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Revision date 19-Aug-2013

Revision Number 1

1. Identification of the substance/preparation and of the Company/undertaking

1.1 Product Identifier

Product Type Stellite - Welding wire
Product name DELCROME 104-o WIRE
Product code KSW104 41 - WIRE

Type

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Wear and Corrosion Resistant Welding Consumable. Restricted to professional users. For use in industrial installations only.

Uses advised against None reasonably foreseeable.

1.3 Details of the supplier of the safety data sheet

importer

Prepared by

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1.4 Emergency telephone number CHEMTREC: +1-703-527-3887 (INTERNATIONAL)
1-800-424-9300 (NORTH AMERICA)

2. Hazards Identification

2.1 Classification of the substance or mixture

Regulation (EC) No 1272/2008

2.2 Label Elements

Product name DELCROME 104-o WIRE
Product code KSW104 41 - WIRE
Symbols/Pictograms Not dangerous

precautionary statements P264 - Wash hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P330 - Rinse mouth
P210 - Keep away from heat/sparks/open flames/hot surfaces. — No smoking

2.3 Other Hazards

WARNING Vapors may be irritating to eyes, nose, throat, and lungs.

Welding Hazards

Welding will create fumes which may be toxic. Hexavalent Chrome may be formed during welding. If welding is performed on plated or coated materials such as galvanised or painted steel, excessive fume may be produced which contains additional hazardous components, and may result in metal fume fever or other health effects. Radiation from the welding arc can cause burns to the skin and damage to the eyes. The product and work surface will be hot during and after welding. Electric shock can KILL. Arc Rays can injure eyes and burn skin.

Product Information

Potential health effects

acute toxicity

Inhalation

May be harmful if inhaled. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Eye Contact

Contact with eyes may cause irritation.

INGESTION

Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Ingestion may cause irritation to mucous membranes.

irritation

Repeated exposure may cause skin dryness or cracking.

Sensitization

May cause sensitization of susceptible persons.

Chronic effects

Hexavalent Chrome may be formed during welding. Prolonged exposure may cause chronic effects. CNS and psychiatric effects, Parkinson-like symptoms. Languor, sleepiness and weakness in legs. A stolid masklike appearance of face, emotional disturbances such as uncontrollable laughter and spastic gait with tendency to fall in walking and findings in more advanced cases. Repeated contact may cause allergic reactions in very susceptible persons. Avoid repeated exposure. Repeated or prolonged exposure may cause central nervous system damage.

carcinogenicity

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Main Symptoms

May cause allergy or asthma symptoms or breathing difficulties if inhaled. MAY CAUSE ALLERGIC SKIN REACTION. Neurological disorders.

Aggravated Medical Conditions

Skin disorders, Neurological disorders, Respiratory disorders, Preexisting eye disorders

environmental hazard

See Section 12 for additional Ecological Information

3. Composition/information on Ingredients

Chemical name	EC No	CAS-No	Weight %	Classification	EU GHS Classification	REACH Reg. No.
Iron	231-096-4	7439-89-6	> 50	-		No data available
Chromium	231-157-5	7440-47-3	25 - 50	-		No data available
Carbon	231-153-3	7440-44-0	5 - 10	-		No data available
Manganese	231-105-1	7439-96-5	2.5 - 3	-		No data available
Silicon	231-130-8	7440-21-3	0.1 - 1	-		No data available

Full text of R-phrases: see section 16

4. First aid measures

General advice Use first aid treatment according to the nature of the injury. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

4.1 Description of first aid measures

Eye Contact After looking into an arc without protection immediately protect eyes with sunglasses and get medical attention. Rinse thoroughly with plenty of water, also under the eyelids.

Skin contact May cause an allergic skin reaction. Wash hands thoroughly after handling. Get medical attention if irritation develops and persists. In case of burns, immediately cool affected skin for as long as possible with cold water.

Inhalation MAY CAUSE ALLERGIC RESPIRATORY REACTION. If fumes from reactions are inhaled, move to fresh air immediately.

INGESTION Not an expected route of exposure.

Self-protection of the first aider Self-protection of the first aider. Wear suitable gloves.

4.2 Most important symptoms and effects, both acute and delayed CNS and psychiatric effects, Parkinson-like symptoms. Languor, sleepiness and weakness in legs. A stolid masklike appearance of face, emotional disturbances such as uncontrollable laughter and spastic gait with tendency to fall in walking and findings in more advanced cases. May cause allergy or asthma symptoms or breathing difficulties if inhaled

4.3 Indication of any immediate medical attention and special treatment needed Treat symptomatically. May cause sensitization by inhalation and skin contact.

Notes to Physician Treat symptomatically May cause sensitization by inhalation and skin contact

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Extinguishing media which must not be used for safety reasons none.

5.2 Special hazards arising from the substance or mixture Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Thermal decomposition can lead to release of irritating and toxic gases and vapors. May cause sensitization by inhalation and skin contact. Carbon oxides.

5.3 Advice for fire-fighters Use personal protective equipment as required. As in any fire, wear self-contained breathing apparatus and full protective gear.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures Avoid contact with skin and eyes. Ensure adequate ventilation. . Use personal protective equipment as required. Avoid dust accumulation in enclosed space.

6.2 Environmental precautions Avoid release to the environment.

6.3 Methods and material for containment and cleaning up

Pick up and transfer to properly labeled containers. Avoid generation of dust. Do not dry sweep dust. Wet dust with water before sweeping or use a vacuum to collect dust.

6.4 Reference to other sections

7. Handling and Storage

7.1 Precautions for safe handling

Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. In case of insufficient ventilation, wear suitable respiratory equipment. Handle in accordance with good industrial hygiene and safety practice. Use personal protective equipment as required. Avoid contact with eyes, skin and clothing. Wash contaminated clothing before reuse.

7.2 Conditions for safe storage, including any incompatibilities

Keep out of the reach of children. Keep in properly labeled containers. Store in a cool/low-temperature, well-ventilated, dry place away from heat and ignition sources.

Storage temperature

Storage Life

Stable under normal conditions

incompatible materials

7.3 Specific end use(s)

Welding. .

8. exposure controls/personal protection

8.1 Control parameters

Exposure controls

Chemical name	Eu	United Kingdom	France	Spain	Germany
Chromium 7440-47-3	2 mg/m ³ TWA	STEL: 1.5 mg/m ³ TWA: 0.5 mg/m ³	2 mg/m ³ TWA [VME] (indicative limit)	2 mg/m ³ TWA [VLA-ED] (indicative limit value)	
Manganese 7439-96-5		STEL: 1.5 mg/m ³ TWA: 0.5 mg/m ³	1 mg/m ³ TWA [VME] (fume, as Mn)	0.2 mg/m ³ TWA [VLA-ED]	0.2 mg/m ³ TWA MAK (inhalable fraction); 0.02 mg/m ³ TWA MAK (respirable fraction)
Silicon 7440-21-3		STEL: 30 ppm STEL: 12 mg/m ³ TWA: 10 mg/m ³ TWA: 4 mg/m ³	10 mg/m ³ TWA [VME]		
Chemical name	Italy	Portugal	Netherlands	Finland	Denmark
Chromium 7440-47-3	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA [VLE-MP]	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA (dust)
Manganese 7439-96-5	0.2 mg/m ³ TWA	0.2 mg/m ³ TWA [VLE-MP]		0.2 mg/m ³ TWA (inhalable dust); 0.1 mg/m ³ TWA (respirable)	0.2 mg/m ³ TWA (dust, fume and powder); 0.1 mg/m ³ TWA (respirable)
Silicon 7440-21-3					10 mg/m ³ TWA
Chemical name	Austria	Switzerland	Poland	Norway	Ireland
Chromium 7440-47-3	2 mg/m ³ TWA [TMW]	0.5 mg/m ³ TWA [MAK] (inhalable)	0.5 mg/m ³ TWA [NDS]	STEL: 1.5 mg/m ³	2 mg/m ³ TWA
Carbon 7440-44-0	5 mg/m ³ TWA [TMW] (alveolar dust with <1% Quartz)		4.0 mg/m ³ TWA [NDS] (natural, total inhalable dust); 1.0 mg/m ³ TWA [NDS] (natural, respirable dust); 6.0 mg/m ³ TWA [NDS] (synthetic, total inhalable dust)		

Manganese 7439-96-5	2 mg/m ³ STEL [KZW] (inhalable fraction, 4 X 15 min) 0.5 mg/m ³ TWA [TMW] (inhalable fraction)	0.5 mg/m ³ TWA [MAK] (inhalable)	0.3 mg/m ³ TWA [NDS]	STEL: 3 ppm STEL: 0.3 mg/m ³	0.2 mg/m ³ TWA (fume, as Mn); 0.2 mg/m ³ TWA
Silicon 7440-21-3		3 mg/m ³ TWA [MAK] (respirable)		STEL: 20 mg/m ³	10 mg/m ³ TWA (total inhalable dust); 4 mg/m ³ TWA (respirable dust)

Derived No Effect Level (DNEL) Cr, Chromium, long-term local inhalation 0.5 mg/m³
 Fe, Iron, long-term local effects inhalation 3 mg/m³
 Mn, Manganese, systemic inhalation 0.2 mg/m³

Predicted No Effect Concentration (PNEC) No information available

During Welding If welding is performed on plated or coated materials such as galvanised or painted steel, excessive fume may be produced which contains additional hazardous components, and may result in metal fume fever or other health effects

8.2 Exposure controls

Personal precautions Use personal protective equipment as required. Avoid contact with eyes, skin and clothing. Wash hands before eating, drinking or smoking. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product.

Engineering controls Ensure adequate ventilation, especially in confined areas.

Eye Protection Use suitable eye protection to guard against the effects of welding.

Skin Protection Long sleeved clothing. Wear fire/flammable resistant/retardant clothing.

Hand Protection Protective gloves. The product and work surface will be hot during and after welding. Ensure adequate protection is in place to stop individuals from burning themselves.

Respiratory protection Use only with adequate ventilation. If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product.

Special Precautions for users Health Surveillance should be in place for employees who are exposed while using this product. If exposure limits are likely to be exceeded or if irritation or other symptoms are experienced, NIOSH/MSHA or EN 136 approved respiratory protection should be worn. Training required. Eye-irrigation bottle with pure water.

Environmental exposure controls Do not allow to enter into soil/subsoil. In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

physical state	solid
Appearance	metallic
Odor	none
pH	Insoluble in water
Melting point / melting range	1285-1395 °C / 2340-2540 °F
flash point	not applicable
vapor pressure	not applicable
vapor density	not applicable
Water solubility	Insoluble in water
Autoignition temperature	N/A
viscosity	solid
density	8.44 g/cm3
Explosive properties	not applicable

9.2. Other information

VOC Content (%)	Not Applicable
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10. Stability and Reactivity

10.1 Reactivity	Stable under normal conditions
10.2 Chemical stability	Stable under normal conditions
10.3 Possibility of hazardous reactions	Stable under normal conditions
10.4 Conditions to avoid	Keep away from sources of heat (e.g. hot surfaces), sparks and open flames.
10.5 Incompatible materials	Acids. Strong oxidizing agents.
10.6 Hazardous decomposition products	Thermal decomposition can lead to release of toxic/corrosive gases and vapors.

11. Toxicological Information

11.1 Information on toxicological effects

Product Information

Acute toxicity	
Inhalation	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Eye Contact	Contact with eyes may cause irritation.
Skin contact	Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. Prolonged contact may cause redness and irritation. Prolonged skin contact may defat the skin and produce dermatitis. May cause sensitization by skin contact.
Neurological effects	Repeated or prolonged exposure may cause central nervous system damage. Prolonged or excessive exposure to manganese in dust or fume may cause irreversible central nervous system damage (Manganism). Symptoms resemble Parkinson's disease and include tremors, impaired speech, mask like face and impaired movement.

INGESTION	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea Ingestion may cause irritation to mucous membranes
irritation	Repeated exposure may cause skin dryness or cracking.
corrosivity	No information available
Sensitization	May cause sensitization of susceptible persons

Chemical name	Oral LD50	dermal LD50	Inhalation LC50
Iron	= 984 mg/kg (Rat)		
Chromium	LD50 >5000 mg/kg bw	Data waiving - Study Scientifically Unjustified	LC50 >5.41 mg/L air (analytical)
Carbon	> 10000 mg/kg (Rat)		
Manganese	LD50 >2000 mg/kg bw	Data waiving - Study Scientifically Unjustified	LC50 >5.14 mg/L air (analytical)

chronic toxicity Hexavalent Chrome may be formed during welding. Prolonged exposure may cause chronic effects. CNS and psychiatric effects, Parkinson-like symptoms. Languor, sleepiness and weakness in legs. A stolid masklike appearance of face, emotional disturbances such as uncontrollable laughter and spastic gait with tendency to fall in walking and findings in more advanced cases. Repeated contact may cause allergic reactions in very susceptible persons. Avoid repeated exposure. Repeated or prolonged exposure may cause central nervous system damage.

carcinogenicity

Carcinogenic effects The table below indicates whether each agency has listed any ingredient as a carcinogen

Chemical name	EU Annex I Carcinogen Information	UK	IARC
Chromium	Category 3		Group 3 - Not Classified as a Human Carcinogen

MUTAGENIC EFFECTS None known

Reproductive toxicity This product does not contain any known or suspected reproductive hazards.

developmental toxicity None known

Neurological effects Repeated or prolonged exposure may cause central nervous system damage. Prolonged or excessive exposure to manganese in dust or fume may cause irreversible central nervous system damage (Manganism). Symptoms resemble Parkinson's disease and include tremors, impaired speech, mask like face and impaired movement.

11.2 Other Information

none

Substance related information

12. Ecological Information

12.1. Ecotoxicity

ecotoxicity Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants

Chemical name	Algae toxicity	Acute Fish toxicity	Toxicity to Microorganisms	Daphnia magna

Iron	NOEC - 1.4 mg/L	Data Waiving - Study Scientifically Unjustified	Not available	Data Waiving - Study Scientifically Unjustified
Chromium	Data Waiving - Study Scientifically Unjustified	Data Waiving - Study Scientifically Unjustified	Not available	Data Waiving - Study Scientifically Unjustified
Manganese	EC50 - 4.5 mg/L	NOEC - 3.6 mg/L	Not available	EC 50 > 1.6 mg/L

12.2 Persistence and degradability Product/Substance is inorganic. not applicable.

12.3 Bioaccumulative potential This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

12.4 Mobility in soil No information available

12.5 Results of PBT and vPvB assessment The components in this formulation do not meet the criteria for classification as PBT or vPvB

12.6 Other adverse effects

13. Disposal Considerations

13.1 Waste treatment methods

Disposal Considerations It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Improper disposal or reuse of this container may be dangerous and illegal. Refer to applicable local, state and federal regulations as well as industry standards.

Waste from residues/unused products Reuse or recycle. Dispose of in accordance with local regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

EWC Waste Disposal No. .

OTHER INFORMATION Waste codes should be assigned by the user based on the application for which the product was used.

14. Transport Information

IMO/IMDG Not regulated

ADR/RID Not regulated

ICAO/IATA-DGR Not regulated

14.8 Additional information

15. regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories

EU Regulations
EINECS/ELINCS -
ENCS -

Legend

EU Inventory Legend EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

15.2 Chemical Safety Assessment Chemical Safety Assessment available for this product

16. other information

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Issuing Date 01-Aug-2013
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Revision Note not applicable

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Disclaimer

Kennametal urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific SDSs, we are not and cannot be responsible for SDS's obtained from any source other than ourselves. If you have obtained an SDS from another source or if you are not sure that the SDS you have is current, please contact us for the most current version.

End of Safety Data Sheet