological limits: No available data
Personal protection:
Respiratory protection: Use an air purifying dust respirator when welding or brazing in a confined space, or when local exhaust or ventilation is not sufficient to keep exposure values within safe limits.
Hands protection: Wear appropriate gloves to prevent skin contact.
EN 12477: Protection gloves for welders

Requirements (EN Levels)	Type A	Type B
Abrasion (Cycles)	2 (500)	1 (100)
Cut (Factor)	1 (1.2)	1 (1.2)
Tear (Newton)	2 (25)	1 (10)
Puncture (Newton)	2 (60)	1 (20)
Burning Behavior	3	2
Contact Heat	1	1
Convective Heat	2	-
Small Splashes	3	2
Dexterity	1 (11)	4 (6.5)

Type B gloves are recommended when high dexterity is required as for TIG welding, while type A gloves are recommended for other welding processes. The contact temp (ºC) is 100 and the threshold time (seconds) >15.
Eyes protection: Welder's helmet or face shield with color absorbing lenses. Shield and filter to provide protection from harmful UV radiation, infra red and molten metal approved to standard EN379. Filter shade to be a minimum of shade 9.
Skin protection: Heat-resistant protective clothing. Wear safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry. Clothing should be selected to suit the level, duration and purpose of the welding activity.

Class 1	
Impact of Spatter	15 Drops
Heat Transfer (radiation)	RHTI 24 ≥ 7 seconds
Process	Manual welding with light formation of spatter and drops • Gas Welding • TIG Welding • MIG Welding • Micro plasma welding • Brazing • Spot Welding • MMA Welding (with rutile-covered electrode)
Environmental Conditions	Operation of machines • Oxygen cutting machines • Plasma cutting machines • Resistance welding machines • Machines for thermal spraying • Bench welding

Class 2	
Impact of Spatter	25 Drops
Heat Transfer (radiation)	RHTI 24 ≥ 16 seconds
Process	Manual welding with heavy formation of spatter and drops • MMA welding (with basic or cellulose-covered electrodes) • MAG welding (with CO2 or mixed gases) • MIG Welding (with high current) • Self shielded flux core arc welding • Plasma cutting • Gouging • Oxygen cutting • Thermal spraying
Environmental Conditions	Operation of machines • In confined spaces • At overhead welding/cutting or in comparable constrained positions

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid, metallic rod, wire, bare or coated.
Odor: Odorless
Odor Threshold: Not Available
pH Value: Not Available
Melting Point/Melting Range: 1200-2100 Degrees F, 630-1150 Degrees C
Freezing Point: Not Available
Boiling Point: (@ 24 mm Hg): 4703 Degrees F, 2595 Degrees C
Flash point: Not Available
Evaporation Rate: Not Available
Self-in flammability: Not Available
Explosion limits: Not Available
Vapor pressure: Not Available
Vapor density: Not Available
Density: Not Available
Relative density: 6-9 g/cm3
Solubility: Insoluble in water.
Partition coefficient: Not Available
Auto-ignition temperature: Not Available
Decomposition temperature: Not Available
Other Information: No available data.

10. STABILITY AND REACTIVITY

Chemical Stability: This product is stable under normal conditions.
Hazardous Reactions: Contact with chemical substances like acids or strong bases cause generation of gas.
Conditions to Avoid: Copper can form an unstable acetylide if in contact with acetylene gas.
Incompatible Materials: Strong Oxidizers; Ammonia; Azides; Bromates; Chlorates, and Iodates of Alkali and Alkali Earth Metals; Halogens; Alkaline Hydroxides. Reacts with acids.
Hazardous Decomposition Products: When this product is used in a welding process, hazardous decomposition product would include those from volatilization, reaction or oxidation of the material listed in section 3 and those from the base metal and coating. The amount of fumes generated from this product varies with welding parameters and dimensions. The rest is not analyzed, according to available standards. Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in section 3. Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone. Air contaminants around the welding area can be affected by the welding process and influence the composition and quality of fumes and gases produced.

11. TOXICOLOGICAL INFORMATION

Signs and Symptoms of Overexposure: Inhalation of welding fumes and gases can be dangerous to your health. Classification of welding fumes is difficult because of varying base materials, coatings, air contaminants and processes. The Internal Agency for Research on Cancer has classified welding fumes as possible carcinogenic to humans (Group 2B).
Acute Effects: Overexposure to welding fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes. Copper: Acute exposure to copper may cause capillary damage, headache, cold sweat, weak pulse, kidney and liver damage, central nervous system excitation followed by depression, jaundice, convulsions, paralysis and coma. Death may occur from shock or renal failure.

LD/LC50 Values that are relevant for classification		
Chromium 7440-47-3		
Oral	LD50, LCD50	19.8 ->15900 mg/kg (rat)
Inhalation	LC50	>888 mg/ L/ 4 hr. (rat)

LD/LC50 Values that are relevant for classification		
Copper 7440-50-8		
Oral	LD50	>2000 mg/kg (rat)
Inhalation	LC50	>5.11 mg/L/4 hr. (rat)
Dermal	LD50	>2000 mg/kg (rat)
Intraperitoneal	LD50	3.5 mg/kg (mouse)

LD/LC50 Values that are relevant for classification		
Silver 7440-22-4		
Oral	LD50	>5000 mg/kg (rat)

LD/LC50 Values that are relevant for classification		
Tungsten Carbide 12070-12-1		
Oral	LD50	1500 mg/kg (rat)

LD/LC50 Values that are relevant for classification		
Boron 7440-42-8		
Oral	LD50	30,000 mg/kg (rat)

LD/LC50 Values that are relevant for classification		
Iron 7439-89-6		
Oral	LD50	650 mg/kg (rat)

LD/LC50 Values that are relevant for classification		
Silicon 7440-21-3		
Oral	LD50	3160 mg/kg (rat)

LD/LC50 Values that are relevant for classification		
Manganese 7439-96-5		
Oral	LD50, LCD50	9000 mg/kg (rat)

LD/LC50 Values that are relevant for classification		
Nickel 7440-02-0		
Oral	LD50	>9000 mg/kg (rat)
Inhalation	LC50	>10.2 mg/L/1 hr. (rat)

Chronic Effects: Overexposure to welding fumes may affect pulmonary function and eyes. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may included slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait. Prolonged inhalation of titanium dioxide (Classified by 2B by IARC) above safe exposure limits can cause cancer. Prolonged inhalation of titanium dioxide (Classified 2B by IARC) above safe exposure limits can cause cancer. Prolonged inhalation of crystalline silica (Classified 1 by IARC and K by NTP) above a safe exposure can cause cancer.

12. ECOLOGICAL INFORMATION

Toxicity: Welding rods contain metals which are considered to be very toxic towards aquatic organisms. Finely divided welding rods are therefore considered harmful to aquatic organisms.
Persistence and Degradability: The welding rods consist of elements that can not degrade any further in the environment.
Bio accumulative Potential: Welding rods contain heavy metals which bio accumulates in the food chain. The following figures are the bio concentration factor (BCF) for the substances on their own.
BCF:
Manganese, BCF: 59052
Nickel, BCF: 16
Iron, BCF: 140000
Mobility in Soil: Welding rods are not soluble in water or soil. Particles formed by working welding rods can be transported in the air.
Other Adverse Effects: Welding materials could degrade into components originating from the materials used in the welding process. Avoid exposure to conditions that could lead to accumulation in soils or groundwater. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Product: For product elimination, consult recycling companies or appropriate local authority.
USA RCRA: In their intended manner of use, this product should not be released into the environment and may cause long lasting harmful effects to aquatic life. Residue from welding consumables and processes could degrade and accumulate in soils and groundwater.
Package: May be disposed in approved landfills provided local regulations are observed.

14. TRANSPORT INFORMATION

UN-number: Welding rods are not classified as dangerous goods for transport and have no UN number.
UN proper shipping name: Welding rods are not classified as dangerous goods for transport and has no UN proper shipping name.
Transport hazard class: Welding rods are not classified as dangerous goods for transport.
Packing group: There are not any special precautions with which a user should or must comply or be aware of in connection with transport or conveyance either within or outside premises.
Environmental hazards: Welding rods are not environmentally hazardous according to the criteria of the UN Model Regulations (as reflected in the IMDG Code, ADR, RID and AND) and/or a marine pollutant to the IMDG Code.
Special precautions for users: There are not any special precautions which a user should or must comply or be aware of in connection with transport or conveyance either within or outside premises of the welding rod.
Transport in Bulk According to Annex III MARPOL 73/78 and the IBC Code: Welding rods in massive form do not subject under MARPOL 73/78 and the IBC Code. Not applicable – product is transported only in packaged form.

15. REGULATORY INFORMATION

Safety, health and environment regulations/legislation specific for the substance or mixture: Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label. Observe any federal and local regulations. Take precautions when welding and protect yourself and others.
Warning: Welding fumes and gases are hazardous to your health and may damage lungs and other organs. Use adequate ventilation. Electric shock can kill. Arc rays and sparks can injure eyes and burn skin. Wear correct hand, head, eye and body protection.
Chemical safety assessment: No
USA: Under the OSHA Hazard Communication Standard, this product is considered hazardous. This product contains or produces a chemical known to the state of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code § 25249.5 et seq.) United States EPA Toxic Substance Control Act: All constituents of this product are on the TSCA inventory list or are excluded from listing.
EPCRA/SARA Title III Toxic Chemicals
The following metallic components are listed as SARA 313 "Toxic Chemicals" and potential subject to annual SARA reporting. See Section 3 for weight percentage.

Ingredient Name	Disclosure Threshold
Manganese	5 mg/m3
Nickel	1 mg/m3

16. OTHER INFORMATION

The information in this document is believed to be correct as of the date issued. However, no warranty is expressed to be implied regarding the accuracy or completeness of this information. This information and product are furnished on the condition that the person receiving them shall make his own determinations as to the suitability of the product for his particular purpose and on the condition that he assumes the risk of his use thereof.
This Safety Data Sheet complies with the EC directives 91/155/EEC and 93/112/EEC, including modifications 2001/58/EC. Complies with OSHA Communication Standard 29 CFR 1910.1200 and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499

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