Safety Data Sheet

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1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT NAME: Hi-Alloy 100 Electrode

MANUFACTURER: Inweld Corporation
3962 Portland Street
Coplay Pa 18037

EMERGENCY TELEPHONE NUMBER: 800-424-9300

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2. HAZARD IDENTIFICATION:

Emergency Overview: This product is normally not considered hazardous as shipped. Avoid eye contact or inhalation of dust from the product. When this product is used in a welding process, the most important hazards are welding fumes, heat, radiation and electric shock.

Classification of the Substance/Mixture

CLP/GHS Classification (1272/2008):
Skin Irritation, Category 2
Eye Irritation, Category 2
Acute Toxicity – Inhalation, Category 4
Specific Target Organ Toxicity (Repeated Exposure), Category 1
Hazardous to the Aquatic Environment – Acute Hazard, Category 1
Hazardous to the Aquatic Environment – Long-Term Hazard, Category 2

EU Classification (67/548/EEC):
Toxic (T), Harmful (Xn), Irritant (Xi), Dangerous for the Environment (N), R48/23/25, R20, R36/38, R50, R51/53

Labelling:

Symbols: 

Signal Word: Danger

Hazard Statements:
H315 – Causes skin irritation.
H319 – Causes serious eye irritation.
H332 – Harmful if inhaled.
H372 – Cause damage to respiratory system, eyes, kidney, 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:
P210 – Keep away from heat/sparks/open flames/hot surfaces – No smoking.
P260 – Do not breathe dust/fume/gas/mist/vapours/spray.
P264 – Wash skin and hair thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product.
P271 – Use only outdoors or in a well-ventilated area.
P273 – Avoid release to the environment.

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P280 – Wear protective gloves/eye protection/face protection.
P302+P352 – IF ON SKIN: Wash with plenty of soap and water.
P304+P340 – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P358 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 – Call a POISON CENTER or doctor/physician if you feel unwell.
P332+P313 – IF skin irritation occurs: Get medical advice/attention.
P337+P313 – IF eye irritation persists: Get medical advice/attention.
P362 – Take off contaminated clothing and wash before reuse.
P391 – Collect spillage.
P501 – Dispose of contents/container in accordance with local/regional/national/international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS:

Chemical Identity	CAS #	Range %	OSHA PEL (mg/m3)	ACGIH-TLV (mg/m3)	Carcinogenicity	EU Classification (67/548/EEC)	CLP/GHS Classification (1272/2008)
#Aluminum	7429-90-5	1-11	15	10	No	(F) R11 – R15	(H228) Flam. Sol. 2 (H261) Water-react. 3
Bentonite	1302-78-9	1-11	NR	NR	No	Not Dangerous	Not Hazardous
# Copper	7440-50-8	50-60	1.0	1.0	No	(F) R11 (N) R50	(H228) Flam. Sol. 1 (H400) Aquatic Acute 1
Potassium Cryolite	13775-52-5	1-11	2.5 (as F)	2.5 (as F)	No	(Xi) R36/37/38	(H315) Skin Irrit.. 2 (H319) Eye Irrit.. 2A (H335) STOT SE 3
#Manganese	7439-96-5	1-11	5	1	No	(Xn) R48	(H373) STOT RE 2
#Nickel	7440-02-0	1-5	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	1-5	10 (as Fe2O3)	5 (as Fe2O3)	No	Not Dangerous	Not Hazardous
Sodium Cryolite	15096-52-3	10-20	2.5 (as F)	2.5 (as F)	No	(Xn) R20 (T) R48/23/25 (N),R51/53	(H332) Acute Tox. 4 (H372) STOT RE 1 (H411) Aquatic C. 2
#Sodium Fluoride	7681-49-4	1-11	2.5 (as F)	2.5 (as F)	No	(T) R25 (Xi) R36/38	(H301) Acute Tox. 3 (H315) Skin Irrit.. 2 (H319) Eye Irrit.. 2A
Sodium Silicate	1344-09-3	1-11	NR	5	No	(C) R34 (Xi) R37	(H314) Skin Corr. 1B (H335) STOT SE 3

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 #.

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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. Rinse mouth.
Electric Shock: Disconnect and turn off the power. Use a nonconductive material to pull victim away from contact with live parts or wires. Immediately contact a physician.

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: Do not use water on molten metal. Large fires may be flooded with water from a distance.
Specific Hazards Arising From Chemical: Keep away from heat/spark/open flames/hot surfaces – No smoking. Aluminium oxides, Silicon oxides, Copper oxides, Manganese/manganese oxides, Nickel/nickel oxides, Iron oxides, Hydrogen fluoride, Sodium oxides
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: Solid objects may be picked up and placed into a container. Liquids or pastes should be scooped up and placed into a container. Wear proper protective equipment while handling these materials. Do not discard as refuse.

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 place in closed packages. Keep separate from chemical substances like acids and strong bases, which could cause chemical reactions. Ground/Bond container and receiving equipment.

8. EXPOSURE CONTROLS/ 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:

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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 Behaviour	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 colour 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.
Color: Grey
Odour: Odourless
Odour Threshold: Not Available
pH Value: Not Available
Melting Point/Melting Range: 1560 - 2000° F, 850 - 1100° C
Freezing Point: Not Available
Boiling Point/Boiling Range: Not Available
Flash point: Not Available
Evaporation Rate: Not Available
Self-in flammability: Not Available
Explosion limits: Not Available
Vapour pressure: Not Available
Vapour density: Not Available
Density at 20ºC: 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. Keep away from any possible contact with water, because of violent reaction and possible flash fire.
Conditions to Avoid: Not applicable.
Incompatible Materials: Reacts with acid and water

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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.
Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in section 3. Manganese has a low exposure limit, in some countries that may be easily exceeded. 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.

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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. Symptoms of systematic copper poisoning may include: capillary damage, headache, cold sweat, weak pulse, kidney and liver damage, central nervous system excitation followed by depression, jaundice, convulsions, paralysis and coma. May cause sensitisation by skin contact.

LD/LC50 Values that are relevant for classification		
Aluminum 7429-90-5		
Oral	LD50	>15900 mg/kg (rat)
Inhalation	LC50	>.888 mg/L/4 hr. (rat)
	LC50	12 mg/l (96h) (rainbow trout)

LD/LC50 Values that are relevant for classification		
Bentonite 1302-78-9		
Intravenous	LD50	35 mg/kg (rat)
	LC50	19000 mg/l (96h) (rainbow trout)

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

LD/LC50 Values that are relevant for classification		
Manganese 7439-96-5		
Oral	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)

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LD/LC50 Values that are relevant for classification		
Iron 7439-89-6		
Oral	LD50	30000 mg/kg (rat)

LD/LC50 Values that are relevant for classification		
Sodium Cryolite 15096-52-3		
Oral	LD50	>5000 mg/kg (rat)
	LC50	42.5 mg/l (96h) (rainbow trout)

LD/LC50 Values that are relevant for classification		
Sodium Fluoride 7681-49-4		
Oral	LD50	31 mg/kg (rat)
Oral	LD50	44 mg/kg (mouse)
Oral	LD50	200 mg/kg (rabbit)
Oral	LD50	100 mg/kg (domestic animals)
Oral	LD50	110 mg/kg (wild bird)
Intraperitoneal	LD50	22 mg/kg (rat)
Intravenous	LD50	26 mg/kg (rat)
Subcutaneous	LD50	175 mg/kg (rat)
Intraperitoneal	LD50	38 mg/kg (mouse)
Intravenous	LD50	50.83 mg/kg (mouse)
Subcutaneous	LD50	.115 mg/kg (mouse)
Intravenous	LD50	26.6 mg/kg (monkey)
	LC50	200 mg/l (96h) (rainbow trout)

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 include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait. Prolonged inhalation of nickel (Classified 2B by IARC and R by NTP) above safe exposure limits may cause cancer. Chronic copper poisoning is typified by hepatic cirrhosis, brain damage and demyelination, kidney defect and copper deposition in the cornea as exemplified by humans with Wilson's disease. It has also been reported that copper poisoning has led to haemolytic anemia and accelerates arteriosclerosis, damage to the lungs, vomiting, diarrhoea, abdominal pain and blood disorders. Prolonged or repeated exposure to sodium fluoride can cause damage to the lungs.

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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:
Aluminum, BCF: 18
Copper, BCF: 29

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Nickel, BCF: 16
Iron, BCF: 140000
Manganese, BCF: 59052

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: In massive form, welding rods present no hazards to the aquatic environment.
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.

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13. DISPOSAL CONSIDERATIONS:

Product: For product elimination, consult recycling companies or appropriate local authority.

USA RCRA: This product is not considered hazardous waste if discarded. 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.

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14. TRANSPORT INFORMATION:

UN-number: Welding rods are not classified as dangerous goods for transport and has 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.

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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.

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Ingredient Name	Disclosure Threshold
Aluminum	**15 mg/m3**
Copper	**1.0 mg/m3**
Manganese	**5 mg/m3**
Nickel	**1 mg/m3**
Sodium Fluoride	**2.5 (as F) 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 Material 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

Hazard Statements:

H228 – Flammable solid.
H261 – In contact with water releases flammable gas.
H301 – Toxic if swallowed.
H315 – Causes skin irritation.
H317 – May cause an allergic skin reaction.
H319 – Causes serious eye irritation.
H332 – Harmful if inhaled.
H335 – May cause respiratory irritation.
H351 – Suspected of causing cancer.
H372 – Causes damages to organs through prolonged or repeated exposure.
H373 – May cause damage to organs through prolonged or repeated exposure.
H400 – Very toxic to aquatic life.
H411 – Toxic to aquatic life with long lasting effects.

R-Phrases:

R11 – Highly flammable**.**
R15 – Contact with water liberates extremely flammable gases**.**
R20 – Harmful by inhalation.
R25 – Toxic if swallowed.
R34 – Causes burns.
R36/38 – Irritating to eyes and skin**.**
R36/37/38 – Irritating to eyes, respiratory system and skin.
R37 – Irritating to respiratory system.
R40 – Limited evidence of a carcinogenic effect.
R43 – May cause sensitization by skin contact.
R48 – Danger of serious damage to health by prolonged exposure.
R48/23 – Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R48/23/25 – Toxic: danger of serious damage to health by prolonged exposure through inhalation**.**
R50 – Toxic to aquatic organisms.

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R51/53 – Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-Phrases:

S15 – Contact with water liberates extremely flammable gases.
S16 – Keep away from source of ignition – No smoking.
S22 – Do not breathe dust.
S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28 – After contact with skin, wash immediately with plenty of water
S36/37/39 – Wear suitable protective clothing, gloves and eye/face protection.
S43 – In case of fire, use fire-fighting equipment on basis class D.
S45 – In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61 – Avoid release to the environment.

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