

1. Identification

Product identifier **Stainless Steel Flake**
Other means of identification None.
Recommended use Not available.
Recommended restrictions None known.
Manufacturer/Importer/Supplier/Distributor information
Company name Ametek Specialty Metals
Address 1085 Rte 519
 Eighty Four, PA 15330
 US
Telephone 1-724-225-2658
E-mail Not available.

Emergency phone number 1-703-527-3887

2. Hazard(s) identification

Physical hazards Not classified.
Health hazards Sensitization, skin Category 1
 Carcinogenicity Category 2
 Specific target organ toxicity, repeated exposure Category 1 (Lung)
 Specific target organ toxicity, repeated exposure Category 2 (Central Nervous System)
Environmental hazards Hazardous to the aquatic environment, acute hazard Category 2
 Hazardous to the aquatic environment, long-term hazard Category 2
OSHA defined hazards Combustible dust

Label elements



Signal word Danger
Hazard statement May cause an allergic skin reaction. Suspected of causing cancer. Causes damage to organs (Lung) through prolonged or repeated exposure. May cause damage to organs (Central Nervous System) through prolonged or repeated exposure. May form combustible dust concentrations in air. Toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Prevent dust accumulation to minimize explosion hazard. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. Observe good industrial hygiene practices.

Response	If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. If exposed or concerned: Get medical advice/attention. Call a poison center/doctor if you feel unwell. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish. Collect spillage.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Iron	7439-89-6	45 - 70.5
Chromium	7440-47-3	16 - 18
Nickel	7440-02-0	10 - 14
Molybdenum	7439-98-7	2 - 3.0
Silicon	7440-21-3	0 - 2.3
Manganese	7439-96-5	0 - 2.0
Copper	7440-50-8	0 - 0.5
Sulfur	7704-34-9	0 - 0.3
Nitrogen	7727-37-9	0 - 0.1
Phosphorus	7723-14-0	0 - 0.04
Carbon	7440-44-0	0 - 0.03
Other components below reportable levels		0 - 10

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. The alloy contains additional alloying elements at concentrations below disclosure requirements. At temperatures above the melting point the alloys may liberate fumes containing oxides of alloying elements.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.
Eye contact	Do not rub eyes. Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Narcosis. Behavioral changes. Decrease in motor functions. Dusts may irritate the respiratory tract, skin and eyes. Coughing. Discomfort in the chest. Shortness of breath. May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Special powder against metal fires. Dry sand.
Unsuitable extinguishing media	Do not use water or halogenated extinguishing media. Do not use water on molten metal: Explosion hazard could result.

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed. Solid metal is not flammable; however, finely divided metallic dust or powder may form an explosive mixture with air. In a fire, nickel may form nickel carbonyl, a highly toxic substance and known carcinogen.

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.

Fire fighting equipment/instructions

Move containers from fire area if you can do it without risk.

General fire hazards

Powder may burn. Dust is an explosion hazard.

6. Accidental release measures**Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Wear protective clothing as described in Section 8 of this safety data sheet.

Methods and materials for containment and cleaning up

Avoid dust formation. Allow spilled material to solidify and scrape up with shovels into a suitable container for recycle or disposal. Collect dust using a vacuum cleaner equipped with HEPA filter. The vacuum cleaner should be explosion-proofed. If not possible, gently moisten dust before it is collected with shovel, broom or the like. This material and its container must be disposed of as hazardous waste.

Environmental precautions

Avoid release to the environment. Do not contaminate water.

7. Handling and storage**Precautions for safe handling**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Explosion-proof general and local exhaust ventilation. Do not breathe dust. Avoid contact with eyes, skin, and clothing. Persons susceptible for allergic reactions should not handle this product. Avoid prolonged exposure. Do not taste or swallow. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep containers tightly closed in a dry, cool and well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection**Occupational exposure limits****US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

Components	Type	Value	Form
Chromium (CAS 7440-47-3)	PEL	1 mg/m3	
Copper (CAS 7440-50-8)	PEL	1 mg/m3	Dust and mist.
		0.1 mg/m3	Fume.
Manganese (CAS 7439-96-5)	Ceiling	5 mg/m3	Fume.
Molybdenum (CAS 7439-98-7)	PEL	15 mg/m3	Total dust.
Nickel (CAS 7440-02-0)	PEL	1 mg/m3	
Phosphorus (CAS 7723-14-0)	PEL	0.1 mg/m3	
Silicon (CAS 7440-21-3)	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value
Carbon (CAS 7440-44-0)	TWA	15 mppcf

ACGIH

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Dust and mist.

ACGIH

Components	Type	Value	Form
		0.2 mg/m3	Fume.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Chromium (CAS 7440-47-3)	TWA	0.5 mg/m3	
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Manganese (CAS 7439-96-5)	TWA	0.1 mg/m3	Inhalable fraction.
		0.02 mg/m3	Respirable fraction.
Molybdenum (CAS 7439-98-7)	TWA	3 mg/m3	Respirable fraction.
		10 mg/m3	Inhalable fraction.
Nickel (CAS 7440-02-0)	TWA	1.5 mg/m3	Inhalable fraction.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m3	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Carbon (CAS 7440-44-0)	TWA	2.5 mg/m3	Respirable.
Chromium (CAS 7440-47-3)	TWA	0.5 mg/m3	
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Dust and mist.
Manganese (CAS 7439-96-5)	STEL	3 mg/m3	Fume.
	TWA	1 mg/m3	Fume.
Nickel (CAS 7440-02-0)	TWA	0.015 mg/m3	
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m3	
Silicon (CAS 7440-21-3)	TWA	5 mg/m3	Respirable.
		10 mg/m3	Total

Biological limit values	No biological exposure limits noted for the ingredient(s).
Exposure guidelines	Follow standard monitoring procedures.
Appropriate engineering controls	Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust. Ventilate as needed to control airborne dust. Use explosion-proof ventilation equipment if airborne dust levels are high. Special ventilation should be used to convey finely divided metallic dust generated by grinding, sawing etc., in order to eliminate explosion hazards.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Wear dust-resistant safety goggles where there is danger of eye contact. In addition to safety glasses or goggles, a welding helmet with appropriate shaded shield is required during welding, burning, or brazing. A face shield is recommended, in addition to safety glasses or goggles, during sawing, grinding, or machining.
Skin protection	
Hand protection	Wear suitable protective gloves to prevent cuts and abrasions. When material is heated, wear gloves to protect against thermal burns. Suitable gloves can be recommended by the glove supplier.
Other	Wear suitable protective clothing.
Respiratory protection	In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter. When engineering controls are not sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH approved respirator for dusts. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use. Seek advice from local supervisor.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Private clothes and working clothes should be kept separately. Contaminated uniforms should be laundered separately from other clothing to prevent potential cross-contamination. If possible, an industrial laundry service should be used to eliminate the possibility of contaminating the home environment. Handle in accordance with good industrial hygiene and safety practices. Observe any medical surveillance requirements.

9. Physical and chemical properties

Appearance

Physical state	Solid.
Form	Powder.
Color	Gray.
Odor	Not available.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Combustible dust.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.

Vapor pressure Not available.

Vapor density Not available.

Relative density 7.5 - 9.3

Solubility(ies)

Solubility (water) Insoluble

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity Not available.

10. Stability and reactivity

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous reactions No dangerous reaction known under conditions of normal use.

Conditions to avoid Keep away from heat, sparks and open flame. Minimize dust generation and accumulation. Contact with incompatible materials.

Incompatible materials Strong acids. Strong oxidizing agents.

Hazardous decomposition products No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation Dust may irritate respiratory system. May cause damage to organs through prolonged or repeated exposure by inhalation.

Skin contact May cause an allergic skin reaction.

Eye contact Direct contact with eyes may cause temporary irritation.

Ingestion Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Narcosis. Behavioral changes. Decrease in motor functions. Dusts may irritate the respiratory tract, skin and eyes. Coughing. Discomfort in the chest. Shortness of breath. May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects.

Information on toxicological effects**Acute toxicity** Not expected to be acutely toxic.

Components	Species	Test Results
Carbon (CAS 7440-44-0)		
Acute		
<i>Oral</i>		
LD50	Rat	> 10000 mg/kg
Manganese (CAS 7439-96-5)		
Acute		
<i>Inhalation</i>		
LC50/LC90	Rat	> 1500 mg/m ³ , 4 hours
<i>Oral</i>		
LD50	Rat	9000 mg/kg
Silicon (CAS 7440-21-3)		
Acute		
<i>Oral</i>		
LD50	Rat	3160 mg/kg
Sulfur (CAS 7704-34-9)		
Acute		
<i>Dermal</i>		
LD50	Rat	> 2000 mg/kg, 24 Hours
<i>Inhalation</i>		
LC50	Rat	> 5.43 g/m ³ , 4 Hours
<i>Oral</i>		
LD50	Rat	> 2200 mg/kg
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.	
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.	
Respiratory or skin sensitization		
Respiratory sensitization	Not a respiratory sensitizer.	
Skin sensitization	May cause an allergic skin reaction.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	Suspected of causing cancer.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Chromium (CAS 7440-47-3)	3 Not classifiable as to carcinogenicity to humans.	
Nickel (CAS 7440-02-0)	2B Possibly carcinogenic to humans.	
NTP Report on Carcinogens		
Nickel (CAS 7440-02-0)	Known To Be Human Carcinogen. Reasonably Anticipated to be a Human Carcinogen.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)		
Not regulated.		
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.	
Specific target organ toxicity - single exposure	Not classified.	
Specific target organ toxicity - repeated exposure	Causes damage to organs (Lung) through prolonged or repeated exposure. May cause damage to organs (Central Nervous System) through prolonged or repeated exposure.	
Aspiration hazard	Due to the physical form of the product it is not an aspiration hazard.	
Chronic effects	Causes damage to organs through prolonged or repeated exposure. May cause damage to organs through prolonged or repeated exposure. Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.	

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Components		Species	Test Results
Iron (CAS 7439-89-6)			
Aquatic			
Fish	LC50	Channel catfish (<i>Ictalurus punctatus</i>)	> 500 mg/l, 96 Hours
Nickel (CAS 7440-02-0)			
Aquatic			
Crustacea	EC50	Water flea (<i>Daphnia magna</i>)	1 mg/l, 48 hours
			1 mg/l, 48 Hours
	LC50	Calanoid copepod (<i>Eurytemora affinis</i>)	7.35 - 12.12 mg/l, 96 hours
Phosphorus (CAS 7723-14-0)			
Aquatic			
Crustacea	EC50	Water flea (<i>Daphnia magna</i>)	0.025 - 0.037 mg/l, 48 hours
Fish	LC50	Bluegill (<i>Lepomis macrochirus</i>)	0.002 - 0.006 mg/l, 96 hours
			0.001 - 0.004 mg/l, 96 hours

Persistence and degradability The product is not expected to be readily biodegradable.

Bioaccumulative potential No data available. Metal powders in water or soil may form metal oxides or other metal compounds that could become bioavailable and harm aquatic or terrestrial organisms.

Partition coefficient n-octanol / water (log Kow)

Nitrogen (CAS 7727-37-9) 0.67

Mobility in soil Alloys in massive forms are not mobile in the environment.

Other adverse effects An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code D007: Waste Chromium
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Recover and recycle, if practical. Solid metal and alloys in the form of particles may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal. Dispose of in accordance with local regulations.

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number Not available.

UN proper shipping name This material is not hazardous as defined by the U.S. Department of Transportation 49CFR.

Transport hazard class(es)

Class Not available.

Subsidiary risk -

Packing group Not applicable.

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Chromium (CAS 7440-47-3)	LISTED
Copper (CAS 7440-50-8)	LISTED
Manganese (CAS 7439-96-5)	LISTED
Nickel (CAS 7440-02-0)	LISTED
Phosphorus (CAS 7723-14-0)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
Phosphorus	7723-14-0	1	100		

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Chromium	7440-47-3	16 - 18
Nickel	7440-02-0	10 - 14
Manganese	7439-96-5	0 - 2.0

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Chromium (CAS 7440-47-3)
Manganese (CAS 7439-96-5)
Nickel (CAS 7440-02-0)
Phosphorus (CAS 7723-14-0)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Carbon (CAS 7440-44-0)
Chromium (CAS 7440-47-3)
Copper (CAS 7440-50-8)
Manganese (CAS 7439-96-5)
Molybdenum (CAS 7439-98-7)
Nickel (CAS 7440-02-0)
Nitrogen (CAS 7727-37-9)
Phosphorus (CAS 7723-14-0)
Silicon (CAS 7440-21-3)
Sulfur (CAS 7704-34-9)

US. New Jersey Worker and Community Right-to-Know Act

Carbon (CAS 7440-44-0)
 Chromium (CAS 7440-47-3)
 Copper (CAS 7440-50-8)
 Manganese (CAS 7439-96-5)
 Molybdenum (CAS 7439-98-7)
 Nickel (CAS 7440-02-0)
 Nitrogen (CAS 7727-37-9)
 Phosphorus (CAS 7723-14-0)
 Silicon (CAS 7440-21-3)
 Sulfur (CAS 7704-34-9)

US. Pennsylvania Worker and Community Right-to-Know Law

Carbon (CAS 7440-44-0)
 Chromium (CAS 7440-47-3)
 Copper (CAS 7440-50-8)
 Manganese (CAS 7439-96-5)
 Molybdenum (CAS 7439-98-7)
 Nickel (CAS 7440-02-0)
 Nitrogen (CAS 7727-37-9)
 Phosphorus (CAS 7723-14-0)
 Silicon (CAS 7440-21-3)
 Sulfur (CAS 7704-34-9)

US. Rhode Island RTK

Chromium (CAS 7440-47-3)
 Copper (CAS 7440-50-8)
 Manganese (CAS 7439-96-5)
 Nickel (CAS 7440-02-0)
 Phosphorus (CAS 7723-14-0)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Nickel (CAS 7440-02-0)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	21-May-2015
Revision date	20-May-2016
Version #	02
Further information	Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

HMIS® ratings

Health: 3*
Flammability: 1
Physical hazard: 0

Disclaimer

The above information is believed to be accurate based on the most current data available. Ametek makes no warranty, either expressed or implied, with respect to such information, and assumes no liability resulting from its use. Users are advised to conduct their own test to determine the safety and suitability of each product or product combination for their own purposes. Ametek shall not be liable for claims, losses or damages of any third party or for lost profits or incidental or consequential damages.