MSDS Alltite Gasket
B130717

NORTH AMERICAN STAINLESS

Material Safety Data Sheet
Stainless Steel

July 2012

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Section 1 – Chemical Product and Company Identification

Manufacturer:	North American Stainless 6870 US 42 East Ghent, KY 41045
Emergency Number:	(502) 347-6650 (502) 347-6111 after 5:00 PM
Product Name:	Stainless Steel Products, All Grades
Description:	Solid material in various forms
Technical Contact:	Environmental, Safety & Health
Date of Revision:	July 25, 2012

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Section 2 – Composition / Ingredients

Note: Steel products in their natural state do not present an inhalation or contact hazard, however operations such as burning, welding, sawing, brazing and grinding my release fumes and or dust, which may present health hazards. There is not an American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV) or OSHA exposure limit (PEL) established for steel.

Component	CAS #	Percent	OSHA PEL(mg/m^3)	ACGIH TLV (mg/m3)
Iron	7439-89-6	45 – 90	10 mg/ m^3 Iron Oxide – Fume	10 mg/ m^3 Iron Oxide – Dust & Fume
Nickel	7440-02-2	0 – 40	1 mg/m^3, Metal, soluble & insoluble compounds	1.5 mg/ m^3 Metal 0.1 mg/ m^3 Soluble compounds 0.2 mg/ m^3, Insoluble compounds
Chromium	7440-47-3	10.5 – 30	1 mg/ m^3, Metal & insoluble salt 0.5 mg/m^3, Cr (III) 5 µg/m^3, Cr (VI) 2.5 µg/m^3 Action Level Cr (VI)	0.5 mg/m^3 Metal and Cr (III) 0.05 mg/m^3, Cr (VI) & water soluble compounds 0.01 mg/m^3, Cr (VI) Insoluble compounds
Manganese	7439-96-5	0 – 15	5 mg/m^3 (ceiling)	0.2 mg/m^3
Molybdenum	7429-98-7	0 – 5	5 mg/m^3 Soluble compounds as MO 15 mg/m^3 Total dust	5 mg/m^3 Soluble compounds as MO 10 mg/m^3 Insoluble compounds as MO
Copper	7440-50-8	0 – 5	0.1 mg/m^3 Fume 1.0 mg/m^3 Dust & Mist	0.2 mg/m^3 Fume 1.0 mg/m^3 Dust & Mist
Silicon	7440-21-3	0 – 3	15 mg/m^3 Total dust 5 mg/m^3 Respirable dust	10 mg/m^3 Total dust
Aluminum	7429-90-5	0 – 1	15 mg/m^3 Metal & Total dust 5 mg/m^3 Respirable dust	1 mg/m^3 Respirable dust 5 mg/m^3 Welding fume
Cobalt	7440-48-4	0 – 1	0.1 mg/m^3 Metal, Dust & Fume	0.02 mg/m^3 Metal, Dust & Fume
Vanadium	1314-62-1	Trace	0.5 mg/m^3 (ceiling) Vanadium Pentoxide dust 0.1 mg/m^3 (ceiling) Vanadium Pentoxide fume	0.05 mg/m^3 Vanadium Pentoxide

Tungsten	7440-33-7	Trace	15mg/m³ Total Dust 5 mg/m³ Respirable dust	1.0 mg/m³ 3 mg/m³ STEL Soluble 5.0 mg/m³ 10 mg/m³ STEL Insoluble
Tantalum	7440-25-7	Trace	5 mg/m³ Metal & Oxide dust 10 mg/m³ STEL	5 mg/m³ Metal & Oxide dust
Titanium	7440-32-6	0 – 1	15 mg/m³ Titanium Dioxide total dust	10 mg/m³ Titanium Dioxide total dust
Lead	7439-92-1	Trace	0.05 mg/m³	0.05 mg/m³

Section 3 – Hazard Identification:

General Hazard Statement: Solid metallic products are classified as "articles" and are not hazardous materials in their solid form under the definitions of the OSHA Hazard Communication Standard (29 CFR 1910.1200). Articles manufactured from these solid products are generally considered non hazardous as well. However some hazardous elements of these products can be emitted under certain processing conditions such as but not limited to: burning, melting, cutting, brazing, grinding, machining, milling, and welding.

Primary route of entry: Inhalation of dust or fume during welding, burning, melting, cutting, brazing, grinding, machining, milling, welding and other operations.

Effects of Overexposure: Stainless, as a solid, is not toxic and presents no health hazard. Overexposure to dusts and or fumes which may result during processing can pose health hazards as defined below

Acute Effects of Overexposure:

Inhalation: Inhalation of high concentrations of fumes or dusts may result in irritation and or sensitization of the respiratory track, nasal irritation, and metal fume fever.
Eyes: Exposure to fumes and dusts can cause irritation and or sensitization and conjunctivitis.
Skin: Contact with dusts may cause irritation or sensitization leading to dermatitis.
Ingestion: Nausea or vomiting may result from ingestion of dusts

Chronic Effects of Overexposure:

Inhalation: Prolonged inhalation of dust or fume may cause lung, central nervous system, liver, kidney, and nasal cavity damage.
Eyes: Prolonged exposure to fumes and dusts can cause severe irritation, and or sensitization and conjunctivitis.
Skin: Prolonged contact with dusts may cause severe irritation or sensitization leading to dermatitis.
Ingestion: Nausea or vomiting may result from ingestion of dusts
Eye inflammation

Section 4 – First Aid Measures:

Eye Contact: Wash with copious amounts of water for 15 minutes to ensure that no articles remain in the eye. Seek medical advice if irritation persists
Skin Contact: If irritation develops, wash skin thoroughly with soap and water. Seek medical attention, if necessary.
Inhalation: Remove from dusty area to fresh air: If discomfort persists, consult physician.
Ingestion: If significant amounts of dusts are ingested consult physician.

Section 5 - Fire and Explosion Information:

Flash Point (°F):	N/A
Method Used:	N/A
Auto-Ignition Temperature (°F):	N/A
Flammability Limits (%/Vol):	
LEL: (Lower Explosive Limit)	N/A
UEL:(Upper Explosive Limit)	N/A
Flammability Classification	N/A

Hazardous Combustion Products: Not applicable for solid formed alloy. Toxic metal and metallic oxide fumes may be evolved from fires involving finely divided alloy.

Extinguishing Media: For solid formed alloys, as appropriate for surrounding fire. A fire involving finely divided alloy should be treated as Class D Combustible metal fire. Fire should be extinguished by a properly trained and experienced firefighter. Proper care should be taken in applying extinguishing agent.

Special Fire Fighting Instructions: For solid formed alloy, as appropriate for surrounding fire. Positive pressure SCBE and structural firefighter's protective clothing should be used at a minimum for surrounding fire.

Unusual Fire and Explosion Hazards: Solid formed alloy does not constitute a fire or explosion hazard. However, finely divided, suspended particulates may present a fire and explosion hazard in the presence of an ignition source.

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Section 6 – Accidental Release Measures:

Solid Form: N/A
Dust Form: Shut off ignition source; no flares, smoking or flames should be in or near hazard area. Do not touch or walk through spilled material. Clean up using methods which avoid dust generation. Compressed air should not be used. During cleanup avoid inhalation and skin and eye contact. Provide local exhaust or dilution ventilation as required
Disposal: Dispose of in accordance with all applicable federal, state and local regulations.

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Section 7 – Handling and Storage:

Handling: Avoid breathing of and contact with fumes and dusts during processing. No specific requirements for solid formed steel product
Storage: Keep away fro incompatible materials (section 10)

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Section 8 – Exposure Control and Personal Protection:

Engineering Controls: Local and or general exhaust ventilation should be used to keep worker exposure below applicable exposure limits (section 2) during welding, brazing, grinding, machining, and other processes which may generate airborne contaminants.
Respiratory: NIOSH / MSHA – approved dust/mist/fume respiratory should be used during welding, burning, and grinding operations, if applicable exposure limits (section 2) are exceeded
Gloves: Suitable for protection against physical injury and skin contact during handling and processing.
Eyes: Safety glasses or goggles should be worn when there is probability of flying particles or elevated levels of dust or fume.

Section 9 - Physical and Chemical Properties:

Boiling Point (°F):	N/A
Vapor Pressure (mmHg @ 20°C):	N/A
Vapor Density (AIR=1):	N/A
Melting Point	2500 – 2800 °F
Solubility in Water:	Insoluble
Viscosity:	N/A
Specific Gravity (H_20=1):	7.85 to 7.94
Percent Volatile by Volume:	N/A
Evaporative rate (Ethyl Ether = 1):	N/A
pH Information:	N/A
Appearance and Odor:	Odorless solid silver-gray metallic

Section 10 – Stability and Reactivity Data:

STABILITY (Conditions to avoid): Stable under normal conditions of transport, storage and use for solid formed product

INCOMPATIBILITY (Material to avoid): Oxidizers. Reacts with strong acids to form explosive hydrogen gas.

HAZARDOUS DECOMPOSITION PRODUCTS: During certain operations such as welding, burning, melting or hot rolling, metal fumes may be generated. Hexavalent chromium which is a suspect carcinogen may result from pickling of stainless.

HAZARDOUS POLYMERIZATION: Will not occur.

Section 11 – Toxicological Data:

Iron: Excessive exposure of eyes to airborne iron dust can cause conjunctivitis, choroiditis, and retinitis. Chronic inhalation of high concentrations of iron oxide fume or dust may result in the siderosis (benign pneumoconiosis).
LD_{50} (oral rat) – 30gm/kg; LC_{50} – No Data
Nickel: The most common effect resulting from exposure to nickel compounds is "nickel itch", a form of dermatitis in sensitized individuals. Nickel sensitivity, once acquired, may persist indefinitely.
LD_{50} = 50 mg/kg mouse – intravenous. LC_{50} – No Data
Carcinogenicity: NTP- Reasonably anticipated to be carcinogenic; IARC- Group 1 (there is sufficient evidence for carcinogenicity in humans) and 2B (agents which are possibility carcinogenic to humans); OSHA – Not regulated; ACGIH – A5 (not a suspected human carcinogen)
Chromium: Health hazards associated with exposures are dependent upon its oxidation state. Suspect carcinogen and tumorigen. Dermatitis may result from exposure to chromium fumes.
LD_{50} (Oral) – No Data; LC_{50} – No Data
Carcinogenicity: Chromium metal and trivalent chromium compounds are not classifiable as human carcinogens. Hexavalent Chromium (produced by welding, torch cutting, brazing and possibly grinding) is a confirmed human carcinogen. NTP – Group 1 (known to be carcinogenic); IARC- Group 1 (there is sufficient evidence for carcinogenicity in humans) and 2B (agents which are possibility carcinogenic to humans); ACGIH – A1 (confirmed human carcinogen)

Manganese: Can affect central nervous system, including languor, sleepiness, weakness, emotional disturbances, spastic gait, recurring leg cramps, and paralysis. Upper respiratory system damage may result from inhalation of fume and dust.
LD_{50} (Oral - Rat) – 30 gm/kg; LC_{50} – No Data
Molybdenum: Irritation of nose and throat, weight loss and digestive disturbances in animals. Can cause joint pains in the hands, knees, and feet. No industrial poisonings have been reported.
LD_{50} (Oral) – No Data; LC_{50} – No Data
Copper: May be responsible for one form of metal fume fever. Metal fume fever's symptoms include cough, headache, fever, nausea, chilling, pain in muscles and joints, and metal taste in mouth. This condition is usually transitory lasting one day or less. Chronic exposure may also result in Wilson's Disease (characterized by hepatic cirrhosis, brain damage, demyelination, renal disease, and copper deposition in the cornea.
LD_{50} (Oral) – No Data; LC_{50} – No Data
Silicon: Is an inert material which does not appear to have the ability to cause fibrosis in lung tissue. Silicon may cause chronic respiratory effects.
LD_{50} (Oral-Rat) – 3160 mg/kg; LC_{50} – No Data
Aluminum: Inhalation of finely divided aluminum and aluminum oxide powder can cause pulmonary fibrosis and lung damage.
LD_{50} (Oral) – No Data; LC_{50} – No Data
Cobalt: Exposure to high levels of cobalt can result in lung and heart effects and dermatitis. An experimental carcinogen.
LD_{50} (Oral) – No Data; LC_{50} – No Data
Carcinogenicity: IARC – possibly carcinogenic to humans. ACGIH – animal carcinogen.
Particulates: Eye and respiratory irritation may occur with exposures to dust.

Medical conditions known to be aggravated by exposure to this material: Persons with lung disorders or diseases or skin disorders may be at added risk as a result of overexposure to this material.

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Section 12 – Ecological Data:
Not applicable for solid alloy product in its as shipped form. Articles produced from solid product are not an ecological hazard. No information has been found on specific alloy to establish its effect onto the environment if released in a finely divided form. It is believed that finely divided alloy will be hazardous to fish, animals, plants, and the environment. The degree of hazard would depend on the particle size and quantity released. If particle size is small enough, alloy may be ingested by wildlife, with possible toxic effects occurring.

Solid alloy is not expected to migrate easily into soil or ground water. Finely divided alloy can become mobile in water and contaminate soil and ground water. Finely divided alloy may persist in the environment for long periods of time based upon the corrosion resistant, insoluble, and non-biodegradable properties of the alloy. In addition, heavy metals may contaminate the food chain and be consumed by humans

Some alloy components will react with oxygen to form metallic oxides at varying rates. Iron oxidizes most rapidly in moist air. Metallic particulate discharged to a POTW may pass through or contaminate sewage sludge, may interfere with the treatment system process, and may be non compliant with a POTW permit or other regulations.

Section 13 – Disposal Data:

If product as shipped becomes a solid waste, it would not be considered a hazardous waste and should be recycled. Product dusts from processing may be classified as hazardous wastes which are defined within 40 CFR 261 as well as state and or local regulation. Solid waste generated from product processing should be classified by a competent environmental professional and disposed, processed, or recycled in accordance with federal, state, and local regulation.

Section 14 – Transportation Data:

Hazardous Material Proper Shipping Name: N/A for solid formed product
Hazard Class: N/A for solid formed product
Identification Number: N/A for solid formed product

Note: Stainless steel transported in coiled form is under tension and represents a significant source of potential energy due to the tension induced by coiling; it will uncoil to try to lay flat in a long strip when banding is cut or other forces are released; uncoiling can be sudden and catastrophic and measures should be taken to ensure that uncoiling will not occur.

Section 15 – Regulatory Data:

SARA Title III Hazard Categorization: Product (dust and fume) is categorized as an immediate (acute) health hazard and a delayed (chronic) health hazard as defined by 40 CFR 370. Product is not categorized as a fire hazard. Product is not categorized as a reactivity hazard. Product is not categorized as a pressure release hazard.

SARA Title III Section 302 Extremely Hazardous Substances (EHS's): None
SARA Title III Section 313 Reportable Substances:
Nickel, Cobalt, Chromium, Aluminum, Manganese and Copper.
CERCLA Hazardous Substance: (If diameter of released particle >10 micrometers)
Nickel – 100 pound threshold
Chromium – 5000 pound threshold
Copper – 5000 pound threshold
TSCA: The components of this product are listed on the Toxic Substance Control Act Inventory.
Pennsylvania R-T-K List:
Aluminum, Manganese, Molybdenum, Nickel, Silicon, Chromium, Cobalt, Copper, and Tantalum.
New Jersey R-T-K Environmental Hazardous Substance List:
Aluminum, Chromium, Copper, Cobalt, Manganese, and Nickel
California Proposition 6e:
Listed possible trace elements know by the state to cause cancer – Arsenic (inorganic), Cadmium, Lead.
Listed possible trace elements know by the state to cause reproductive toxicity – Lead
Listed components known by the state to cause cancer – Nickel, Cobalt (metal powder)
Listed components known by the state to cause reproductive effects – None

Section 16 - Additional Information

NFPA Rating: Health: 1 Flammability: 0 Reactivity: 0
HMIS Rating: Health: 1 Flammability: 0 Reactivity: 0 PPE: B

FLEXITALLIC L.P.

Material Safety Data Sheet

No. FDP-005
REVISED: 08 Aug 2012
Contact Number 281-604-2400

GENERAL INFORMATION
Manufacturer:
Flexitallic L.P.
6915 Highway 225
Deer Park, Texas 77536

Common Name, Trade Name, or Specification:
Flexicarb Filled Spiral Wound Gasket DOT Hazard Code - N/A

1. HAZARDOUS INGREDIENTS AND EXPOSURE LIMITS

Although several of the ingredients used to formulate this product may be hazardous in the raw state, the manufacturing process results in a solid, infusible form, binding or otherwise rendering the mixture inert. We have identified below those hazardous constituents present in quantities greater than 1% (0.1% for carcinogens) that may be released from the product by overheating, burning, machining, abrading, or riveting.

Component	CAS Number	%	OSHA PEL	ACGIH TLV
Nickel	7440-02-0	<10	1 mg/m^3	1 mg/m^3
Chromium	7440-47-3	<15	0.5 mg/m^3	0.5 mg/m^3
Molybdenum	7439-98-7	<3	10 mg/m^3	10 mg/m^3
Silica (Quartz)	14808-60-7	<2	0.1 mg/m^3(respirable)	0.1 mg/m^3(resp)
Graphite	7782-42-5	<95	2.5 mg/m^3(respirable)	2.0 mg/m^3 (resp)

2. PHYSICAL AND CHEMICAL CHARACTERISTICS

Melting Point - None Solubility in water - Insoluble Odor -None
Color - Black Specific Gravity - 1.0 - 1.5 Form - Solid

3. FIRE AND EXPLOSION DATA

Auto-ignition Temperature: This product is inherently flame resistent.
Flammable Limits in Air: % in Air by Volume: LEL: N/A UEL: N/A
Extinguisher Media: Carbon dioxide, chemical, or foam
Special Firefighting Procedure: Material in or near fires should be cooled with a water

spray or fog. A self-contained breathing apparatus, operating in the positive pressure mode, and full fire fighting protective clothing should be worn for combative fires.
Unusual Fire and Explosion Hazards: Thermal decomposition or combustion may produce dense smoke, oxides of carbon, and low molecular weight organic compounds whose composition has not been characterized.

4. PHYSICAL HAZARDS AND REACTIVITY DATA

Stability: Stable at normal temperatures and storage conditions
Incompatibility: None
Hazardous Decomposition Products: None
Hazardous Polymerization: Will not polymerize. This product is fully cured in the manufacturing process.

5. HEALTH HAZARDS

Carcinogenicity:	NTP Listed	IARC Listed	NIOSH Listed	OSHA Listed
Nickel	Yes	Yes*	Yes	No
Chromium	No	No	No	No
Molybdenum	No	No	No	No
Silica(Quartz)	Yes	Yes**	Yes	No
Graphite	No	No	No	No

* IARC classifies nickel as "carcinogenic to humans." (Group 1)
** IARC classifies quartz as "probably carcinogenic to humans." (Group 2A)

Symptoms and Effects of Exposure to the Individual Components:

NICKEL
Inhalation hazards - Prolonged exposure may cause headache, vertigo, nausea, and vomiting, and may cause reproductive problems. IARC classifies nickel as "carcinogenic to humans." (Group 1)
Other hazards - Acute contact exposure may cause allergic contact dermatitis, pulmonary asthma, conjunctivitis, and inflammatory reactions around nickel-containing medical implants and prostheses. Prolonged contact may cause substernal pain, cough, hyper-pnea, weakness, cyanosis, leukocytosis, pneumonitis, convulsions, and delerium. Ingestion may produce gastroenteric irritation resulting in vomiting , inflammation, and epigastric pain.

CHROMIUM
Inhalation hazards - Acute: exposure may result in cough and irritation of the respiratory system.
Chronic: Prolonged exposure may cause histologic fibrosis of the lungs.
Other hazards - Poisonous by ingestion; may cause severe gastrointestinal irritation.

MOLYBDENUM
Inhalation hazards - Dust may cause irritation of nasal and respiratory passages.
Other hazards - Molybdenum may be aneye irritant. Ingestion may cause diarrhea, loss of weight, liver and kidney damage.

SILICA DUST

Inhalation hazards - Acute: Exposure to silica dust may cause paroxysmal coughing, wheezing, dyspnea and upper respiratory tract irritation. Chronic: Prolonged exposure to silica dust may cause silicosis. Quartz has been classified by IARC as "probably carcinogenic to humans." (Group 2A)
Other hazards - Eye or skin contact can cause temporary discomfort and irritation.

GRAPHITE
Inhalation hazards - Acute: exposure may result in cough, dyspnea, black sputum, and fibrosis. Chronic: Prolonged exposure may cause pneumoconiosis. It is reported that diseases of the respiratory and cardiovascular system may be aggravated by exposure.

6. FIRST AID

Inhalation: Move to fresh air. Obtain medical attention.
Eyes: Flush with water to remove particulate. Obtain medical attention.
Skin: Wash thoroughly with soap and water. If persistent irritation develops, obtain medical attention.
Ingestion: Obtain medical attention.

7. SPECIAL PRECAUTIONS AND SPILL / LEAK PROCEDURES

Handling and Storage : Shipping and storage may result in accumulation of dust in shipping containers. If this occurs, dispose of the container in an airtight polyethylene bag (see disposal instructions below) or remove dust by vacuuming or wet mopping. Vacuums used for this purpose should be equipped with HEPA filters. Do not use compressed air to blow dust from storage containers.

Release or Spill : If a release of dust occurs during machining, abrading, or riveting, remove dust by vacuuming or wet mopping. Vacuums used for this purpose should be equipped with HEPA filters. Do not use compressed air to blow dust from the workplace.

Waste Disposal : Disposal of solid waste is regulated by federal and state law. Waste should be placed in airtight containers, and disposed of properly. Contact local regulatory agency for guidance.

8. PERSONAL PROTECTION AND CONTROL

Respiratory Protection : Use NIOSH-approved respirator if exposure to dust, vapors, or fumes in concentrations exceeding PEL's or TLV's is possible. (See 29 CFR 1910.134 for respiratory protection standards)

Ventilation : Any operations which may produce dust, including machining, grinding, riveting, or abrading of this product, should be adequately exhausted to prevent inhalation of dust.

Personal Protective Equipment : Suitable respiratory protection should be worn if dust exposure is possible. All regulations and safe practices related to the use of respiratory protection must be observed. Refer to OSHA standards and NIOSH guidelines. If skin irritation occurs, gloves and other protective garments may be worn.

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