SAFETY DATA SHEET

Print date 2017-09-21 **Revision date** 2017-09-21 **Revision number** 1

1. Identification of the Substance/Preparation and of the Company/Undertaking

1.1 Product Identifier

Product Type	Welding rods
Product Name	**Delstain 420 Rod/Wire/Electrode/Part**
Product Code	KSYN1060-1
Type	Solid, Base metals and alloys, > 1x1x1 mm

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

Recommended use	Service life. cobalt and/or nickel containing alloys, steels, prefabricated parts and tools. Metallurgical Products. Wear and Corrosion Resistant Welding Consumable. Wear and Corrosion Resistant Components. For use in industrial installations only.
Uses advised against	Consumer use.

1.3 Details of the supplier of the safety data sheet

Supplier Identification	India: Kennametal India Limited 8/9th Mile, Tumkur Road Bangalore, Karnataka - 560073 bangalore.information@kennametal.com Phone: 1 800 10352271031 Singapore: Kennametal Pte Ltd. 3A International Business Park Unit #01-02/03/05 Singapore 609935 k-sg.sales@kennametal.com Phone: 1 800 622 1031 Pakistan: itsystem@brain.net.pk
Prepared By	Kennametal Inc. 1600 Technology Way Latrobe, PA 15650, USA
E-mail	k-corp-product.safety@kennametal.com
Company Emergency Phone Number	Kennametal Security, Latrobe, US, PA +1-724-539-5610 (english)

1.4 Emergency telephone number

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

2.2 Label Elements

Product Name	Delstain 420 Rod/Wire/Electrode/Part
Product Code	KSYN1060-1
Precautionary Statements	P202 - Do not handle until all safety precautions have been read and understood P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P281 - Use personal protective equipment as required
P280 - Wear protective gloves/protective clothing/eye protection/face protection

2.3 Other Hazards

Welding Hazards — CAUTION. Welding will create fumes which may be toxic. The product and work surface will be hot during and after welding. Fire hazard. Ensure adequate protection is in place to stop individuals from burning themselves. Hexavalent Chrome may be formed during 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.

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

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.

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, Kidney disorders, Liver disorders, Central nervous system, Blood disorders, Overexposure may cause female and male reproductive disorder(s), Use of alcoholic beverages may enhance toxic effects

Environmental Hazard — See section 12 for additional ecological information May cause long-term adverse effects in the aquatic environment

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Formula	CAS-No	Weight-%	GHS Classification
Iron	Fe	7439-89-6	> 50	Not classified
Chromium	Cr	7440-47-3	10 - 25	Not classified
Manganese	Mn	7439-96-5	1 - 2.5	Not classified
Carbon	C	7440-44-0	0.1 - 1	Not classified

Note — This product may contain additional substances with a content of less than 0.1 % per substance, which are not listed.

4. FIRST AID MEASURES

General Advice — If symptoms persist, call a physician. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. 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. If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact — Consult a physician if necessary. 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. If breathing is irregular or stopped, administer artificial respiration. Oxygen or artificial respiration if needed. Get medical attention. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

INGESTION — Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician. Rinse mouth.

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 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.

Component information

Chemical Name	Extuinguishing Media for Fires (Suitable)	Extinguishing Media for Fires (Unsuitable)

Chromium	Use extinguishing media appropriate for surrounding fire.	Do not use carbon dioxide, which may form an explosive mixture with powdered chromium.

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 eat, drink or smoke when using this product. Use personal protective equipment as required. Avoid contact with eyes, skin and clothing. Wash contaminated clothing before reuse. Do not breathe dust/fume/gas/mist/vapors/spray.

7.2 Conditions for safe storage, including any incompatibilities

Storage Keep out of the reach of children. 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) Restricted to professional users.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Chemical Name	China	Hong Kong	India	Indonesia	Japan
Iron	-	-	-	TWA: 1 mg/m³	-
Chromium	TWA: 0.05 mg/m³ STEL: 0.15 mg/m³	TWA: 0.5 mg/m³	-	TWA: 0.5 mg/m³	0.5 mg/m³ OEL
Manganese	TWA: 0.15 mg/m³ STEL: 0.45 mg/m³	TWA: 0.2 mg/m³	1 mg/m³ TWA (fume) 5 mg/m³ Ceiling (dust) 0.03 mg/m³ STEL (fume, as Mn)	TWA: 0.2 mg/m³	0.2 mg/m³ OEL 0.2 mg/m³ OEL (as Mn)
Chemical Name	**Korea**	**Philippines**	**Singapore**	**Taiwan**	**Thailand**
Chromium	TWA: 0.5 mg/m³	1 mg/m³ TWA	PEL: 0.5 mg/m³	1 mg/m³ TWA	-
Manganese	STEL: 3 mg/m³ TWA: 1 mg/m³	5 mg/m³ Ceiling	STEL: 3 mg/m³ PEL: 1 mg/m³	1 mg/m³ TWA (fume) 5 mg/m³ Ceiling	-
Chemical Name	**Vietnam**	**...**	**...**	**...**	**...**
Manganese	0.3 mg/m³ TWA 0.6 mg/m³ STEL	-	-	-	-

During Welding During Welding

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/flame resistant/retardant clothing. Wear impervious gloves and/or clothing if needed to prevent contact with the material.
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. Regular cleaning of equipment, work area and clothing is recommended. Keep away from food, drink and animal feeding stuffs. Wash hands before breaks and at the end of workday. Avoid contact with skin, eyes and clothing.
Special Precautions for Users	Health Surveillance should be in place for employees who are exposed while using this product. Training required. Eye-irrigation bottle with pure water. 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.

Biological standards

Chemical Name	Singapore - BEI
Manganese	50 µg/L Medium: urine Parameter: Manganese

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 @20°C	Solid	**appearance**	Metallic
Odor	None	**Melting Point / Melting Range**	~ 1400 °C / ~ 2552 °F
Flash Point	Not applicable	**vapor pressure**	Not applicable
vapor density	Not applicable	**Water Solubility**	Insoluble in water
Autoignition Temperature	N/A	**Dynamic Viscosity**	Solid
Density VALUE	8.1-8.4 g/cm3	**Explosive Properties**	Not applicable

9.2. Other information

VOC content (%) Not applicable

Component information

Chemical Name	Mol. Weight	Water Solub.	Vap. Press.	Vap. Dens.	pH Val.	Autoign. Temp.	Evap. Rate	Boil. Temp.
Iron	55.84 g/mol	-	0.000001 hPa at 25 °C	-	-	>100 °C	-	-
Chromium	51.99 g/mol	-	-	-	-	-	-	2642 °C
Manganese	54.93 g/mol	-	1 mmHg at	-	-	-	-	-

			1292 °C					
Carbon	12.01 g/mol	-	-	-	-	300 - 500 °C	-	-
Chemical Name	**Density VALUE**	**Melt. Temp.**	**flash point**	**Water Sol.**	**Bulk Dens.**	**Odor**	**State**	**Color**
Iron	7.87 g/cm3 at 25 °C	1539 °C	-	insoluble	3000 - 4000 kg/m^3	-	-	-
Chromium	7.19 g/cm3 at 20 °C	1900 °C	-	insoluble	-	-	-	grey
Carbon	-	>=3500 °C	-	insoluble	0.25 - 0.75 kg/m^3 at 20 °C	-	-	-

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)

Manganese	LD50 >2000 mg/kg bw	Data waiving - Study Scientifically Unjustified	LC50 >5.14 mg/L air (analytical)
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.

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
Chromium	Group 3 - Not Classified as a Human Carcinogen	-	-	A4 - not classifiable as a human carcinogen

Mutagenic effects None known

Reproductive Toxicity None known.

developmental toxicity None known

Target Organ Effects EYES, Respiratory system, skin, Central Nervous System (CNS)

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. May cause long-term adverse effects in the aquatic environment.

Chemical Name	Algae Toxicity	Acute Fish Toxicity	Toxicity to microorganisms	Toxicity to daphnia and other aquatic invertebrates
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.

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

ICAO / IATA-DGR NOT REGULATED

China (IECSC) NOT REGULATED

Australia Dangerous Goods NOT REGULATED

Japan NOT REGULATED

15. REGULATORY INFORMATION

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

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

Chemical Name	China - Chemicals Regulated under National Standard (GB)	China - List of Dangerous Chemicals
Manganese	-	Present (powder, wetted with >=25% water)
Chemical Name	**India - Hazardous and Toxic Chemicals**	**Japan - ISHL Disclosure cut-off list**
Chromium	Present (powder)	>=0.1%
Manganese	-	>=0.1% Group 2, >1 % in preparations (Group 2 substance under supervision)
Chemical Name	**Korea - Substances to Control - Metals**	**Singapore - Hazardous Substances**
Iron	1 %	-
Chromium	1 %	-
Manganese	1 %	-

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

Chemical Name	IECSC - China Inventory of Existing Chemical	Inventory - Japan - Existing and New Chemical	Inventory - Japan - Industrial Safety and Health Law	Inventory - Korea - Existing Chemicals	Inventory - Philippines - Inventory of	Inventory - Taiwan - Taiwan Chemical

	Substances	Substances (ENCS)	Substances (ISHL)	Inventory (KECI/KECL)	Chemicals and Chemical Substances (PICCS)	Substance Inventory (TCSI)
Iron	Present [34355]	-	-	Present [KE-21059]	Present	Present
Chromium	Present [13603]	-	-	Present [KE-05970]	Present	Present
Manganese	Present [24928]	-	-	Present [KE-22999]	Present	Present
Carbon	Present [34023]	-	-	Present [KE-04671]	Present	Present

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

16. OTHER INFORMATION

Global Automotive Declarable Substance List Classifications

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

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Revision note Initial Release

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