KT 7014, 7018 Electrode

Safety Data Sheet

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SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture

Product Name: KT 7014, 7018 Electrode

Synonyms: Coated Metal Alloy

Other means of identification: AWS A5.1

1.2. Intended Use of the Product

Use of the substance/mixture: No use is specified.

1.3. Name, Address, and Telephone of the Responsible Party

Company

K-T Industries, Inc
3112 Northwest Boulevard
Sheldon, Iowa 51201
T: 712-324-5361

1.4. Emergency Telephone Number

Emergency Number : 712-324-5361

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

GHS-US classification

Not classified

2.2. Label Elements

GHS-US Labeling

No labeling applicable

2.3. Other Hazards

Under normal conditions of use and handling in the wire form, harmful substances cannot be released, nor is the wire considered flammable. Much of the information provided in this SDS is for situations of use in which hazardous exposures may occur, such as in welding applications or for metals in powdered form. Avoid inhalation of metal dusts and fumes. May cause an influenza-like illness. Avoid skin and eye contact with dusts to prevent mechanical irritation. User-generated dust is easily ignited and difficult to extinguish. Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions.

2.4. Unknown Acute Toxicity (GHS-US)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Not applicable

3.2. Mixture

Name	Product Identifier	%	GHS-US classification
Iron oxide (Fe2O3)	(CAS No) 1309-37-1	42	Comb. Dust
Titanium dioxide	(CAS No) 13463-67-7	15	Carc. 2, H351
Calcium fluoride (CaF2)	(CAS No) 7789-75-5	10	Not classified
Kaolin	(CAS No) 1332-58-7	10	Not classified
Cellulose pulp	(CAS No) 65996-61-4	5	Comb. Dust
Aluminum oxide	(CAS No) 1344-28-1	5	Not classified
Sodium silicate	(CAS No) 1344-09-8	5	Met. Corr. 1, H290 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT SE 3, H335
Manganese	(CAS No) 7439-96-5	2	Comb. Dust
Silicon	(CAS No) 7440-21-3	1.5	Comb. Dust
Molybdenum	(CAS No) 7439-98-7	1	Comb. Dust

Phosphorus elemental	(CAS No) 7723-14-0	1	Acute Tox. 1 (Oral), H300 Acute Tox. 2 (Dermal), H310 Acute Tox. 4 (Inhalation:dust,mist), H332 Aquatic Acute 3, H402 Flam. Sol. 1, H228 Aquatic Chronic 3, H412
Sulfur	(CAS No) 7704-34-9	1	Comb. Dust Skin Irrit. 2, H315 Aquatic Acute 3, H402
Vanadium	(CAS No) 7440-62-2	1	Comb. Dust
Zinc oxide	(CAS No) 1314-13-2	0.5	Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Limestone	(CAS No) 1317-65-3		Not classified

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of First Aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid Measures After Inhalation: When symptoms occur: go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists.

First-aid Measures After Skin Contact: Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation develops or persists. Cool skin rapidly with cold water after contact with molten product. Removal of solidified molten material from skin requires medical assistance.

First-aid Measures After Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention. Protect skin and eyes from contact with molten material. Removal of solidified molten material from the eyes requires medical assistance.

First-aid Measures After Ingestion: Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/Injuries: Welding, cutting, or processing this material may release dust or fumes that are hazardous.

Symptoms/Injuries After Inhalation: During processing, the most significant route of exposure is by the inhalation (breathing) of fumes. If fumes are inhaled, they can cause a condition commonly known as metal fume fever with symptoms which resemble influenza; Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur.

Symptoms/Injuries After Skin Contact: Contact with hot, molten metal will cause thermal burns. Removal of solidified molten material from skin requires medical assistance. Mechanical damage via flying particles and chipped slag is possible.

Symptoms/Injuries After Eye Contact: During metal processing, dusts caused from milling and physical alteration will likely cause eye irritation. Fumes from thermal decomposition or molten material will likely be irritating to the eyes.

Symptoms/Injuries After Ingestion: Ingestion may cause adverse effects.

Chronic Symptoms: This product is intended for use in ARC welding. During this process UV rays irritate the superficial corneal epithelium, causing inhibition of mitosis, production of nuclear fragmentation, and loosening of the epithelial layer. Under experimental conditions in animals, phototoxic effects have been demonstrated at all levels of the cornea, including the stroma and endothelium. Inhalation of iron oxide fumes undergoing decomposition may cause irritation and flu-like symptoms; otherwise iron oxide is not hazardous. If heated to the point of fume generation zinc fumes may cause metal fume fever. Otherwise, zinc is non-toxic. Zinc: Prolonged exposure to high concentrations of zinc fumes may cause "zinc shakes", an involuntary twitching of the muscles. Otherwise, zinc is non-toxic. Silicon: Can cause chronic bronchitis and narrowing of the airways. Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). Chronic exposure to excessive manganese levels can lead to a variety of psychiatric and motor disturbances, termed manganism. Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Use class D extinguishing media on fines, dust, or molten metal. Use water spray on chips and fines.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not considered flammable but may burn at high temperatures. Small chips, turnings, dust and fines from processing may be readily ignitable.

Explosion Hazard: Product is not explosive.

Reactivity: Hazardous reactions will not occur under normal conditions.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire. Under fire conditions, hazardous fumes will be present.

Firefighting Instructions: Use water spray or fog for cooling exposed containers.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid prolonged contact with eyes, skin and clothing. Avoid breathing dust.

6.1.1. For Non-emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

6.1.2. For Emergency Responders

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area. Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

6.2. Environmental Precautions

Prevent entry of dusts, chips and ribbon to sewers and public waters. Notify authorities if any material enters sewers or public waters.

6.3. Methods and Material for Containment and Cleaning Up

For Containment: Contain solid spills with appropriate barriers and prevent migration and entry into sewers or streams.

Methods for Cleaning Up: Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill. Cool molten material to limit spreading. Use only non-sparking tools.

6.4. Reference to Other Sections

See Heading 8. Exposure controls and personal protection. See Section 13, Disposal Considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: Welders are exposed to a range of fumes and gases. Fume particles contain a wide variety of oxides and salts of metals and other compounds, which are produced mainly from electrodes, filler wire and flux materials. Fumes from the welding of stainless-steel and other alloys contain nickel compounds and chromium [VI] and [III]. Ozone is formed during most electric arc welding, and exposures can be high in comparison to the exposure limit, particularly during metal inert gas welding of aluminum. Oxides of nitrogen are found during manual metal arc welding and particularly during gas welding. Welders who weld painted mild steel can also be exposed to a range of organic compounds produced by pyrolysis.

Precautions for Safe Handling: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Avoid prolonged contact with eyes, skin and clothing. Avoid breathing dust.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations.

Storage Conditions: Keep container closed when not in use. Store in a dry, cool place. Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials.

Incompatible Products: Strong acids, strong bases, strong oxidizers. Corrosive substances in contact with metals may produce flammable hydrogen gas.

Special Rules on Packaging: Store in a closed container.

7.3. Specific End Use(s)

No use is specified.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), or OSHA (PEL).

Iron oxide (Fe2O3) (1309-37-1)		
USA ACGIH	ACGIH TWA (mg/m³)	5 mg/m³ (respirable fraction)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL (TWA) (mg/m³)	5 mg/m³ (dust and fume)
USA IDLH	US IDLH (mg/m³)	2500 mg/m³ (dust and fume)
USA OSHA	OSHA PEL (TWA) (mg/m³)	10 mg/m³ (fume) 15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)

Zinc oxide (1314-13-2)		
USA ACGIH	ACGIH TWA (mg/m³)	2 mg/m³ (respirable fraction)
USA ACGIH	ACGIH STEL (mg/m³)	10 mg/m³ (respirable fraction)
USA NIOSH	NIOSH REL (TWA) (mg/m³)	5 mg/m³ (dust and fume)
USA NIOSH	NIOSH REL (STEL) (mg/m³)	10 mg/m³ (fume)
USA NIOSH	NIOSH REL (ceiling) (mg/m³)	15 mg/m³ (dust)
USA IDLH	US IDLH (mg/m³)	500 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³ (fume) 15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)

Molybdenum (7439-98-7)		
	Internal TWA (mg/m³)	5 mg/m³ (Molybdenum (as Mo), Soluble Compounds)
USA ACGIH	ACGIH TWA (mg/m³)	10 mg/m³ (inhalable fraction) 3 mg/m³ (respirable fraction)
USA NIOSH	NIOSH REL (TWA) (mg/m³)	5 mg/m³ (Molybdenum (as Mo), Soluble Compounds)
USA IDLH	US IDLH (mg/m³)	5000 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³ (Molybdenum (as Mo), Soluble Compounds) 15 mg/m³ (Molybdenum (as Mo), Insoluble Compounds (Total dust)

Vanadium (7440-62-2)		
USA NIOSH	NIOSH REL (TWA) (mg/m³)	1 mg/m³
USA NIOSH	NIOSH REL (STEL) (mg/m³)	3 mg/m³
USA OSHA	OSHA PEL (Ceiling) (mg/m³)	0.5 mg/m³ (respirable dust) 0.1 mg/m³ (fume)

Silicon (7440-21-3)		
USA NIOSH	NIOSH REL (TWA) (mg/m³)	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)
USA OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)

Manganese (7439-96-5)		
USA ACGIH	ACGIH TWA (mg/m³)	0.02 mg/m³ (respirable fraction) 0.1 mg/m³ (inhalable fraction)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL (TWA) (mg/m³)	1 mg/m³ (fume)
USA NIOSH	NIOSH REL (STEL) (mg/m³)	3 mg/m³
USA IDLH	US IDLH (mg/m³)	500 mg/m³
USA OSHA	OSHA PEL (Ceiling) (mg/m³)	5 mg/m³ (fume)

Aluminum oxide (1344-28-1)		
USA ACGIH	ACGIH TWA (mg/m³)	10 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)

Kaolin (1332-58-7)		
USA ACGIH	ACGIH TWA (mg/m³)	2 mg/m³ (particulate matter containing no asbestos and <1%

		crystalline silica, respirable fraction)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL (TWA) (mg/m³)	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)
USA OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)

Titanium dioxide (13463-67-7)		
USA ACGIH	ACGIH TWA (mg/m³)	10 mg/m³
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA IDLH	US IDLH (mg/m³)	5000 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (total dust)

Limestone (1317-65-3)		
USA NIOSH	NIOSH REL (TWA) (mg/m³)	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)
USA OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)

***Exposure Limits for Additional Compounds Which May Be Formed During Processing.**

Ozone (10028-15-6)		
USA ACGIH	ACGIH TWA (ppm)	0.05 ppm (heavy work) 0.08 ppm (moderate work) 0.10 ppm (light work) 0.20 ppm (heavy, moderate or light workloads, <=2 hours)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL (ceiling) (mg/m³)	0.2 mg/m³
USA NIOSH	NIOSH REL (ceiling) (ppm)	0.1 ppm
USA IDLH	US IDLH (ppm)	5 ppm
USA OSHA	OSHA PEL (TWA) (mg/m³)	0.2 mg/m³
USA OSHA	OSHA PEL (TWA) (ppm)	0.1 ppm

Nitrogen dioxide (10102-44-0)		
USA ACGIH	ACGIH TWA (ppm)	0.2 ppm
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL (STEL) (mg/m³)	1.8 mg/m³
USA NIOSH	NIOSH REL (STEL) (ppm)	1 ppm
USA IDLH	US IDLH (ppm)	20 ppm
USA OSHA	OSHA PEL (Ceiling) (mg/m³)	9 mg/m³
USA OSHA	OSHA PEL (Ceiling) (ppm)	5 ppm

Nitrogen monoxide (10102-43-9)		
USA ACGIH	ACGIH TWA (ppm)	25 ppm
USA NIOSH	NIOSH REL (TWA) (mg/m³)	30 mg/m³
USA NIOSH	NIOSH REL (TWA) (ppm)	25 ppm
USA IDLH	US IDLH (ppm)	100 ppm
USA OSHA	OSHA PEL (TWA) (mg/m³)	30 mg/m³
USA OSHA	OSHA PEL (TWA) (ppm)	25 ppm

8.2. Exposure Controls

Appropriate Engineering Controls : Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

Personal Protective Equipment : Gloves. Protective clothing. Protective goggles. Insufficient ventilation: wear respiratory protection.

Materials for Protective Clothing : Chemically resistant materials and fabrics.

Hand Protection : Wear protective gloves.

Eye Protection : Chemical safety goggles. Welders should wear goggles or safety glasses with side shields that comply with ANSI Z87.1 under welding helmets and always wear goggles or other suitable eye protection when gas welding or oxygen cutting.

Skin and Body Protection : Wear suitable protective clothing.

Respiratory Protection : If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

Other Information : When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State : Solid

Appearance : Welding wire is a solid metal, shaped as wire of various diameters

Odor : No data available

Odor Threshold : No data available

pH : No data available

Evaporation Rate : No data available

Melting Point : No data available

Freezing Point : No data available

Boiling Point : No data available

Flash Point : No data available

Auto-ignition Temperature : No data available

Decomposition Temperature : No data available

Flammability (solid, gas) : No data available

Vapor Pressure : No data available

Relative Vapor Density at 20 °C : No data available

Relative Density : No data available

Solubility : No data available

Partition Coefficient: N-Octanol/Water : No data available

Viscosity : No data available

9.2. Other Information

No additional information available

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity: Hazardous reactions will not occur under normal conditions.

10.2. Chemical Stability: Stable under recommended handling and storage conditions (see section 7).

10.3. Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

10.4. Conditions to Avoid: Incompatible materials.

10.5. Incompatible Materials: Strong acids, strong bases, strong oxidizers.

10.6. Hazardous Decomposition Products: Under conditions of fire this material may produce: Toxic fumes. Metal oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information On Toxicological Effects

Acute Toxicity: Not classified

Iron oxide (Fe2O3) (1309-37-1)	
LD50 Oral Rat	> 10000 mg/kg

Zinc oxide (1314-13-2)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rat	> 2000 mg/kg

Molybdenum (7439-98-7)	
LD50 Oral Rat	> 2000 mg/kg
LD50 Dermal Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 3.92 mg/l/4h

Phosphorus elemental (7723-14-0)	
LD50 Oral Rat	3030 µg/kg
LD50 Dermal Rat	100 mg/kg
LC50 Inhalation Rat	4.3 mg/l (Exposure time: 1 h)

Sulfur (7704-34-9)	
LD50 Oral Rat	> 3000 mg/kg
LD50 Dermal Rabbit	> 2000 mg/kg
LC50 Inhalation Rat	> 9.23 mg/l/4h

Silicon (7440-21-3)	
LD50 Oral Rat	3160 mg/kg

Manganese (7439-96-5)	
LD50 Oral Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 5.14 mg/l/4h

Aluminum oxide (1344-28-1)	
LD50 Oral Rat	> 15900 mg/kg
LC50 Inhalation Rat	> 2.3 mg/l/4h

Sodium silicate (1344-09-8)	
LD50 Oral Rat	3400 mg/kg

Calcium fluoride (CaF2) (7789-75-5)	
LD50 Oral Rat	4250 mg/kg

Kaolin (1332-58-7)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rabbit	> 5000 mg/kg

Titanium dioxide (13463-67-7)	
LD50 Oral Rat	> 10000 mg/kg

Skin Corrosion/Irritation: Not classified

Serious Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Carcinogenicity: Not classified

Iron oxide (Fe2O3) (1309-37-1)	
IARC group	3

Titanium dioxide (13463-67-7)	
IARC group	2B
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: During processing, the most significant route of exposure is by the inhalation (breathing) of fumes. If fumes are inhaled, they can cause a condition commonly known as metal fume fever with symptoms which resemble influenza; Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur.

Symptoms/Injuries After Skin Contact: Contact with hot, molten metal will cause thermal burns. Removal of solidified molten material from skin requires medical assistance. Mechanical damage via flying particles and chipped slag is possible.

Symptoms/Injuries After Eye Contact: During metal processing, dusts caused from milling and physical alteration will likely cause eye irritation. Fumes from thermal decomposition or molten material will likely be irritating to the eyes.

Symptoms/Injuries After Ingestion: Ingestion may cause adverse effects.

Chronic Symptoms: This product is intended for use in ARC welding. During this process UV rays irritate the superficial corneal epithelium, causing inhibition of mitosis, production of nuclear fragmentation, and loosening of the epithelial layer. Under experimental conditions in animals, phototoxic effects have been demonstrated at all levels of the cornea, including the stroma and endothelium. Inhalation of iron oxide fumes undergoing decomposition may cause irritation and flu-like symptoms; otherwise iron oxide is not hazardous. If heated to the point of fume generation zinc fumes may cause metal fume fever. Otherwise, zinc is non-toxic. Zinc: Prolonged exposure to high concentrations of zinc fumes may cause "zinc shakes", an involuntary twitching of the muscles. Otherwise, zinc is non-toxic. Silicon: Can cause chronic bronchitis and narrowing of the airways. Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). Chronic exposure to excessive manganese levels can lead to a variety of psychiatric and motor disturbances, termed manganism. Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - General : Not classified.

Zinc oxide (1314-13-2)	
LC50 Fish 1	780 µg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Daphnia 1	0.122 mg/l
NOEC chronic fish	0.026 mg/l (Species: Jordanella floridae)

Phosphorus elemental (7723-14-0)	
LC50 Fish 1	33.2 mg/l Red Phosphorous (Exposure time: 96 h - Species Danio rerio [static])
EC50 Daphnia 1	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC 50 Fish 2	0.001 - 0.004 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
EC50 Daphnia 2	0.025 - 0.037 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

Sulfur (7704-34-9)	
LC50 Fish 1	866 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
EC50 Daphnia 1	736 mg/l
LC 50 Fish 2	14 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])

Manganese (7439-96-5)	
NOEC chronic fish	3.6 mg/l (Exposure time: 96h; Species: Oncorhynchus mykiss)

Aluminum oxide (1344-28-1)	
LC50 Fish 1	> 100 mg/l
EC50 Daphnia 1	> 100 mg/l
ErC50 (algae)	> 100 mg/l
NOEC (acute)	> 50 mg/l

Sodium silicate (1344-09-8)	
LC50 Fish 1	301 - 478 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus)
LC 50 Fish 2	3185 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [semi-static])

12.2. Persistence and Degradability

KT 7014, 7018 Electrode	
Persistence and Degradability	Not established.

12.3. Bioaccumulative Potential

KT 7014, 7018 Electrode	
Bioaccumulative Potential	Not established.

Phosphorus elemental (7723-14-0)	
BCF fish 1	< 200

Sodium silicate (1344-09-8)	
BCF fish 1	(no bioaccumulation expected)

12.4. Mobility in Soil

No additional information available

12.5. Other Adverse Effects

Other Information : Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

Additional Information: Recycle where possible and/or dispose of spent material such as metals & metal-bearing waste and submerged arc welding (SAW) flux/slag appropriately.

Ecology – Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

14.1. In Accordance with DOT Not regulated for transport

14.2. In Accordance with IMDG Not regulated for transport

14.3. In Accordance with IATA Not regulated for transport

SECTION 15: REGULATORY INFORMATION

15.1 US Federal Regulations

Iron oxide (Fe2O3) (1309-37-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Zinc oxide (1314-13-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Molybdenum (7439-98-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Phosphorus elemental (7723-14-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on the United States SARA Section 302	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 302 Threshold Planning Quantity (TPQ)	100 (This material is a reactive solid. The TPQ does not default to 10000 pounds for non-powder, non-molten, non-solution form)
SARA Section 313 - Emission Reporting	1.0 % (yellow or white)
Sulfur (7704-34-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Vanadium (7440-62-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 % (except when contained in an alloy)
Silicon (7440-21-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Manganese (7439-96-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 %
Cellulose pulp (65996-61-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Aluminum oxide (1344-28-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 % (fibrous forms)
Sodium silicate (1344-09-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Calcium fluoride (CaF2) (7789-75-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Kaolin (1332-58-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

Titanium dioxide (13463-67-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Delayed (chronic) health hazard

Limestone (1317-65-3)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2 US State Regulations

Titanium dioxide (13463-67-7)	
U.S. - California - Proposition 65 - Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.

Iron oxide (Fe2O3) (1309-37-1)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Zinc oxide (1314-13-2)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Molybdenum (7439-98-7)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Phosphorus elemental (7723-14-0)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Sulfur (7704-34-9)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Vanadium (7440-62-2)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Silicon (7440-21-3)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Manganese (7439-96-5)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Aluminum oxide (1344-28-1)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Kaolin (1332-58-7)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Titanium dioxide (13463-67-7)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Limestone (1317-65-3)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 11/16/2015

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Acute Tox. 1 (Oral)	Acute toxicity (oral) Category 1
Acute Tox. 2 (Dermal)	Acute toxicity (dermal) Category 2
Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Carc. 2	Carcinogenicity Category 2
Comb. Dust	Combustible Dust
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Flam. Sol. 1	Flammable solids Category 1
Met. Corr. 1	Corrosive to metals Category 1
Skin Corr. 1B	Skin corrosion/irritation Category 1B
Skin Irrit. 2	Skin corrosion/irritation Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H228	Flammable solid
	May form combustible dust concentrations in air
H290	May be corrosive to metals
H300	Fatal if swallowed
H310	Fatal in contact with skin
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H318	Causes serious eye damage
H332	Harmful if inhaled
H335	May cause respiratory irritation
H351	Suspected of causing cancer
H400	Very toxic to aquatic life
H402	Harmful to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

SDS US (GHS HazCom)