

Product Name/s	Gemini Nickel Arc 98
Part Number	100092, 100093, 100093H, 100094
SDS Document Number	SDS_GEMINI_SPECIAL_CAST IRON ELECTRODES_v1.1_010619
Issue Date	14/06/19

1 Product identifier & identity for the chemical

1.1 Product Identifier

Product Name: Gemini Nickel Arc 98
Part Numbers: 100092, 100093, 100093H, 100094
AWS Classification: AWS A5.15 E Ni-CI

1.2 Other means of identification

Cast Iron Electrodes

1.3 Recommended use of the chemical and restrictions on use

Electrodes for welding all types of cast iron. Do not use except for welding.

1.4 Suppliers name, address and phone number

Supplier Name: Dynaweld Industrial Supplies Pty Ltd
Address: Building 2, 10 Jessica Place, Prestons NSW 2170, Australia
Phone: +61 2 8761 6500
Email: sales@dynaweld.com.au
Web Site: <http://www.dynaweld.com.au/>

1.5 Emergency phone number

Emergency Phone: +61 2 8761 6500 (Australia)

2 Hazard Identification

2.1 Classification of the hazardous chemical

This product is not classified as hazardous according to Globally Harmonized System of classification and labelling of chemicals (GHS).

These products contain nickel, which is classified as dangerous (i.e. H351 - Suspected of causing cancer, H372 - Causes damage to organs through prolonged or repeated exposure, H317 - May cause an allergic skin reaction, H412 - Harmful to aquatic life with long-lasting effects, H315 - Causes skin irritation) however in the form that nickel is present in these products it does not contribute to a hazard classification of the products.

2.2 Label elements, including precautionary statements

Signal Word: Not Applicable
Symbols: Not Applicable
Hazard Statements: Not Applicable
Precautionary Statements: Not Applicable

2.3 Other hazards which do not result in classification

General: When this product is used in a welding process, there are a number of potential hazards. Please read and understand this Safety Data Sheet, the manufacturer's instructions, precautionary labels and *WTIA Technical Note No. 7 Health and Safety in Welding* before using this product.
Electric Shock: Electrical shock can kill.
Radiation: Arc rays can injure eyes and burn skin.

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- Fumes /Gases:** Formation of dangerous fumes / gases during use. Inhalation of welding fumes and gases may cause respiratory irritation, cough. Excessive or prolonged inhalation may cause metal fume fever.
- Heat:** Spatter, slag, melting metal, hot welds, arc rays and sparks can cause burn injuries to skin or damage to eyes and can also ignite combustibles and flammable materials.
- Noise:** Noises generated by welding equipment may damage the auditory system.
- Magnetic fields:** Persons with a pacemaker should not go near welding or cutting operations until they have consulted their doctor and obtained information from the manufacturer of the device.

3 Composition/information on ingredients

3.1 Identity of chemical ingredients

Chemical Name	CAS No.	Concentration Range (%)
Nickel	7440-02-0	>60%
Iron	7439-89-6	Bal
Carbon	7440-44-0	<1%
Silicon	7440-21-3	<1%
Manganese	7439-96-5	<1%
Phosphorous	7723-14-0	<1%
Sulfur	7704-34-9	<1%
Copper	7440-50-8	<1%

3.2 CAS number and other unique identifiers

Note: See section 3.1

3.3 Concentration of ingredients

Note: See section 3.1

4 First Aid Measures

4.1 Description of necessary first aid measures

- General:** Move to fresh air and get medical advice / attention.
- Inhalation:** Remove person to fresh air, keep comfortable for breathing, and get medical advice/attention. If breathing has stopped, perform artificial respiration, and get immediate medical advice/attention.
- Skin contact:** Take off contaminated clothing, and rinse skin with soap and water [or shower]. If skin irritation occurs, get medical advice/attention. For reddened or blistered skin, or thermal burns, get medical advice/attention.
- Eye contact:** Rinse cautiously with water for several minutes. Remove contact lenses (if present and easy to do). Continue rinsing. Get medical advice/attention.

Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. If symptoms persist, get medical advice/attention.
- Electric shock:** Disconnect and turn off power. If the victim is semi or unconscious, open the airway. If the victim cannot breathe, give artificial respiration. If there is no pulse, massage the chest and apply artificial respiration. Get medical advice / attention.
- Ingestion:** Unlikely due to form of product, except for granular materials. If ingested, Rinse mouth. Do NOT induce vomiting. Immediately contact the nearest poisons information centre 13 11 26 (Australia).

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4.2 Symptoms caused by exposure

Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.

Note: Refer to Section 11 for further information.

4.3 Medical Attention and Special Treatment

Treat symptomatically.

5 Fire Fighting Measures

As shipped, this product is non-flammable. However, welding arc and sparks can ignite combustibles and flammable products. Read and understand *WTIA Technical Note No. 7 Health and Safety in Welding* before using this product.

5.1 Suitable extinguishing media

As shipped, the product will not burn. In case of fire in the surroundings, use CO₂, powder or water spray. There is no unsuitable extinguishing media known.

5.2 Specific hazards arising from the chemical

None known.

5.3 Special protective equipment and precautions for fire fighters

Special protective equipment: Follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Special precautions: Use standard fire fighting procedures, and consider the hazards of other involved materials.

6 Accidental release measures

Unlikely due to form of product, however welding fumes and slags may be released when the product is used in welding. Avoid crushing of this product.

6.1 Personal precautions, protective equipment and emergency procedures

If airborne dust and/or fumes are present use adequate engineering controls, and, if needed, personal protection to prevent overexposure.

Note: Refer to recommendations in Section 8.

6.2 Environmental precautions

Avoid release to the environment. Prevent further leakage or spillage if safe to do so.

6.3 Methods and materials for containment and cleaning up

Avoid generating dust. On land, sweep or shovel into suitable containers. Prevent product from entering any drains, sewers or water sources. During containment / clean up observe precautions with regard to the use of personal protective equipment.

Note/s: For further information see Section 8. Refer to Section 13 for proper disposal.

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7 Handling and Storage

7.1 Precautions for safe handling

Handle with care to avoid stings and cuts. Wear gloves when handling welding consumables.

Reduction of fumes and dust: Keep formation of airborne dust and fumes to a minimum. Provide appropriate exhaust ventilation at places where dust and fumes are formed. Read and understand the manufacturer's instruction and the precautionary label on the product. See WTIA Technical Note No. 7 Health and Safety in Welding.

Prevention of electric shock: Do not touch live electrical parts such as the welding wire and welding machine terminals. Wear insulated gloves and safety boots. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with work piece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Prevention of fire & explosion: Remove flammable and combustible materials and liquids.

7.2 Conditions for safe storage, including any incompatibilities

Store in dry protected location to prevent any moisture contact. Keep packages closed when not in use. High-density solid product; avoid storage in unstable positions. Keep welding consumables away from chemical substances like acids, which could cause chemical reactions. Store in accordance with local/regional/national regulations.

8 Exposure controls/personal protection

8.1 Control parameters – exposure standards, biological monitoring

Use industrial hygiene monitoring equipment to ensure that exposure does not exceed the applicable national exposure limits.

Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions Regarding the TLVs and BEIs states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures.

Chemical Name	CAS No.	TLV mg / m ³	OSHA PEL ⁽²⁾ mg / m ³
Chromium Compounds	7440-47-3	Metal (as Cr) 0.5 Cr(VI), inorganic, water insoluble (as Cr) 0.05* Cr(VI), inorganic, water soluble (as Cr) Copper (metal) fume 0.01*	1 0.005* 0.005*
Copper (metal)	7440-50-8	0.2	0.1(fume) 1 dust/mist
Iron (as iron oxide)	7439-89-6	5**	10 (fume)
Manganese & Manganese Compounds (as Mn)	7439-96-5	0.2	5 ceiling
Molybdenum Metal Insoluble Compounds	7439-98-7	3** 10** 0.5**	15*
Nickel (inhalable fraction)	7440-02-0	1.5	1
Niobium	7440-02-0	None	None
Silicon (nuisance dust)	7440-21-3	Withdrawn	15*,5**
Tungsten (metal)	7440-33-7	10 (STEL)	None

* Total dust, ** Respirable fraction, *** Inhalable fraction

Note: Some products may not contain all of the materials listed. For details of composition refer to the composition table in Section 3. For information about welding fume analysis see Section 10.

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8.2 Appropriate engineering controls

Ventilation: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below the exposure limits in the worker's breathing zone, and the general area. Keep exposure as low as possible.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits.

Note: See WTI Technical Note 7 – Health and Safety in Welding for further information / guidance.

8.3 Personal protective equipment (PPE)

Eye Protection		Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade which is too dark to see the weld zone. Then go to the next lighter shade, which gives sufficient view of the weld zone. Provide protective screens and flash goggles, if necessary, to shield others.
Hand protection:		Wear protective gloves. Suitable gloves can be recommended by the glove supplier.
Protective Clothing		Wear hand, head, and body protection which will help to prevent injury from radiation, sparks and electrical shock. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Wear dry gloves free of holes or split seams. Train the welder not to permit electrically live parts or electrodes to contact skin or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.
Respiratory protection:		Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. Use respirable fume respirator, or air-supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below exposure limits.
Ear protection:		Wear earplugs or earmuffs when using engine driven arc welding machine or pulsed arc welding machine that generates high-level noise.
Hygiene measures:		Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Note: See WTI Technical Note 7 – Health and Safety in Welding for further information / guidance.

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9 Physical and chemical properties

	Property	Product description
9.1	Appearance	Solid, non-volatile with varying colour
9.2	Odour	No further relevant information available
9.3	Odour threshold	No further relevant information available
9.4	pH	No further relevant information available
9.5	Melting point/freezing point	>1000°C. Freezing point not available.
9.6	Boiling point and boiling range	No further relevant information available
9.7	Flash point	Not applicable
9.8	Evaporation rate	Not applicable
9.9	Flammability	No further relevant information available
9.10	Upper/lower flammability or explosive limits	Not applicable
9.11	Vapour pressure	Not applicable
9.12	Vapour density	Not applicable
9.13	Relative density	No further relevant information available
9.14	Solubility(ies)	Insoluble
9.15	Partition coefficient: (n-octanol/water)	No further relevant information available
9.16	Auto-ignition temperature	No further relevant information available
9.17	Decomposition temperature	No further relevant information available
9.18	Viscosity	Not applicable
9.19	Specific heat value	No further relevant information available
9.20	Particle size	No further relevant information available
9.21	Volatile organic compounds content	No further relevant information available
9.22	% volatile	No further relevant information available
9.23	Saturated vapour concentration	No further relevant information available
9.24	Release of invisible flammable vapours and gases	No further relevant information available
	Additional parameters	
9.25	Shape and aspect ratio	No further relevant information available
9.26	Crystallinity	No further relevant information available
9.27	Dustiness	No further relevant information available
9.28	Surface area	No further relevant information available
9.29	Degree of aggregation or agglomeration	No further relevant information available
9.30	Ionisation (redox potential)	No further relevant information available
9.31	Biodurability or biopersistence	No further relevant information available

10 Stability and Reactivity

10.1 Reactivity

The product is non-reactive under normal conditions of storage and transport.

10.2 Chemical stability

Stable under normal conditions of storage and transport.

10.3 Conditions to avoid

Avoid heat or contamination of acids, alkalis and oxidising agents.

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10.4 Incompatible materials and possible hazardous reactions

Contact with acids, alkalis and oxidising agents could cause reaction and generation of gas.

10.5 Hazardous decomposition products

Dangerous fumes are formed during use. Welding fumes are classified carcinogen by the IARC (International Agency for Research on Cancer) as Group 2B Cancer suspected agent. Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone.

According to process conditions, hazardous decomposition products may be generated. These hazardous products could include those from the reaction or oxidation of the components listed in section 3 or included in base material.

The amount of fumes generated change with the welding parameters and the diameters of the consumable. Refer to applicable national exposure limits for fume compounds and national exposure limits for fumes.

Fumes generated by this covered electrode contain compounds indicated in section 8. The amount of fumes is generally no more than 1 to 10g/kg consumable. Fumes from these products may contain compounds of Fe, O, Mn, Cr, Ni, Si, Mo, Cu, W and Nb. The rest is not analysed according to available standards. Refer to applicable national exposure limits found in Section 8.

A significant amount of the chromium in the fumes can be hexavalent chromium, which has very low exposure limit in some countries. Manganese and Nickel also have low exposure limits, in some countries this may be easily exceeded.

Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone. Air contaminants around the welding areas can be affected by the welding process and influence the composition and quantity of fumes and gases produced.

In case of work on parts covered by coatings such as lubricants, solvents, paints, metallic compounds, grease, etc. The thermal or photochemical decomposition products of these elements cumulate with the dusts and fumes emitted by the melting of the welding product. The solution to adopt must be, in any case, preceded by a spot study.

Note: For further information refer to WTIA Technical Note No. 7 Health and Safety in Welding.

11 Toxicological information

This material is not toxic – refer to section 2 for further information.

Inhalation of welding fumes and gases can be dangerous to your health. The composition and quantity of both are dependent upon the material being worked, the process, procedures, and consumables used. Note: Refer to Section 10 for further information.

Emissions during the use of this product may also induce an allergic or sensitisation reaction and thereby aggravate existing systemic disease.

11.1 Information on routes of exposure

Acute Toxicity - Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

Cr: The presence of chromium/chromate in welding fumes can cause irritation of nasal membranes and skin.

Ni: The presence of nickel compounds in fume can cause metallic taste, nausea, tightness of chest, fever.

F: Exposure to the fluoride ion in welding fumes may cause hypocalcemia-calcium deficiency in the blood that can result in muscle cramps and inflammation and necrosis of mucous membranes.

Gases: Some toxic gases associated with welding may cause pulmonary edema, asphyxiation, and death.

Chronic Toxicity – Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis, pneumoconiosis and other pulmonary effects. The severity of the change is proportional to the length of the exposure. The changes may be caused by non-work factors such as smoking, etc.

Ni: Long term overexposure to nickel fumes may also cause pulmonary fibrosis and edema.

Cr: Chromates may cause ulceration, perforation of the nasal septum, and severe irritation of the bronchial tubes and lungs. Liver damage has also been reported. Chromates contain the hexavalent form of chromium.

Mn: Overexposure to manganese compounds may affect the central nervous system, symptoms of which are languor, sleepiness, muscular weakness, emotional disturbances and spastic gait. The effect of manganese on the nervous system is irreversible.

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- Cu: Overexposure to copper fumes may lead to copper poisoning, resulting in hemolytic anemia and liver, kidney and spleen damage.
- Fe: Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung, which can be seen on a chest x-ray but causes little or no disability. Chronic overexposure to iron (>50-100mg Fe per day) can result in pathological deposition of iron in body tissues, symptoms of which are fibrosis of the pancreas, diabetes mellitus, and liver cirrhosis.
- SiO2: Respiratory exposure to the crystalline silica present in this welding electrode is not anticipated during normal use. Respiratory overexposure to airborne crystalline silica is known to cause silicosis, a form of disabling pulmonary fibrosis, which can be progressive and may lead to death.
- F: Chronic fluoride absorption can result in osseous fluorosis, increased radiographic density of the bones and mottling of the teeth.

Carcinogenicity – Welding fumes (not otherwise specified) are possibly carcinogenic to humans. Welding fumes is on the IARC lists as posing a cancer risk (Group 2B).

SiO2: Crystalline silica is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans.

Ni: Nickel and its compounds are on the IARC and NTP lists as posing respiratory cancer risk.

Cr: Hexavalent chromium and its compounds are on the IARC and NTP lists as posing a cancer risk to humans.

Arc rays: Skin cancer has been reported.

Respiratory or Skin Sensitisation -

Ni: Nickel and its compounds are skin sensitizers with symptoms ranging from slight itch to severe dermatitis.

Cr: Chromates may cause allergic reactions, including skin rash. Asthma has been reported in some sensitized individuals. Skin contact may result in irritation, ulceration, sensitization, and contact dermatitis.

Others - Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition by-products may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

11.2 Symptoms related to exposure

Note: See Section 11.1

11.3 Numerical measures of toxicity

No further information available

11.4 Immediate, delayed and chronic health effects from exposure

Note: See Section 11.1

11.5 Exposure Levels

Note: See Section 11.1

11.6 Interactive effects

Note: See Section 11.1

11.7 Data limitations

No further information available.

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12 Ecological information

Welding consumables and materials could degrade / weather into components originating from the consumables or from the materials used in the welding process. Avoid exposure to conditions that could lead to accumulation in soils or groundwater.

12.1 Ecotoxicity

No further relevant information available.

12.2 Persistence and degradability

No further relevant information available.

12.3 Bioaccumulative potential

No further relevant information available.

12.4 Mobility in soil

No further relevant information available.

12.5 Other adverse effects

No further information available.

13 Disposal considerations

13.1 Safe handling and disposal methods

The generation of waste should be avoided or minimised whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner.

Ferrous product; do not dispose of it in the environment (metal scrap). When used in combination with fume extractors, treat the ensuing powders according to the provisions in force.

13.2 Disposal of any contaminated packaging

Dispose of non-recyclable products in accordance with all applicable National, State, and Local requirements.

13.3 Environmental regulations

Discharge, treatment, or disposal may be subject to National, State, or Local laws.

14 Transport information

High density product. Not dangerous according to the transport provisions in force. No international regulations or restrictions are applicable.

14.1 UN number

No further relevant information available

14.2 Proper shipping name

No further relevant information available

14.3 Transport hazard class(es)

No further relevant information available

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14.4 Packing group

No further relevant information available

14.5 Environmental hazards

No further relevant information available

14.6 Special precautions during transport

No further relevant information available

14.7 Hazchem Code

Hazchem code not relevant to this product

15 Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Regulations of each country are applied to substances / mixtures.

15.2 Poisons Schedule number

A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

16 Other information

Training advice:

Ensure that user is aware of the potential hazards and knows what to do in the event of an accident or an emergency.

16.1 Date of preparation or review

1st June, 2019

16.2 Key abbreviations or acronyms used

BEI - Biological Exposure Indices

GHS - Globally Harmonized System of classification and labelling of chemicals.

IARC - International Agency for Research on Cancer

NTP - National Toxicology Program

PPE - Personal Protection Equipment

SUSMP - Standard for the Uniform Scheduling of Medicines and Poisons

TLVs - Threshold Limit Value

WTIA – Welding Technology Institute of Australia

Dynaweld Industrial Supplies Pty Ltd requires that all customers read this safety data sheet carefully so as to be informed about the risks implied in the use of the product, and provide any person involved with a copy of the same and/or adequate training on the use of the product.

Whilst Dynaweld Industrial Supplies Pty Ltd has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, Dynaweld Industrial Supplies accepts no liability for loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in the SDS,

END OF SAFETY DATA SHEET