



Material Safety Data Sheets (MSDS)

Document No.: CSW-0009

Rev. date : 2023.08.22

Rev. No. : 0

1. IDENTIFICATION(BRAND NAME & MANUFACTURER INFORMATION)

- 1-1. Brand Name : **CSI-NiCu7, CSI-690, CSI-625, CSI-182, CSI-Ni1, CSC-CuNi**
- 1-2. Product Type : Shield Metal Arc Welding Electrode for nickel and nickel alloy steel
- 1-3. Manufacturer / Supplier
 - 1) Manufacturer : Chosun Welding Co.Ltd
 - 2) Address : 43 Goedong-ro,Nam-gu, Pohang-si, Gyeongsangbuk-do, [37863] Korea
 - 3) Emergency Tel : +82-080-285-9080, +82-52-237-5301~6 Fax:+82-52-237-3311

2. HAZARD(S) IDENTIFICATION

The ingredients are components of this product and hardly harmful to users because of the processed a series of progresses.

This section covers the materials and the hazard .

2-1. Classification of hazard

- Skin Sensitization: Category 1
- Respiratory Sensitization: Category 1
- Carcinogenicity: Category 2
- Specific Target Organ Toxicity, Single Exposure: Category 1
- Specific Target Organ Toxicity, Repeated Exposure: Category 1

2-2. Warning signals including precaution.

- Pictograph



- A signal : Danger
- Health hazard statements
 - H317 May cause an allergic skin reaction.
 - H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
 - H351 Suspected of causing cancer.
 - H372 Causes damage to respiratory system through prolonged or repeated exposure.
- Prevention 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 fume.
 - P261 Avoid breathing fume.
 - P264 Wash thoroughly after handling.
 - P270 Do not eat, drink or smoke when using this product.
 - P272 Contaminated work clothing should not be allowed out of the workplace.
 - P280 Wear protective gloves/protective clothing/eye protection/face protection.
 - P284 In case of inadequate ventilation wear respiratory protection.
- Response precautionary statements
 - P302+P352 IF ON SKIN: Wash with plenty of soap and water.
 - P304+P340 IF INHALED: remove person to fresh air and keep comfortable for breathing.
 - P308+P311 IF exposed or concerned: Call a POISON CENTER or doctor/physician
 - P308+P313 IF exposed or concerned: Get medical advice/attention.
 - P314 Get medical advice/attention if you feel unwell.
 - P321 Specific treatment, see supplemental first aid information.
 - P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
 - P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
 - P362+P364 Take off contaminated clothing and wash it before reuse
- Storage precautionary statements
 - P405 Store locked up.



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- Disposal precautionary statements
 - P501 Dispose of contents and container in accordance with local and national regulations.
- 2-3. Other hazards : No data available

3. COMPOSITION/INFORMATION OF INGREDIENTS

Followed terms are related to components which constituted this product.

Various materials(fumes and gases) which are occurred by welding refer to *10.safety and reaction*

3-1. HAZARDOUS INGREDIENTS

Ingredients	CAS No.	CSI-NiCu7	CSI-690	CSI-625
Aluminium Oxide	1344-28-1	≤ 10.0	≤ 10.0	≤ 10.0
Calcium Carbonate	471-34-1	5.0~10.0	1.0~5.0	5.0~10.0
Iron	7439-89-6	1.0~5.0	5.0~10.0	1.0~5.0
Manganese	7439-96-5	1.0~5.0	1.0~5.0	-
Copper	7440-50-8	20.0~40.0	-	-
Nickel	7440-02-0	Rem.	Rem.	Rem.
Silica	60676-86-0	0.1~1.0	0.1~1.0	1.0~5.0
Titanium Dioxide	13463-67-7	0.5~1.5	1.0~5.0	1.0~5.0
Chromium	7440-47-3	-	10.0~30.0	15.0~40.0
Niobium	7440-03-1	-	1.0~5.0	1.0~5.0
Molybdenum	7439-98-7	-	-	5.0~10.0
AWS Classification		AWS A5.11 ENiCu-7	AWS A5.11 ENiCrFe-7	AWS A5.11 ENiCrMo-3

Ingredients	CAS No.	CSI-182	CSI-Ni1	CSC-CuNi
Aluminium Oxide	1344-28-1	≤ 10.0	≤ 10.0	≤ 10.0
Calcium Carbonate	471-34-1	5.0~10.0	5.0~10.0	5.0~10.0
Iron	7439-89-6	5.0~10.0	0.2~0.8	0.1~1.0
Manganese	7439-96-5	1.0~5.0	0.1~1.0	1.0~5.0
Copper	7440-50-8	-	-	Rem.
Nickel	7440-02-0	Rem.	Rem.	20.0~50.0
Silica	60676-86-0	0.1~1.0	0.1~1.0	0.1~1.0
Titanium Dioxide	13463-67-7	1.0~5.0	0.5~1.5	0.0~1.0
Chromium	7440-47-3	10.0~30.0	-	-
Niobium	7440-03-1	1.0~5.0	-	-
Molybdenum	7439-98-7	-	-	-
AWS Classification		AWS A5.11 ENiCrFe-3	AWS A5.11 ENi-1	AWS A5.6 ECuNi

※ Nickel and chromium contained in this product exist in metallic state (not substances subject to special management). However, nickel may appear as an insoluble compound due to a chemical reaction with the base metal during welding

4. FIRST-AID MEASURES

4-1. When it gets into your eyes

- If foreign matter generated during welding gets into your eyes, do not rub them and wash them with water.



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- If discomfort is felt or pain continues even after washing with water, seek medical attention from an ophthalmologist.

4-2. When in contact with skin

- If your skin is exposed to arc rays and hot heat generated during welding, you may suffer burns.
- Wash with plenty of soapy water for at least 15 minutes to remove chemicals.
- If you suffer a burn, quickly cool the affected area and seek medical attention.
- In case of minor skin contact, prevent spread to contaminated areas.
- Remove and remove clothing and shoes contaminated with chemicals and wash them before using again.

4-3. When inhaled

- If breathing is difficult due to excessive inhalation of gas generated during welding, perform oxygen respiration or artificial respiration. Receive medical attention quickly.
- If not breathing, perform artificial respiration.
- If breathing is difficult, provide oxygen.
- Do not make the person vomit.

4-4. When eaten

- If a substance is ingested or inhaled, do not perform artificial respiration using the mouth-to-mouth method and use appropriate respiratory medical equipment. Please use it.
- If swallowed, seek medical help (doctor) immediately.
- If swallowed, rinse your mouth. Don't try to make him vomit.

4-5. Most important symptoms and effects, both acute and delayed

- Acute: Electrical ophthalmia, metal fume fever, allergic reaction, dizziness, vomiting, etc. caused by arc rays and fumes generated during welding. If bronchial asthma occurs, stop work and seek medical attention.
- Delay: Excessive exposure to arc rays and fumes generated during welding can cause serious damage to the eyes, lungs, and skin. I can give it.

4-6. First aid and doctor's precautions

- Difficulty breathing due to welding gas and fumes
 - Quickly move the patient to fresh air and loosen tight areas around the neck and lower back. do.
 - If the patient is unconscious, secure the airway and administer oxygen supply or artificial respiration.
 - Request medical help as quickly as possible.
- Electric shock
 - Immediately turn off the power and move the victim to a safe place.
 - If the patient is unconscious, secure an airway, perform artificial respiration, and quickly receive help from medical staff.

5. FIRE-FIGHTING MEASURES

5-1. Appropriate (and inappropriate) extinguishing media

- Suitable fire extinguishing media: carbon dioxide, powder fire extinguishing agent, regular foam, water, etc.
- Unsuitable extinguishing media: No data available.
- In case of large fire: No data.

5-2. Specific hazards arising from chemicals

- Thermal decomposition products: carbon dioxide, fume
- Fire and explosion hazard: Not applicable.

5-3. Protective equipment and precautions to wear when extinguishing a fire

- When extinguishing a fire, wear protective equipment (protective clothing, gloves, shoes, goggles, mask, etc.).
- There is a risk of fire during welding work, so remove flammables and combustibles from the surrounding area and ensure sufficient ventilation in the workplace. Fire extinguishing equipment must be provided to



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extinguish fires.

6. ACCIDENTAL RELEASE MEASURES

- 6-1. Measures and protective equipment required to protect the human body: 8. c. Wear personal protective equipment as indicated in the item.
- 6-2. Measures needed to protect the environment: Prevent entry into waterways, drains, basements and confined spaces.
- 6-3. Methods for purification or removal: Not applicable.

7. HANDLING AND STORAGE

- 7-1. Safe handling instructions
- Handle in a sufficiently ventilated area.
 - Do not inhale fumes and gases generated during welding.
 - Handle away from fire.
 - Avoid contact with eyes, skin and clothing.
 - Wear appropriate protective equipment as necessary.
- 7-2. Safe storage methods
- Store indoors in a dry and well-ventilated place.
 - Store away from chemicals such as acids that may cause chemical reactions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- 8.1 Control parameters: Community workplace exposure limits were not established for substances contained in the mixture.
- 8.2. Exposure controls: Do not eat, drink and smoke. Immediately remove all contaminated clothing. Wash hands before breaks and at the end of work.
- 8.2.1 Appropriate engineering controls: Use local exhaust ventilation during all welding operations.
- 8.2.2 In Individual protection measures, such as personal protective equipment:
- 8.2.2.1 Eye/face protection: Always wear eye protection during welding operations, helmet and/or face shield with filter lens.
- 8.2.2.2 Skin protection:
- Hand protection: Wear appropriate protective (welding) gloves during welding.
 - Other: Wear appropriate protective clothing and boots.
- 8.2.2.3 Respiratory protection: If ventilation is insufficient, use appropriate respirator or self-contained breathing apparatus.
- 8.2.2.4 Thermal hazards: No data available.
- 8.2.3 Environmental exposure controls: Do not allow to enter sewers, surface and ground water.

9. PHYSICAL AND CHEMICAL PROPERTIES

- 9-1. Physical State : Solid
- 9-2. Odor : Odorless
- 9-3. Odor threshold : Not applicable
- 9-4. pH Value : Not applicable
- 9-5. Melting point : Not applicable
- 9-6. early boiling point : Not applicable
- 9-7. Flash point : Not applicable



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- 9-8. Evaporation rate : Not applicable
- 9-9. Flammability : Not applicable
- 9-10. Explosion limit - lower : Not applicable
Explosion limit - upper : Not applicable
- 9-11. Vapor pressure : Not applicable
- 9-12. Solubility in water : Not applicable
- 9-13. Vapor density : Not applicable
- 9-14. Density : 7~8.
- 9-15. Partition coefficient N-octanol / water : Not applicable
- 9-16. Spontaneous combustion temperature : Not applicable
- 9-17. Decomposition temperature : Not applicable
- 9-18. Viscosity : Not applicable
- 9-19. Molecular weight : Not applicable

10. STABILITY AND REACTIVITY

- 10.1. Chemical stability and potential for hazardous reactions
Chemically stable at room temperature and pressure.
Generates irritating fumes and gases when used.
- 10.2. Conditions to avoid (electrostatic discharge, shock, vibration, etc.): Not applicable.
- 10.3. Materials to avoid: Combustible materials, acids
- 10.4. Substances produced during decomposition: Fumes and gases are produced by welding heat.

11. TOXICOLOGICAL INFORMATION

Welding fume consist of complex materials and represent iron oxide, manganese oxide and fluorine oxide.
follow section is a health hazard data..

11.1 Iron oxide

- Acute poisonous character : relatively non-poison at intake
- A generation of cancer : no data
- Health influence : (expose a eye and a skin) acute exposure – occur a physical stimulation.
Chronic exposure – no data.
(Ingestion) acute exposure - occur a physical stimulation.
Chronic exposure – occur a iron-pneumoconiosis in case that a welding fume is piled in the lung.

11.2 Manganese oxide(manganese)

- Acute poisonous character : it is rare for worker to occur an acute poison.
- A generation of cancer : nothing
- Health influence : (Ingestion) acute exposure – May occur a acute pneumonia in case that a welding fume of manganese steel is breathed in.
May occur a metal fume fever.

Chronic exposure - occur a nervous disease by reason of chronic poison when welded in a limited place.

※ Metal fume fever - metal fume fever which have a symptoms like a cold is occurred when a worker ingest a corpuscle of metal oxide, below 1.5 micro(generally 0.02~0.05 micro)

First symptoms occur after 4~12h and are thirst, sweat, a metal smell or a stink in mouth.

Other symptoms are a cough, a stimulate, a dry of mucous membrane, a languor and a discomfort.

Occur a fever, a cold fit, a muscular pain and headache.

Occur a vomiting, a excess mental activity and have loose bowels.

Tolerance about a fume directly occur and disappear soon. Every symptoms is lessened less than 24~36h.

Chronic exposure – chronic metal fume fever don't occur but symptoms occur repeatedly and disappear



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within one-two days due to have a tolerance.

12. ECOLOGICAL INFORMATION

- 12-1. Toxicity : No data available
- 12-2. Persistence–degradability : No data available
- 12-3. Bio accumulative potential : No data available
- 12-4. Mobility in soil : No data available
- 12-5. Results of PBT and vPvB assessment : No data available

13. DISPOSAL CONSIDERATION

Follow the rules of the government and the local government when dump wastes.

14. TRANSPORT INFORMATION

- 14.1 **ADR/RID/ADN:** The mixture is not subject to international regulations on transport of dangerous goods.
- 14.1.1 **UN number:** No data available.
- 14.1.2 **UN proper shipping name:** No data available.
- 14.1.3 **Transport hazard class(es):** No data available.
- 14.1.4 **Packing group:** No data available.
- 14.1.5 **Environmental hazards:** No data available.
- 14.1.6 **Special precautions for user:** No data available.
- 14.1.7 **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** No data available.
- 14.2 **IMDG:** The mixture is not subject to international regulations on transport of dangerous goods.
- 14.3 **ICAO/IATA:** The mixture is not subject to international regulations on transport of dangerous goods.

15. REGULATORY INFORMATION

Observing the article 39 (express of hazardous materials) of law of industry safety & health and the article 31 of this same law, express the precautionary label on the product.

California Proposition 65:

⚠ WARNING: This product may expose you to chemicals including [Cobalt (II) Oxide, Titanium dioxide (airborne, unbound particles of respirable size), Chromium (hexavalent compounds), Nickel, Lead and Lead Compounds, Carbon Black, Cadmium, Beryllium and Beryllium Compounds] which are known to the State of California to cause cancer, and [Chromium (hexavalent compounds), Nickel, Lead and Lead Compounds, Cadmium] which are known to the State of California to cause birth defects and/or other reproductive harm. For more information go to <https://www.p65warnings.ca.gov/>
Nickel, Titanium Dioxide, Quartz and Chromium as possible carcinogens

16. OTHER INFORMATION

- 16-1. This MSDS is made by CHOSUN WELDING CO., LTD and refer to the MSDS of each materials and data of welding fume & gas from the Korea Occupational Safety & Health Agency.
- 16-2. Read and understand the manufacturer's instruction and the precautionary label on the product, and follow the laws.
- 16-3. Reference data : FUMES and GASES in the welding Environment(AWS)
Welding : FUME And GASES (Australian Government Publishing Service Canberra)



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MSDS(KISCO-NET) of each materials

Data cooperation : Korea institute of industrial technology