


VERSAlloy® 77 Brazing Filler Metal
Section 1: Identification

Product Name:	VERSAlloy® 77 Brazing Filler Metal	
Issue Date:	June 18, 2001	
Revision Date:	May 28, 2020 (supersedes all previous issues)	
Synonyms:	AWS A5.8 BNi-2, AMS 4777 Rev. J	
CAS Number(s):	See section 3	
Product Usage:	Brazing Powder	
Manufacturer:	Rankin Industries / PMA Division 400 S. Rockefeller Ave. Ontario, CA 91761	Phone: 909-483-3222 Fax: 909-483-3233 E-Mail: sales@rankin.com Web Site: www.broco-rankin.com
Transportation Emergency Number:	Emergency Response & Training Solutions 1-800-924-6804 1-440-349-2700 CIN #: 3730	

Section 2: Hazard(s) Identification

Health – Environmental - Physical		
Respiratory and Skin Sensitization	GHS Category 1	 Danger
Target Organ Systemic Toxicity (single exposure)	GHS Category 2 (respiratory apparatus, kidney)	
Target Organ Systemic Toxicity (repeated exposure)	GHS Category 1 (respiratory apparatus)	
Carcinogenicity	GHS Category 2 (suspected of causing cancer)	
Aquatic Toxicity (chronic)	GHS Category 4 (may cause long lasting harmful effects to aquatic life)	

This product is intended for industrial use by trained individuals. Keep away from children.

Section 3: Composition / Information on Ingredients

Components of mixture*	CAS Number	Weight percentage**
Nickel	7440-02-0	Balance
Chromium	7440-47-3	6 – 8
Boron	7440-42-8	2.75 – 3.5
Iron	7439-89-6	2.5 – 3.5
Silicon	7440-21-3	4 - 5

*This material is a homogenous metallic alloy of the components listed above.

**This is a general reporting range and is not a product specification.

Exposure limits: See Section 8.

Section 4: First Aid Measures

Exposure Route	Acute	Chronic (delayed)
Eye contact	Eye irritation. Flush with water for 15 minutes or until all particles are removed.	If irritation persists, seek medical attention.
Skin contact	Itching, irritation or rash. Remove contaminated clothing. Wash skin with mild soap and water.	If irritation or rash persists, seek medical attention.
Inhalation	Difficulty breathing, coughing, metal fume fever. Remove exposed person to fresh air. If not breathing administer CPR.	If symptoms persist seek medical attention.
Ingestion	Rinse mouth. If large amount, induce vomiting. Seek medical advice.	Seek medical attention.

Never give anything by mouth to an unconscious person. Treat symptomatically and supportively.

Section 5: Firefighting Measures

Suitable Extinguishing Media:	Material is not readily combustible. Do not use water on metal fires, use dry chemical, dry sand or carbon dioxide to smother fire.
Specific Hazards during a Fire:	Material may break down in fire and may produce toxic decomposition products associated with ingredients. Extreme oxidizing conditions may cause formation of metal oxides. These oxides may be carcinogens.
Protective Equipment:	SCBA and full protective gear is recommended for firefighting.

Section 6: Accidental Release Measures

<ul style="list-style-type: none">Stay out of spill, floor may be slippery.Do not create airborne dust.Do not allow spill to enter floor drains or storm drains.Wear PPE: Respirator and Safety Goggles.Take up with damp sweeping compound or vacuum. Vacuum should be equipped with HEPA filter on exhaust. Transfer into disposal container(s). Dispose by recycling.A spill of greater than 100 lbs. (Nickel RQ 100 lbs., <106µm) which enters the environment requires reporting per OSHA CFR Title 40 Part 372 paragraph 372.4 CERCLA hazardous substance release.
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Section 7: Handling and Storage

<ul style="list-style-type: none">General and/or point ventilation system with dust collection is recommended to ensure exposure to airborne dust is maintained below allowable exposure limits.Wear PPE such as work gloves (or vinyl/latex gloves), safety glasses/goggles. Respiratory protection is recommended, but is required only when exposure limits have been exceeded.Wash hands after use before eating or smoking.Do not eat or smoke in area where material is being used.Store in tightly closed container. For best results, keep product above the ambient dew point temperature.Not a shelf life limited material.
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Section 8: Exposure Controls / Personal Protection

Exposure Limits:			
Components of mixture	CAS Number	OSHA PEL	ACGIH TLV
Nickel	7440-02-0	1.0 mg/m ³	1.5 mg/m ³
Chromium	7440-47-3	1.0 mg/m ³	0.5 mg/m ³
Boron	7440-42-8	15 mg/m ³ (5 mg/m ³ respirable)	10 mg/m ³ as boron oxide
Iron	7439-89-6	10 mg/m ³ as oxide fume	5 mg/m ³ as respirable oxide
Silicon	7440-21-3	15 mg/m ³ (5 mg/m ³ respirable)	10 mg/m ³

Engineering Controls:

- Local exhaust ventilation may be necessary to control air contaminants to their exposure limits.
- Provide mechanical ventilation for confined spaces or if method of use warrants.

Personal Protective Equipment:

- Gloves – work gloves or non-permeable gloves such as vinyl or latex.
- Eyes – safety glasses/goggles or face shield.
- Clothing – Cover-all, lab coat or normal work clothing.
- Respirator – NIOSH N-95 or N-100 filtering face-piece (dusk mask) or equivalent alternative is recommended for up to 10 times the exposure limits.

Section 9: Physical and Chemical Properties

Physical State	Silver / Grey metallic powder
Odor	Odorless
Odor Threshold	Not applicable
PH	Not applicable
Melting Point / Freezing Point	1830°F
Boiling Point	Not determined
Flash Point	Not determined
Evaporation Rate (butyl acetate = 1)	None
Flammability	Non-flammable
LFL (LEL) lower flammability (explosive) limit	Not applicable
UFL (UEL) upper flammability (explosive) limit	Not applicable
Vapor Pressure	Not applicable
Vapor Density	Not applicable
Specific Gravity (Bulk Density)	≈7.8
Solubility	Not soluble
Partition Coefficient (n-octanol/water)	Not determined
Autoignition Temperature	Not available
Decomposition Temperature	Not available
% VOC's	0%

Section 10: Stability and Reactivity

- **Chemical Stability:** This material is stable.
- **Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.
- **Conditions to Avoid:** None
- **Incompatible Materials:** Strong acids and/or oxidizers.
- **Hazardous Decomposition Products:** Intense heat may produce carbon monoxide and/or carbon dioxide and oxidizing conditions may produce oxides of the ingredients shown in Section 3. Oxides of these ingredients may be carcinogenic.

Section 11: Toxicological Information

Likely Routes of Exposure: Skin contact, inhalation of dust.

Skin Contact: May cause sensitivity, dermatitis or allergic reaction.
Contact toxicity data not available. GHS Category 1

Inhalation of Dust: Prolonged inhalation of dust may cause pulmonary irritation, asthma, coughing, shortness of breath.

Ingestion of Dust or powder: Ingestion is not a likely route of exposure.

Ingredient Name	Oral Toxicity (LD50)	Inhalation Toxicity (LC50)
Nickel (metallic)	Oral rat LDLo 5,000 mg/kg	*
Chromium (metallic)	*	*
Boron	Oral rat 650 mg/kg	*
Iron	Oral rat 30,000 mg/kg	*
Silicon	Oral rat 3,160 mg/kg	*

*Toxicity data not available.

Carcinogenicity: GHS Category 2

Ingredient Name	NTP Status		IARC Category	OSHA	CA Prop. 65*
	Known	Anticipated			
Nickel (metallic)	No	Yes	2B	No	Yes
Chromium (metallic)	No	No	3	No	No
Boron	No	No	None	No	No
Iron	No	No	None	No	No
Silicon	No	No	None	No	No

*This product contains a chemical known to the State of California to cause cancer.

Section 12: Ecological Information

- **Aquatic Toxicity:** Acute – None, Chronic – GHS Category 4

Section 13: Disposal Consideration

- Material should be recycled to reclaim scrap metal value.
- If recycling is not possible, dispose of in accordance with local, state, and federal regulations for industrial wastes of this form.

Section 14: Transport Information

DOT Classification	Not regulated unless greater than 100 lbs. per inner container.
UN Identification Number	Not regulated unless greater than 100 lbs. per inner container.
DOT Shipping Description	Not applicable unless greater than 100 lbs. per inner container.

Section 15: Regulatory Information

Toxic Substances Control Act (TSCA)	All ingredients are listed on the TSCA inventory of chemical substances.
Superfund Amendments & Reauthorization Act (SARA)	This product contains Nickel and Chromium.
Resource Conservation & Recovery Act (RCRA)	This material is not a hazardous waste. It is Recyclable.
RoHS & REACH	None

Hazard Codifications & Labeling Requirements

H317 – May cause an allergic skin reaction (nickel).

H351 – Suspected of causing cancer (nickel, chromium).

H370 – Target organ (acute), respiratory apparatus, kidney.

H372 – Target organ (chronic), respiratory apparatus.

Section 16: Other Information

NFPA Numbers (estimated)	Health: 1	Flammability: 0	Reactivity: 1
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WHMIS Category: Class D, Division 2: Nickel and Chromium



The information supplied herein follows the guidelines of WHMIS, GHS, OSHA Hazard Communication Standard 29 CFR 1910.1200 and California Proposition 65, to the best of our knowledge, is accurate and complete. The recommended hygiene and handling practices are believed to be appropriate for the use of this material. However, it is up to the end user to review this information and establish their own procedures and guidelines, based upon their particular application(s). Rankin Industries assumes no responsibility for damage or injury resulting from the end use of this product.