


 Liberty Forge, Inc.	SAFETY DATA SHEET	DOC. # SDS – AS 2
		Page 1 of 6
		ISSUE DATE: 07/29/16
		REV. DATE: 01/24/17

SECTION 1: Company and Product Identification			
Company Information	Liberty Forge, Inc. 1507 Fort Worth St. Liberty, Texas 77575 Phone: 936-336-5785 Fax: 936-336-2730		
Product Category	Alloy Steel		
Category	Steel Forgings		
SECTION 2: Hazards Identification			
Hazardous Description	Alloy Steels are non hazardous in their solid state. Processes such as cutting, grinding, milling, and welding could result in hazardous materials being emitted as fumes, dust (combustible or otherwise), and/or particulate that may present itself as a hazard.		
Pictogram			
Signal Word	Danger		
GHS Classification	Carcinogenicity (Category 2) Skin Sensitization (Category 1) Respiratory Sensitizer (Category 1) Specific target organ toxicity, repeated exposure (Category 1) Eye Irritation (Category 2B) Toxic to Reproduction (Category 1B)		
Precautionary Statement(s)	P202: Do not handle until all safety precautions have been read and understood P261: Avoid breathing dust/fumes P281: Use personal protective equipment as required. P308+P313: If exposed or concerned: Get medical advice/attention.		
Hazard Statement(s)	H232: May form combustible dust concentrations in air H302: Harmful if swallowed H317: Dust/fumes may cause an allergic skin reaction H332: Harmful if inhaled H351: Dust/fumes suspected of causing cancer via inhalation H372: Inhalation of dust/fumes causes damage to respiratory tract through prolonged or repeated exposure H400: Very toxic to aquatic life H402: Harmful to aquatic life H411: Toxic to aquatic life with long lasting effects H412: Harmful to aquatic life with long lasting effects		
SECTION 3: Composition/Information on Ingredients			
Type	Solid Mixture		
Chemical Name and CAS Number	CAS #	Chemical	Percent Range
	1309-37-1	Iron	85-99%
	7440-21-3	Silicon	0.1-1%
	7440-44-0	Carbon	0.03-1.10%

 Liberty Forge, Inc.	SAFETY DATA SHEET	DOC. # SDS – AS 2
		Page 2 of 6
		ISSUE DATE: 07/29/16
		REV. DATE: 01/24/17

	7440-50-8	Copper	0.1-1.3%
	1344-28-1	Aluminum	0.01-0.05%
	7439-98-7	Molybdenum	0.02-1.75%
	13463-67-7	Titanium	0.001-0.01%
	7440-47-3	Chromium	0.1–3.5%
	7439-95-6	Manganese	0.2-1.8%
	7440-02-0	Nickel	0.1-3.5%
	1314-62-1	Vanadium Pentoxide	0.01-0.15%

SECTION 4: First Aid Measures

Eye Contact	Flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Seek medical attention if eye irritation persists.
Skin Contact	For irritation from material, wash affected area with soap and water. Seek medical attention if skin irritation persists. In case of thermal burn, flush skin with cold water and get medical attention.
Inhalation	Dust may irritate mouth and gastrointestinal tract. For overexposure to metal fumes, remove to fresh air, seek medical attention promptly.
Ingestion	Not considered an ingestion hazard. If ingested seek medical attention promptly.

SECTION 5: Fire Fighting Measures

Fire Hazard	Under normal conditions, steel products do not present fire or explosion hazards, and dust generated by handling steel products is oxidized and not combustible.
Extinguishing Media	N/A
Hazardous Combustion Products	N/A
Special Fire Fighting Instruction	Do not use water on molten metal. Do not use Carbon Dioxide (CO ₂). Firefighters should not enter confined spaces without wearing NIOSH/MSHA approved positive pressure breathing apparatus (SCBA) with full face mask and full protective equipment.

SECTION 6: Accidental Release Measures

Spills or Accidental Release	Emergency response is unlikely unless the material is the form of dust due to grinding, cutting, or milling. Fine turnings and small chips should be swept or vacuumed and placed into appropriate disposable containers. Keep fine dust or powder away from sources or ignition. Scrap should be reclaimed for recycling. Care shall be taken to prevent materials from entering drains, sewers, or waterways.
Waste Disposal Methods	Dispose used or unused product in accordance with applicable Federal, State, and Local regulations. Please recycle.
Personal Precautions and Protective Equipment	See Section 8

SECTION 7: Handling and Storage

Storage	Store in ambient temperature and in dry area.
Precautions with Incompatibilities	Store away from strong oxidizers.
Handling	Put on appropriate personal protective equipment (see section 8). Avoid generating and spreading of dust. Do not breathe fumes or dust. Avoid

 Liberty Forge, Inc.	SAFETY DATA SHEET	DOC. # SDS – AS 2
		Page 3 of 6
		ISSUE DATE: 07/29/16
		REV. DATE: 01/24/17

contact with sharp edges.

SECTION 8: Exposure Controls/Personal Protection

Component Exposure Limits	CAS#	Name	OSHA-PEL (mg/m ^3)	ACGIH-TLV (mg/m ^3)
	1309-37-1	Iron	10	5
	7440-21-3	Silicon	15 (total dust) 5 (respirable fraction)	10 (inhalable fraction) 5 (respirable fraction)
	7440-44-0	Carbon	15 (total dust) 5 (respirable fraction)	10 (inhalable fraction) 3 (respirable fraction)
	1344-28-1	Aluminum	15 (total dust) 5 (respirable fraction)	1
	7439-98-7	Molybdenum	15 (total dust) 5 (insoluble compounds)	10 (inhalable fraction)
	13463-67-7	Titanium	15 (total dust) 5 (respirable fraction)	10 (inhalable fraction) 3 (respirable fraction)
	7440-50-8	Copper	1	0.2
	1314-62-1	Vanadium pentoxide	0.05	0.05
	7440-47-3	Chromium	5	0.02
	7439-95-6	Manganese	5 (fumes)	0.2
7440-02-0	Nickel	1	1.5	

PPE: Respiratory	Have adequate ventilation during welding, burning, or grinding.
PPE: Eyes	Wear safety glasses, face shield or goggles when cutting or grinding. Wash eyes thoroughly with water if eyes get contaminated with dust. See medical attention.
PPE: Skin	Wear gloves when handling material. Wash hands thoroughly with soap and water after handling. Wash hands before eating, drinking, or smoking.

SECTION 9: Physical & Chemical Properties

Appearance	Silver grey to grey black with metallic luster
Odor	Odorless
Boiling Point	N/A
Melting Point	Approximately 2800F and above
Solubility (H2O)	Insoluble in Water
Density (at 15.6C)	7.85 g/cm ³ +/- 10%
Specific Gravity	7.6-7.8
Vapor Pressure	N/A
% Volatile, by Volume	N/A
Auto Ignition Temperature	N/A
Evaporation Rate (Butyl Acetate = 1)	N/A
Other Physical and Chemical Data	N/A

SECTION 10: Stability and Reactivity

Stability	Stable
Conditions to Avoid	Avoid generating airborne dusts
Incompatible Product	Mineral Acids/Oxidizers

 Liberty Forge, Inc.	SAFETY DATA SHEET	DOC. # SDS – AS 2
		Page 4 of 6
		ISSUE DATE: 07/29/16
		REV. DATE: 01/24/17

Decomposition Product	N/A
------------------------------	-----

SECTION 11: Toxicological Information

General Information	Under normal use and handling of the solid form of this material there are a few health hazards. Cutting, welding, melting, grinding etc. of these materials will produce dust, Hexavalent Chromium fume or particulate containing the component elements of these materials. Exposure to the dust, fume or particulate of these materials may present significant health hazards.	
Chromium	This product contains chromium. Prolonged and repeated overexposure to chromium dusts or fumes may cause skin ulcers, nasal irritation and ulceration, kidney damage and cancer of the respiratory system. Chromium is skin sensitizer. Cancer is generally attributed to the hexavalent (+6) form of chromium which is listed as a carcinogen by NTP and IARC (Group 1).	
Manganese	This product contains manganese. Prolonged exposure to manganese dusts or fumes is associated with “manganism”, a Parkinson-like syndrome characterized by a variety of neurological symptoms including muscle spasms, gait disturbances, tremors, and psychoses.	
Nickel	This product contains nickel. Prolonged and repeated contact with nickel may cause sensitization dermatitis. Inhalation of nickel compounds has caused lung damage as well as sinus, nasal and lung cancer in laboratory animals. Nickel is a listed carcinogen by NTP and IARC (Group 1).	
Component Analysis LD50/LC50	Iron	Oral-LD50- Rat > 10 g/kg
	Chromium	Oral-LD50- Rat 0.0275 g/kg
	Manganese	Oral-LD50- Rat 9 g/kg
	Nickel	Oral-LD50- Rat 5 g/kg
	Titanium	Oral-LD50- Rat 10 g/kg
	Aluminum	Oral-LD50- Rat 15.9 g/kg
		Inhalation-LC50- Rat 2.3 mg/l/4h
	Carbon	Oral-LD50- Rat 10 g/kg
Oral-LD50- Rat 221.1-715.7 mg/kg		
Dermal-LD50- Rabbit 50 mg/kg		
Vanadium	Inhalation-LC50- Rat 2.21 mg/l/4h	

SECTION 12: Ecological

Ecotoxicity	Nickel	LC50 Fish 1	100 mg/l (exposure time: 96h – species: brachydanio rerio)
		EC50 Daphnia 1	100 mg/l (exposure time: 48h – species: daphnia magna)
		EC50 Other Aquatic Organism 1	0.18 mg/l (exposure time: 72h – species: pseudokirchneriella subcapitata)
		LC 50 Fish 2	1.3 mg/l (exposure time: 96h – species: cyprinus carpio [semi-static])
		EC50 Daphnia 2	1 mg/l (exposure time: 48h – species: daphnia magna [static])
		EC50 Other Aquatic Organisms 2	0.174 (.174 – 0.311) mg/l (exposure time: 96h – species: pseudokirchneriella subcapitata [static])
	Aluminum	LC50 Fish 1	14.6 mg/l
		EC50 Daphnia 1	38.2 mg/l
		NOEC (acute)	> 50 mg/l
	Copper	LC50 Fish 1	0.0068 (0.0068 – 0.0156) mg/l (exposure time: 96h – species: pimephales promelas)
		EC50 Daphnia	0.03 mg/l (exposure time: 48 h – species: daphnia magna)

 Liberty Forge, Inc.	SAFETY DATA SHEET	DOC. # SDS – AS 2
		Page 5 of 6
		ISSUE DATE: 07/29/16
		REV. DATE: 01/24/17

		1	[static])
		EC50 other aquatic organisms 1	0.0426 (0.0426-0.0535) mg/l (exposure time: 72h – species: pseudokirchneriella subcapitata [static])
		LC 50 Fish 2	0.3 mg/l (exposure time: 96h – species: pimephales promelas [static])
		EC50 Other Aquatic Organisms 2	0.31 (0.031-0.054) mg/l (exposure time: 96h – species: pseudokrchneriell subcapitata [static])
Bio-Accumulation	No product information available.		
Soil Mobility	No product information available.		
SECTION 13: Disposal Considerations			
Waste Disposal	Recovery and reuse, rather than disposal, should be the ultimate goal of handling efforts. Dispose of in accordance with Federal, State, or Provincial requirements.		
SECTION 14: Transport Information			
DOT/TDG Information	Not classified as a DOT Hazardous Material		
SECTION 15: Regulatory Information			
General	The products are not hazardous under the criteria of the Federal OSHA Hazard Communications Standards 29 CFR 1910.1200. However, dust and fumes from this product may be combustible or hazardous and require protection to comply with applicable Federal, state and local laws and regulations. This product does contain chemicals subject to reporting requirements of CERCLA/SARA 313.		
TSCA Inventory	Components of this product are listed on the TSCA Inventory.		
California Proposition 65	The Substances Nickel, Cobalt and Titanium are on the California Carcinogens list		
Massachusetts Right-to-Know List	Iron oxides, Chromium, Copper, Manganese, Molybdenum, Nickel, Silicon, Titanium Dioxide, Aluminum Oxide, Vanadium pentoxide		
New Jersey Right-to-Know: Hazardous Substance List	Iron oxides, Chromium, Copper, Manganese, Molybdenum, Nickel, Silicon, Titanium Dioxide, Aluminum Oxides, Vanadium pentoxide		
Pennsylvania Right-to-Know Environmental & Special Hazard List	Iron oxides, Chromium, Copper, Molybdenum, Manganese, Nickel, Silicon, Titanium Dioxide, Aluminum Oxides, Vanadium pentoxide		
SARA Section 313	This product contains Chromium, Manganese, and Nickel which are chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) 1986 and of 40 CFR 372.		
SECTION 16: Other Information			
Disclaimer	This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard works and the environment. The information in this Safety Data Sheet (SDS) was obtained from sources which we believe are reliable; however, the information is provided without any representation or warranty, expressed or implied, regarding the accuracy or correctness.		

 Liberty Forge, Inc.	SAFETY DATA SHEET	DOC. # SDS – AS 2
		Page 6 of 6
		ISSUE DATE: 07/29/16
		REV. DATE: 01/24/17

Handling and Storage	<p>The conditions or methods of handling, storage, use and disposal of the product are beyond the control of Liberty Forge, Inc. and may be beyond Liberty Forge, Inc.'s knowledge. For this and other reasons, Liberty Forge, Inc. does not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use, or disposal of this product.</p>
-----------------------------	---