Safety Data Sheet

Issuing Date 2015-06-19 **Revision Date** 2015-06-19 **Revision Number** 1

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

1.1 Product Identifier

Product Type Welding powder
Product name **Deloro 60 / M/-1 powder**
Product code KSPN1013-1

Type Powder

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

Recommended Use Wear and Corrosion Resistant Welding Consumable. 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 Kennametal Inc. 1600 Technology Way
Latrobe, PA 15650, USA

For further information, please contact:
E-mail k-corp-product.safety@kennametal.com

Emergency Telephone Number CHEMTREC: +1-703-527-3887 (INTERNATIONAL)
1-800-424-9300 (NORTH AMERICA)

NRC (National Response Center) India, National Poisons Information Centre +91 112 659 36 77 or +91 112 658 93 91
Pakistan, National Poisons Control Centre +92 21 9920509/35686535
Philippines, National Poison Management & Control Center +632 524 10 78/+632 544 84 00/local 2311

2. Hazards Identification

2.1 Classification of the substance or mixture

Skin sensitization	Category 1
Carcinogenicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 1

2.2 Label Elements

Product name Deloro 60 / M/-1 powder
Product code KSPN1013-1

signal word **DANGER**

Hazard Statements	H317 - May cause an allergic skin reaction H351 - Suspected of causing cancer H372 - Causes damage to organs through prolonged or repeated exposure if inhaled
precautionary statements	P260 - Do not breathe dust/fume/gas/mist/vapors/spray P264 - Wash hands thoroughly after handling P270 - Do not eat, drink or smoke when using this product P273 - Avoid release to the environment P308 + P313 - IF exposed or concerned: Get medical advice/attention P280 - Wear protective gloves/protective clothing/eye protection/face protection P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
precautionary statements	P201 - Obtain special instructions before use P202 - Do not handle until all safety precautions have been read and understood P210 - Keep away from heat/sparks/open flames/hot surfaces. — No smoking P271 - Use only outdoors or in a well-ventilated area P272 - Contaminated work clothing should not be allowed out of the workplace P285 - In case of inadequate ventilation wear respiratory protection P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention P363 - Wash contaminated clothing before reuse

2.3 Other Hazards

WARNING	May cause sensitization by skin contact. Vapors may be irritating to eyes, nose, throat, and lungs. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Welding Hazards	CAUTION. Welding will create fumes which may be toxic. 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. Arc Rays can injur eyes and burn skin. Electric shock can kill. The product and work surface will be hot during and after welding.

2.4 Additional Information

Product Information

Potential health effects

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. MAY CAUSE ALLERGIC RESPIRATORY REACTION.
Eye Contact	Contact with eyes may cause irritation. Particulates may cause irritation due to mechanical abrasion. May cause eye irritation with susceptible persons.
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 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 skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons. Repeated or prolonged exposure may cause central nervous system damage.

Carcinogenicity This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B).

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, Allergies, Blood disorders, Kidney disorders, Liver disorders, Overexposure may cause female and male reproductive disorder(s)

environmental hazard See Section 12 for additional Ecological Information

3. Composition/information on Ingredients

Chemical name	Formula	EC No	CAS-No	weight-%	GHS Classification
Nickel	Ni	231-111-4	7440-02-0	> 50	STOT RE 1 (H372) S,7 Carc. 2 (H351) S,7 Skin Sens. 1 (H317) S,7 Aquatic Chronic 3 (H412)
Chromium	Cr	231-157-5	7440-47-3	10 - 25	
Silicon Metal	Si	231-130-8	7440-21-3	3 - 5	
Iron	Fe	231-096-4	7439-89-6	3 - 5	
Boron	B	231-151-2	7440-42-8	3 - 5	
Carbon	C	231-153-3	7440-44-0	0.1 - 1	

NOTE This product may contain additional substances with a content of less than 0.1 % per substance, which are not listed. May contain additional substances in a range up to 2 % which are not classified hazardous or may not contribute to the products overall classification.

Full text of H-Statements referred to under sections 2 and 3

H317 - May cause an allergic skin reaction
H351 - Suspected of causing cancer if inhaled
H372 - Causes damage to the following organs through prolonged or repeated exposure if inhaled: Lungs
H412 - Harmful to aquatic life with long lasting effects

4. First aid measures

General advice Immediate medical attention is required. 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 Keep eye wide open while rinsing. Call a physician immediately. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Skin contact Immediate medical attention is required. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash off immediately with soap and plenty of water.

Inhalation	Move to fresh air. Immediate medical attention is required. If not breathing, give artificial respiration.
Ingestion	Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. Rinse mouth.
Self-protection of the first aider	Wear suitable gloves. Self-protection of the first aider.
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 May cause sensitization of susceptible persons

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. In the event of fire, wear self-contained breathing apparatus.

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. 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 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. Avoid contact with eyes, skin and clothing. Wear suitable protective clothing. Use only with adequate ventilation. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

7.2 Conditions for safe storage, including any incompatibilities Keep in properly labeled containers. Keep container tightly closed in a dry and well-ventilated place. Keep containers tightly closed in a cool, well-ventilated place.

Storage temperature

Storage Life Stable under normal conditions

incompatible materials

7.3 Specific end use(s) Welding. Restricted to professional users. For use in industrial installations only.

8. Exposure Controls/Personal Protection

8.1 Control parameters

Exposure controls

Chemical name	China	Hong Kong	India	Indonesia	Japan
Nickel	TWA: 1 mg/m³ STEL: 2.5 mg/m³	TWA: 1.5 mg/m³		TWA: 1.5 mg/m³	
Chromium	TWA: 0.05 mg/m³ STEL: 0.15 mg/m³	TWA: 0.5 mg/m³		TWA: 0.5 mg/m³	
Silicon Metal				TWA: 10 mg/m³	
Iron				TWA: 1 mg/m³	

Chemical name	Korea	Philippines	Singapore	Thailand	Vietnam
Nickel	TWA: 1 mg/m³	1 mg/m³ TWA	PEL: 1 mg/m³		0.05 mg/m³ TWA 0.25 mg/m³ STEL
Chromium	TWA: 0.5 mg/m³	1 mg/m³ TWA	PEL: 0.5 mg/m³		
Silicon Metal	TWA: 10 mg/m³		PEL: 10 mg/m³		
Carbon	TWA: 2 mg/m³				

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 Wear safety glasses with side shields (or goggles).

Skin Protection Wear suitable gloves. Wear suitable protective 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 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 Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with skin, eyes or clothing. Wash hands thoroughly after handling.

Special Precautions for users	Eye-irrigation bottle with pure water. Health Surveillance should be in place for employees who are exposed while using this product. Training required.
Biological standards	
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, Powder
Odor	none	**Melting point / melting range**	965-1040 °C / 1770-1900 °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

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. Particulates may cause irritation due to mechanical abrasion. May cause eye irritation with susceptible persons.
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.
Carcinogenicity	Category 2
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
Nickel	>9000 mg/kg bw	Data waiving - Other Justification	NOAEC >=10.2 mgL air
Chromium	LD50 >5000 mg/kg bw	Data waiving - Study Scientifically Unjustified	LC50 >5.41 mg/L air (analytical)
Silicon Metal	LD50 >3160 mg/kg bw	LD50 >5000 mg/kg bw	Acutely Non Toxic
Iron	= 984 mg/kg (Rat)		
Boron	650 mg/kg (Rat)	Not Listed in C&L Inventory	Not Listed in C&L Inventory
Carbon	> 10000 mg/kg (Rat)		

Chronic toxicity 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 skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons. Repeated or prolonged exposure may cause central nervous system damage.

Carcinogenicity This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B).

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

Chemical name	IARC	China - Carcinogens	India - Carcinogens	Indonesia - Carcinogens
Nickel	Nickel Compounds: Group 1 - Known Human Carcinogen - Nickel, Metalic & Alloy: Group 2B - Possible Human Carcinogen	Possibly carcinogenic to humans		
Chromium	Group 3 - Not Classified as a Human Carcinogen			
Chemical name	**Japan**	**Japan - ISHL Designated Carcinogens**	**Korea - Carcinogens**	**Philippines**
Nickel	Group 1 Group 2B			

MUTAGENIC EFFECTS None known

Reproductive toxicity None known.

Developmental toxicity None known

Target organ effects blood, Eyes, Jaw, kidney, liver, Lungs, Nasal Cavities, respiratory system, Skin, Teeth

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 VERY TOXIC TO AQUATIC ORGANISMS.

Chemical name	Algae toxicity	Acute Fish toxicity	Toxicity to Microorganisms	Daphnia magna
Nickel	EC10 - 316.5 ug/L	LC50 - 15.3 mg/L	Not available	LC50 >200ug/L (@6-6.5 pH), 13ug/L (@8-8.5pH)
Chromium	Data Waiving - Study Scientifically Unjustified	Data Waiving - Study Scientifically Unjustified	Not available	Data Waiving - Study Scientifically Unjustified
Silicon Metal	Data Waiving - Study Scientifically Unjustified	Data Waiving - Other Justification	Not available	Data Waiving - Study Scientifically Unjustified
Iron	NOEC - 1.4 mg/L	Data Waiving - Study Scientifically Unjustified	Not available	Data Waiving - Study Scientifically Unjustified

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.

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

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

15. Regulatory Information

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

Chemical name	India - Hazardous and Toxic Chemicals	Japan - ISHL Disclosure cut-off list
Nickel		>0.1%
Chromium		>0.1%
Silicon Metal		Ignitable substance (listed under Metallic powder)
Chemical name	**Thailand - Hazardous Substances**	**Vietnam - Chemicals**
Nickel		1000 kg (inhalable powder)
Boron		2804 50 (Customs shall make a chemical safety data sheet)

All of the components in the product are on the following Inventory lists:

Chemical name	Inventory - China - Inventory of Existing Chemical Substances (IECSC)	Inventory - Japan - Existing and New Chemical Substances (ENCS)	Inventory - Japan - Industrial Safety and Health Law Substances (ISHL)	Inventory - Korea - Existing Chemicals Inventory (KECI/KECL)	Inventory - Philippines - Inventory of Chemicals and Chemical Substances (PICCS)
Nickel	Present [25343]	-	-	Present [KE-25818]	Present
Chromium	Present [13603]	-	-	Present [KE-05970]	Present
Silicon Metal	Present [13814]	-	-	Present [KE-31029]	Present
Iron	Present [34355]	-	-	Present [KE-21059]	Present
Boron	Present [25541]	-	-	Present [KE-03518]	Present
Carbon	Present [34023]	-	-	Present [KE-04671]	Present

Legend
15.2 Chemical Safety Assessment Chemical Safety Assessment available for this product

16. Other Information

Prepared by Kennametal Inc. 1600 Technology Way Latrobe, PA 15650, USA

Issuing Date 2015-06-19

Revision Date 2015-06-19

Revision Note not applicable

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