



MATERIALS SAFETY DATA SHEET (MSDS)

1. IDENTIFICATION OF THE PREPARATION AND THE COMPANY

PRODUCT NAME: Welding electrodes
PART NO: 3050590, 3050592, 3050594, 3050596, 3050598
COMPANY IDENTIFICATION: CLARKE INTERNATIONAL,
HEMNALL STREET, EPPING, ESSEX. CM16 4LG
BUSINESS TELEPHONE: 01992 565300
BUSINESS FAX: 01992 561562
EMERGENCY TELEPHONE: 020 89887400

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS	EINECS	%WEIGHT
IRON	7439-89-6	231-096-4	96.6 ~ 97.8 %
CARBON	7440-44-0	231-153-3	≤ 0.20 %
MANGANESE	7439-96-5	231-105-1	≤ 1.20 %
SILICON	7440-21-3	231-130-8	≤ 1.00 %
SULPHUR	7704-34-9	231-722-6	≤ 0.035 %
PHOSPHORUS	7723-14-0	231-768-7	≤ 0.040 %
NICKEL	7440-02-0	231-111-4	≤ 0.30 %
CHROMIUM	7440-47-3	231-157-5	≤ 0.20 %
MOLYBDENUM	7439-98-7	231-107-2	≤ 0.30 %
VANADIUM	7440-62-2	231-171-1	≤ 0.08 %

3. HAZARDS IDENTIFICATION:

Important: This section covers the hazardous materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product are also addressed in Section 8. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

HAZARDOUS INGREDIENT	CAS	EINECS ^Γ	REGULATORY HAZARD CLASSIFICATION /DESIGNATION 67/548/EEC ^Δ	IARC ^E	NTP ^Z	OSHA ^H	65 ^Θ
CARBON	7440-44-0	231-153-3	None	---	---	---	---
IRON	7439-89-6	231-096-4	None	---	---	---	---
MANGANESE	7439-96-5	231-105-1	Xn-R20/22Y	---	---	---	---
MOLYBDENUM	7439-98-7	231-107-2	Xn-R48/20/22; Xi-R36/37X	---	---	---	---
SILICON (Amorphous Silica Fume)	7440-21-3 69012-64-2	231-130-8 273-761-5	None None	---	---	---	---
				3	K	---	X

Γ European Inventory of Existing Chemical Substances Number Δ –European Union Directive 67/548/EEC-Annex 1 E – International Agency for Research on Cancer (1-Human Carcinogen, 2A-Probably Carcinogenic to Humans, 2B-Possibly Carcinogenic to Humans, 3 – Unclassifiable as to Carcinogenicity in Humans, 4 -Probably Not Carcinogenic to Humans) Z-US National Toxicology Program (K-Known Carcinogen, S-Suspected Carcinogen) H-OSHA Known Carcinogen List Θ-California Proposition 65 (X –On Proposition 65 list) ---Dashes indicate the ingredient is not listed with the IARC, NTP, OSHA or 65 Φ- Carcinogen, Mutagen or Reproductive Category per European Council Directive 67/548/EEC Annex 1 Y-Manganese Dioxide EU 67/548/EEC Classification/Designation X-Molybdenum Trioxide EU 67/548/EEC Classification/Designation

The following symbols correspond with the EU 67/548/EEC column above are in European Union Directive 67/548/EEC Annex 1 and EC 1272/2008 Annex VI-Table 3.2:

X Xn – Harmful X Xi – Irritant



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WARNING! -Avoid breathing welding fumes and gases; they may be dangerous to your health. Always use adequate ventilation. Always use appropriate personal protective equipment.

PRIMARY ROUTES OF ENTRY: Respiratory System, Eyes and/or skin.

ARC RAYS: The welding arc can injure eyes and burn skin.

ELECTRIC SHOCK: Arc welding and associated processes can kill. See Section 8.

FUMES AND GASES: Can be dangerous to your health.

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used. Most fume ingredients are present as complex oxides and compounds and not as pure metals. When the electrode is consumed, the fume and gas decomposition products generated are different and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in this section, plus those from the base metal and coating, etc., as noted above. Monitor for the materials identified in the list within this section.

Fumes from the use of this product may contain complex oxides or compounds of the following elements and molecules: amorphous silica fume, copper and manganese. Other reasonably expected constituents of the fume would also include complex oxides of iron and molybdenum. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapours from cleaning and degreasing activities). One recommended way to determine the composition and quality of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1, available from the "American Welding Society", P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment-A Sampling Strategy Guide", which gives additional advice on sampling.

4. FIRST AID MEASURES:

INHALATION: If breathing is difficult provide fresh air and contact physician.

EYE/SKIN INJURIES: For radiation burns, see physician.

Section 11 of this MSDS covers the acute effects of overexposure to the various ingredients within the welding consumable. Section 8 of this MSDS lists the exposure limits and covers methods for protecting yourself and your co-workers.

5. FIRE FIGHTING MEASURES:

Welding consumables applicable to this sheet as shipped are nonreactive, non-flammable, non-explosive and essentially non-hazardous until welded. Welding arcs and sparks can ignite combustibles and flammable products. Unused welding consumables may remain hot for a period of time after completion of a welding process. See American National Standard (ANSI) Z49.1 for further general safety information on the use and handling of welding consumables and associated procedures.

6. ACCIDENTAL RELEASE MEASURES:

Solid objects can be picked up and placed into a container. Wear proper personal protective equipment while handling. Do not discard as general trash.



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7. HANDLING & STORAGE:

HANDLING: No specific requirements in the form supplied. Handle with care to avoid 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 product labels.

STORAGE: Keep separate from acids and strong bases to prevent possible chemical reactions.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION:

9. PHYSICAL AND CHEMICAL PROPERTIES:

Welding consumables applicable to this sheet as shipped are nonreactive, nonflammable, non-explosive and essentially nonhazardous until welded.

PHYSICAL STATE: Coating around the core

ODOR: N/A

COLOR: Gray

FORM: virgate

10. STABILITY AND REACTIVITY:

GENERAL: Welding consumables applicable to this sheet are non solid and nonvolatile as shipped. This product is only intended for use per the welding parameters it was designed for. When this product is used for welding, hazardous fumes may be created. Other factors to consider include the base metal, base metal preparation and base metal coatings. All of these factors can contribute to the fume and gases generated during welding. The amount of fume varies with the welding parameters.

STABILITY: This product is stable under normal conditions.

REACTIVITY: Contact with acids or strong bases may cause generation of gas.

11. TOXICOLOGICAL INFORMATION:

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS: Welding Fumes-May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes. Copper-Metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24-48 hours following overexposure. Iron, Iron Oxide-None are Known. Treat as nuisance dust or fume. Manganese-Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours of overexposure. Molybdenum-Irritation of the eyes, nose and throat. Silica (Amorphous)-Dust and fumes may cause irritation of the respiratory system, skin and eyes.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS: Welding Fumes-Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis." Copper-Copper poisoning has been reported in the literature from exposure to high levels of copper. Liver damage can occur due to copper accumulating in the liver characterized by cell destruction and cirrhosis. High levels of copper may cause anemia and jaundice. High levels of copper may cause nervous system damage characterized by nerve fibre separation and cerebral degeneration. Iron, Iron Oxide Fumes-Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetite (Fe₃O₄) are not regarded as fibrogenic materials. Manganese-Long-term overexposure to manganese compounds may affect the central nervous system. Symptoms may be similar to Parkinson's disease and can include slowness, changes in handwriting, gait impairment, muscle spasms and cramps and less commonly, tremor and behavioural changes. Employees who are overexposed to manganese compounds should be seen by a physician for early detection of neurologic problems. 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. Molybdenum-Prolonged overexposure may



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result in loss of appetite, weight loss, loss of muscle coordination, difficulty in breathing and anemia. Silica (Amorphous)-Research indicates that silica is present in welding fume in the amorphous form. Long term overexposure may cause pneumoconiosis. Non-crystalline forms of silica (amorphous silica) are considered to have little fibrotic potential.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with pre-existing impaired lung functions (asthma-like conditions). Persons with a pacemaker should not go near welding and cutting operations until they have consulted their doctor and obtained information from the manufacturer of the device. Respirators are to be worn only after being medically cleared by your company- designed physician.

EMERGENCY AND FIRST AID PROCEDURES: Call for medical aid techniques recommended by the American Red Cross. If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY: Welding fumes must be considered as carcinogens under OSHA (29 CFR 1910.1200).

12. ECOLOGICAL INFORMATION:

Welding processes can release fumes directly to the environment. Welding wire can degrade if left outside and unprotected. Residues from welding consumables and processes could degrade and accumulate in the soil and groundwater.

13. DISPOSAL CONSIDERATIONS:

Use recycling procedures if available. Discard any product, residue, packaging, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

14. TRANSPORT INFORMATION.

No international regulations or restrictions are applicable. No special precautions are necessary.

15. REGULATORY INFORMATION:

Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label and the material safety data sheet. Observe all local and federal rules and regulations. Take all necessary precautions to protect yourself and others.

16. OTHER INFORMATION:

The following Risk and Safety Phrase Texts and Hazard Statements correspond with the columns labelled -EU 67/548/EEC within Section 2 of this material safety data sheet. Take appropriate precautions and protective measures to