

SAFETY DATA SHEET

Issuing Date No data available Revision Date 05-Nov-2012 **Revision Number** 0

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

GHS product identifier

Product Name Chromium-Nickel-Manganese-Copper Alloyed Stainless Steel grades

Other means of identification

Synonyms 204Cu. This includes all listed grades with letter prefixes and suffixes as well as PRODEC®

Recommended use of the chemical and restrictions on use

Solid stainless steel products, various forms, and uses **Recommended Use**

No information available Uses advised against

Supplier's details

Supplier Address

Outokumpu Plate Products 549 West State Road 38 New Castle, IN 47362

TEL: 1-800-349-0023; 1-765-529-0120

Outokumpu Long Products 3043 Crenshaw Parkway Richburg, SC 29729

TEL: 1-888-458-4600; 1-803-789-5383

Outokumpu Pipe Products 1101 North Main Street Wildwood, FL 34785

TEL: 1-800-731-7473; 1-352-748-1313

Outokumpu Coil Products 500 Park Blvd., Suite 40

Itasca, IL 60143

TEL: 1-800-833-8703; 1-847-517-4050

Emergency telephone number

Emergency Telephone

765-529-0120

Number

2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous according to the OSHA Hazard Communication Standard 2012 (29 CFR 1910.1200).

Solid metallic products are generally classified as "articles" and do not constitute hazardous materials in solid form. However, downstream use of the article could result in some hazardous elements contained in these products to be emitted under certain processing conditions such as but not limited to: burning, melting, cutting, sawing, brazing, grinding, machining, milling, and welding. The classification given below pertains to these alloys when used during these processes.

Acute Oral Toxicity	Category 4
Respiratory Sensitization	Category 1
Skin Sensitization	Category 1
Carcinogenicity	Category 1B
Specific Target Organ Toxicity (Repeated Exposure)	Category 1

GHS Label elements, including precautionary statements

Emergency Overview

Signal Word Danger

Hazard Statements

- Harmful if swallowed
- May cause allergy or asthma symptoms or breathing difficulties if inhaled
- May cause an allergic skin reaction
- May cause cancer
- Causes damage to organs through prolonged or repeated exposure
- Very toxic to aquatic life with long lasting effects



Appearance Varying from dull very light grey, to shiny metallic light grey to bright mirror-finish

Physical State Solid.

Odor Odorless

Precautionary Statements

Prevention

- Wash face, hands and any exposed skin thoroughly after handling
- · Do not eat, drink or smoke when using this product
- Obtain special instructions before use
- Do not handle until all safety precautions have been read and understood
- · Use personal protective equipment as required
- In case of inadequate ventilation wear respiratory protection
- · Contaminated work clothing should not be allowed out of the workplace
- Do not breathe dust/fume/gas/mist/vapors/spray

General Advice

• IF exposed or concerned: Get medical attention/advice

Skin

- IF ON SKIN: Wash with plenty of soap and water
- If skin irritation or rash occurs: Get medical advice/attention
- · Wash contaminated clothing before reuse

Inhalation

- IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing
- If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician

Ingestion

- IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
- · Rinse mouth

Storage

Store in accordance with local/regional/national regulations.

Disposal

Dispose of in accordance with local/regional/national regulations.

Hazard Not Otherwise Classified (HNOC)

Not applicable

Other information

Very toxic to aquatic life Very toxic to aquatic life with long lasting effects

No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms

204Cu. This includes all listed grades with letter prefixes and suffixes as well as PRODEC® suffix.

Chemical Name	CAS-No	Weight %	Trade secret
Iron	7439-89-6	Balance	*
Chromium	7440-47-3	15.5-17.5	*
Manganese	7439-96-5	6.5-9	*
Copper	7440-50-8	2-4	*
Nickel	7440-02-0	1.5-3.5	*
Silicon	7440-21-3	0-1	*
Cobalt	7440-48-4	0-0.6	*
Titanium	7440-32-6	0-0.5	*

^{*}The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of necessary first-aid measures

General Advice

In its solid form stainless steel does not present an inhalation, absorption, or ingestion hazard. Grinding, polishing, abrasive blasting, hot rolling, hot forging, thermal cutting, or welding may produce stainless steel dust or fumes containing complex or mixed oxides (spinels) of its components. Metal dust particles may cause eye, skin and/or respiratory

system irritation. The below information is for these instances.

Eye Contact Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Skin Contact Wash off immediately with soap and plenty of water. In the case of skin irritation or allergic

reactions see a physician.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Consult a physician.

Ingestion Not an expected route of exposure. If swallowed: Get medical attention.

grades

Most important symptoms/effects, acute and delayed

Coughing and/ or wheezing. Difficulty in breathing. Irritation. May cause allergic skin **Most Important Symptoms/Effects**

reaction.

Indication of immediate medical attention and special treatment needed, if necessary

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

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

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

Unsuitable Extinguishing Media None

Specific Hazards Arising from the Chemical

Avoid dust formation. Dust can form an explosive mixture in air. May cause sensitization by inhalation and skin contact.

Explosion Data

Sensitivity to Mechanical Impact None. Sensitivity to Static Discharge None

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Avoid dust formation. Avoid inhalation of dust. Ensure adequate ventilation. In case of

insufficient ventilation wear suitable respiratory equipment. Use personal protective

equipment. Avoid contact with skin, eyes and clothing.

Environmental Precautions

Not applicable to steel in solid state. Follow applicable federal, state and local regulations **Environmental Precautions**

Methods and materials for containment and cleaning up

Prevent further leakage or spillage if safe to do so. Cover dust spill with plastic sheet or tarp **Methods for Containment**

to minimize spreading.

Take up mechanically and collect in suitable container for disposal. Avoid dust formation. Methods for Cleaning Up

Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Avoid dust Handling

formation. Avoid breathing dust. Avoid contact with skin, eyes and clothing. Wear personal

protective equipment. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Storage Store in accordance with local regulations.

Incompatible Products

May react in contact with strong acids to release gaseous acid decomposition products, e.g. hydrogen, oxides of nitrogen. Use of strong oxidizers (high pH) on stainless steel may cause Cr(VI) compounds to form at ambient temperatures. Decomposition: Fumes generated during welding, brazing, or thermal cutting may contain: chromium compounds, including hexavalent chromium Cr(VI); nickel; manganese; iron; molybdenum; and silicon compounds.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Exposure Guidelines

There are no occupational exposure limits for stainless steels. Occupational exposure limits apply to some components resulting from grinding, polishing, abrasive blasting, hot rolling, hot forging, thermal cutting, or welding which may produce stainless steel dust or fumes.

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Manganese	TWA: 0.2 mg/m ³	(vacated) TWA: 1 mg/m³ fume	IDLH: 500 mg/m ³
7439-96-5		(vacated) STEL: 3 mg/m³ fume	TWA: 1 mg/m ³ fume
		(vacated) Ceiling: 5 mg/m ³	STEL: 3 mg/m ³
		Ceiling: 5 mg/m³ fume	
Copper	TWA: 0.2 mg/m ³ fume	TWA: 0.1 mg/m ³ fume	IDLH: 100 mg/m ³ dust, fume and
7440-50-8		TWA: 1 mg/m ³ dust and mist	mist
		(vacated) TWA: 0.1 mg/m³ Cu	TWA: 1 mg/m³ dust and mist
		dust, fume, mist	TWA: 0.1 mg/m³ fume
Nickel	TWA: 1.5 mg/m ³	TWA: 1 mg/m ³	IDLH: 10 mg/m ³
7440-02-0		(vacated) TWA: 1 mg/m ³	TWA: 0.015 mg/m ³
Silicon	-	TWA: 15 mg/m³ total dust	TWA: 10 mg/m ³ total dust
7440-21-3		TWA: 5 mg/m³ respirable fraction	TWA: 5 mg/m ³ respirable dust
		(vacated) TWA: 10 mg/m³ total	
		dust	
		(vacated) TWA: 5 mg/m ³	
		respirable fraction	
Cobalt	TWA: 0.02 mg/m ³	TWA: 0.1 mg/m ³ dust and fume	
7440-48-4			TWA: 0.05 mg/m³ dust and fume
		and fume	

Appropriate engineering controls

Engineering Measures

Ensure adequate ventilation, especially in confined area (i.e. showers, eyewash stations,

etc.).

Individual protection measures, such as personal protective equipment

Eye/Face Protection Skin and Body Protection Respiratory Protection When processing the metal alloy wear: Tightly fitting safety goggles. When processing the metal alloy: Wear protective gloves/clothing.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State Solid Appearance Varying from dull very light grey,

to shiny metallic light grey to

bright mirror-finish

Odor Odorless Odor Threshold No information available

<u>Property</u> <u>Values</u> <u>Remarks/ - Method</u>

None known No data available pН Melting Point/Range 1370-1520 °C / 2498-2768 °F None known **Boiling Point/Boiling Range** No data available None known **Flash Point** No data available None known **Evaporation rate** No data available None known Flammability (solid, gas) No data available None known Flammability Limits in Air upper flammability limit No data available lower flammability limit No data available **Vapor Pressure** No data available None known **Vapor Density** No data available None known **Relative Density** No data available None known **Specific Gravity** 0.27-0.30 None known No data available Water Solubility None known Solubility in other solvents No data available None known Partition coefficient: n-octanol/waterNo data available None known No data available None known **Autoignition Temperature Decomposition Temperature** No data available None known Viscosity No data available None known Not flammable Flammable Properties **Explosive Properties** No data available **Oxidizing Properties** No data available Other information

10. STABILITY AND REACTIVITY

No data available

Reactivity

No data available.

VOC Content (%)

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

None under normal processing.

Conditions to avoid

Dust formation.

Incompatible materials

May react in contact with strong acids to release gaseous acid decomposition products, e.g. hydrogen, oxides of nitrogen. Use of strong oxidizers (high pH) on stainless steel may cause Cr(VI) compounds to form at ambient temperatures. Decomposition: Fumes generated during welding, brazing, or thermal cutting may contain: chromium compounds, including hexavalent chromium Cr(VI); nickel; manganese; iron; molybdenum; and silicon compounds.

Hazardous decomposition products

None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

grades

Information on likely routes of exposure

Product Information In its solid form stainless steel does not present an inhalation, absorption, or ingestion

hazard. Grinding, polishing, abrasive blasting, hot rolling, hot forging, thermal cutting, or welding may produce stainless steel dust or fumes containing complex or mixed oxides (spinels) of its components. Metal dust particles may cause eye, skin and/or respiratory

system irritation. The below information is for these instances.

Inhalation May cause irritation of respiratory tract. Inhalation of fumes may cause metal fume fever,

which is characterized by flu-like symptoms with metallic taste, fever, chills, cough,

weakness, chest pain, muscle pain and increased white blood cell count. May cause allergy

or asthma symptoms or breathing difficulties if inhaled.

Eye Contact Contact with eyes may cause irritation.

Skin Contact Contact with dust can cause mechanical irritation or drying of the skin. Repeated or

prolonged skin contact may cause allergic reactions with susceptible persons.

Ingestion May cause irritation

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Iron	= 984 mg/kg (Rat)	-	-
Manganese	= 9 g/kg (Rat)	-	-
Nickel	> 9000 mg/kg (Rat)	-	-
Silicon	= 3160 mg/kg (Rat)	-	-
Cobalt	= 6170 mg/kg (Rat)	-	> 10 mg/L (Rat) 1 h

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms No information available.

Delayed and immediate effects and also chronic effects from short and long term exposure

May cause sensitization by inhalation and skin contact Sensitization

Mutagenic Effects No information available.

The table below indicates whether each agency has listed any ingredient as a carcinogen. Carcinogenicity

Chemical Name	ACGIH	IARC	NTP	OSHA
Chromium		Group 3		
Nickel		Group 2B Group 1	Reasonably Anticipated	Х
Cobalt	A3	Group 2A		X
		Group 2B		

No information available. **Reproductive Toxicity** STOT - single exposure No information available.

Causes damage to organs through prolonged or repeated exposure. STOT - repeated exposure

Elevated temperature processing such as welding and plasma arc cutting may release **Chronic Toxicity**

hazardous fumes. Overexposure to metal fumes may cause pulmonary edema (fluid in the lungs) and methemaglobinemia. May also cause pulmonary fibrosis and lung cancer. Chronic exposure to manganese may cause impairment to the central nervous system including sluggishness, sleepiness, muscle weakness, loss of facial muscle control, edema,

emotional disturbances, spastic gait, and falling.

Target Organ Effects Respiratory system. Skin. No information available. **Aspiration Hazard**

Numerical measures of toxicity • - Product

The following values are calculated based on chapter 3.1 of the GHS document: LD50 Oral 967 mg/kg; Acute toxicity estimate 7500

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Iron	-	LC50 96 h: = 0.56 mg/L semi-static (Cyprinus carpio) LC50 96 h: = 13.6 mg/L static (Morone saxatilis)	<u>-</u>	-
Copper	EC50 96 h: 0.031 - 0.054 mg/L static (Pseudokirchneriella subcapitata) EC50 72 h: 0.0426 - 0.0535 mg/L static (Pseudokirchneriella subcapitata)	LC50 96 h: 0.0068 - 0.0156 mg/L (Pimephales promelas) LC50 96 h: < 0.3 mg/L static (Pimephales promelas) LC50 96 h: = 0.052 mg/L flow-through (Oncorhynchus mykiss) LC50 96 h: = 0.112 mg/L flow-through (Poecilia reticulata) LC50 96 h: = 0.2 mg/L flow-through (Pimephales promelas) LC50 96 h: = 0.3 mg/L static (Cyprinus carpio) LC50 96 h: = 0.8 mg/L static (Cyprinus carpio) LC50 96 h: = 1.25 mg/L static (Lepomis macrochirus)	-	EC50 48 h: = 0.03 mg/L Static (Daphnia magna)
Nickel	EC50 96 h: 0.174 - 0.311 mg/L static (Pseudokirchneriella subcapitata) EC50 72 h: = 0.18 mg/L (Pseudokirchneriella subcapitata)	LC50 96 h: = 1.3 mg/L semi-static (Cyprinus carpio) LC50 96 h: = 10.4 mg/L static (Cyprinus carpio) LC50 96 h: > 100 mg/L (Brachydanio rerio)	-	EC50 48 h: = 1 mg/L Static (Daphnia magna) EC50 48 h: > 100 mg/L (Daphnia magna)
Cobalt	- No information	LC50 96 h: > 100 mg/L static (Brachydanio rerio)	-	-

Persistence and Degradability

No information available.

Bioaccumulation

No information available.

Other Adverse Effects No information available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods

Recover or recycle if possible. Dispose of in accordance with federal, state, and local regulations

Contaminated Packaging

Dispose of in accordance with federal, state, and local regulations.

Chemical Name	RCRA	RCRA - Basi	is for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Chromium - 7440-47-3			aste streams: F035, F037, F039	5.0 mg/L regulatory level	
Nickel - 7440-02-0	(hazardous constituent - no waste number)	Included in w F006,	aste streams: F039		
	Chemical Name			California Hazardous	s Waste
	Chromium		Toxic Corrosive Ignitable		
	Manganese			Ignitable powde	er
	Copper			Toxic	
Nickel		Toxic powder Ignitable powder		er	
	Cobalt			Toxic powder Ignitable powde	er
	Titanium		Ignitable powder		

14. TRANSPORT INFORMATION

DOT Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA Complies DSL Complies

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS-No	Weight %	SARA 313 - Threshold Values %
Chromium	7440-47-3	17.5	1.0
Manganese	7439-96-5	9	1.0
Copper	7440-50-8	4	1.0
Nickel	7440-02-0	3.5	0.1
Cobalt	7440-48-4	0.6	0.1

SARA 311/312 Hazard Categories

Acute Health HazardNoChronic Health HazardNoFire HazardNoSudden Release of Pressure HazardNoReactive HazardNo

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Copper		Х	X	
Nickel		X	X	

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Chromium			RQ 5000 lb final RQ RQ 2270 kg final RQ
Copper	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ

WPS-OUT-004 - Chromium-Nickel-Manganese-Copper Alloyed Stainless Steel grades

Nickel	100 lb	RQ 100 lb final RQ
		RQ 45.4 kg final RQ

U.S. State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals:

Chemical Name	CAS-No	California Prop. 65
Nickel	7440-02-0	Carcinogen
Cobalt	7440-48-4	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Illinois	Rhode Island
Chromium		Х			X
Manganese	Х	Х	X	Х	Х
Copper	X	X	X	X	X
Nickel	Х	Х	X	X	X
Silicon	X	X	X		X
Cobalt	Х	Х	X	X	X
Titanium	X				

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION							
NFPA	Health Hazard 0	Flammability 0	Instability 0	Physical and Chemical Hazards -			
HMIS	Health Hazard 0	Flammability 0	Physical Hazard 0	Personal Protection X			

Prepared By Product Stewardship

23 British American Blvd. Latham, NY 12110 1-800-572-6501

Revision Date 05-Nov-2012

Revision Note No information available.

General Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of Safety Data Sheet