

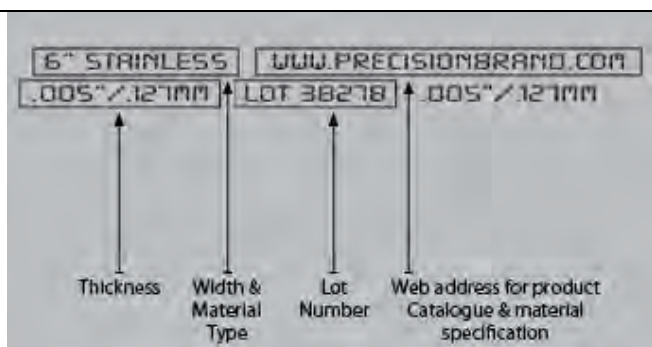
Precision Brand Steel Shim Stock

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Precision Brand Steel shim is a cold rolled, full hard bright finish, low carbon material with maximum carbon content up to .15%.

Shim is versatile, It is universally used for tool and die alignment, arbor spacers and all shim applications where combined hardness, flatness and accuracy is required.



Continuous Marking along length of Shim Roll:

Manufacturers Website
Shim Width
Shim Material
Shim Thickness
Traceable Lot Number

Accuracy Specifications:

Material and Mechanical Properties:

Inch

Thickness inch	Tolerance inch
0.001 – 0.003	± 10%
0.0035 – 0.006	± 0.0005
0.007 – 0.018	±0.00075
0.020 – 0.025	±0.001
0.031	±0.0015

Metric

Thickness mm	Tolerance mm
0.05	± 0.006
0.10	± 0.012
0.15	± 0.016
0.20	± 0.023
0.25 & 0.30	± 0.024
0.40 & 0.50	± 0.039
0.65	± 0.041
0.80	± 0.051

Material	Low Carbon Steel C1008/C1010
Carbon	0.13 Max.
Manganese	0.30 – 0.60
Phosphorous	0.04 Max.
Sulphur	0.05 Max.
Temper	No1 Full Hard
Hardness	≤ 0.069” RB 90 Min ≥ 0.070” RB 84 Min
Tensile Strength	Not Applicable
Meets Specifications	AISI-1008, AISI-1010 ASTM-A-109 (chemistry only)

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Metric Shim Rolls: 150mm wide

Code	Thickness mm	Thickness inch	Box Qty	Included in Assortment Pack	Width mm	Length m	Weight kilos	Weight lbs
77-316-971	0.05mm		1	Yes	150mm	2.5mtr	0.19	0.42
77-316-972	0.10mm		1	Yes	150mm	2.5mtr	0.33	0.72
77-316-973	0.15mm		1	Yes	150mm	2.5mtr	0.52	1.14
77-316-974	0.20mm		1	Yes	150mm	2.5mtr	0.69	1.52
77-316-975	0.25mm		1	Yes	150mm	2.5mtr	0.83	1.83
77-316-976	0.30mm		1	Yes	150mm	2.5mtr	1.02	2.24
77-316-977	0.40mm		1	Yes	150mm	2.5mtr	1.25	2.76
77-316-978	0.50mm		1	Yes	150mm	2.5mtr	1.75	3.85
77-316-979	0.65mm		1	Yes	150mm	2.5mtr	2.29	5.04
77-316-980	0.80mm		1	Yes	150mm	2.5mtr	2.98	6.58

Packed Weight and Dimensions

Code	Thickness mm	W mm	H mm	L mm	Weight kilos	Weight lbs
77-316-971	0.05mm	80	80	180	0.19	0.42
77-316-972	0.10mm	80	80	180	0.33	0.72
77-316-973	0.15mm	80	80	180	0.52	1.14
77-316-974	0.20mm	80	80	180	0.69	1.52
77-316-975	0.25mm	80	80	180	0.83	1.83
77-316-976	0.30mm	120	120	180	1.02	2.24
77-316-977	0.40mm	120	120	180	1.25	2.76
77-316-978	0.50mm	210	165	210	1.75	3.85
77-316-979	0.65mm	300	165	315	2.29	5.04
77-316-980	0.80mm	350	165	315	2.98	6.58

Metric Shim Assortment Pack: 150mm wide x 300mm long

Code	Description	Range	No. Of Sheets	Weight kilos
77-316-999	Steel Assortment Pack Metric	0.05mm – 0.80mm	10	1.318

Packed Weight and Dimensions

Code	W mm	H mm	L mm	Weight kilos
77-316-999	165	25	180	1.318

Precision Brand Steel Shim Stock

Inch Shim Rolls: 6" wide

Code	Thickness inch	Thickness mm	Box Qty	Included in Assortment Pack	Width in	Length in	Weight kilos	Weight lbs
77-316-130	0.001"	0.025	1	Yes	6"	100"	0.11	0.25
77-316-155	0.0015"	0.038	1	Yes	6"	100"	0.12	0.26
77-316-195	0.002"	0.051	1	Yes	6"	100"	0.19	0.42
77-316-215	0.0025"	0.064	1		6"	100"	0.20	0.43
77-316-245	0.003"	0.076	1	Yes	6"	100"	0.26	0.58
77-316-280	0.004"	0.102	1	Yes	6"	100"	0.38	0.72
77-316-320	0.005"	0.127	1	Yes	6"	100"	0.44	0.96
77-316-345	0.006"	0.152	1	Yes	6"	100"	0.52	1.14
77-316-370	0.007"	0.178	1	Yes	6"	100"	0.59	1.31
77-316-395	0.008"	0.203	1	Yes	6"	100"	0.69	1.52
77-316-415	0.009"	0.229	1		6"	100"	0.75	1.66
77-316-450	0.010"	0.254	1	Yes	6"	100"	0.83	1.83
77-316-480	0.012"	0.305	1	Yes	6"	100"	1.02	2.24
77-316-500	0.0135	0.343	1		6"	100"	1.04	2.30
77-316-530	0.015"	0.381	1	Yes	6"	100"	1.25	2.76
77-316-550	0.0165	0.419	1		6"	100"	1.45	3.19
77-316-560	0.018"	0.457	1		6"	100"	1.65	3.63
77-316-590	0.020"	0.508	1		6"	100"	1.75	3.85
77-316-610	0.022	0.559	1		6"	100"	1.79	3.94
77-316-630	0.025"	0.635	1		6"	100"	2.29	5.04
77-316-660	0.031"	0.787	1		6"	100"	2.98	6.58

Packed Weight and Dimensions

Code	Thickness inch	Thickness mm	W mm	H mm	L mm	Weight kilos	Weight lbs
77-316-130	0.001"	0.025	80	80	180	0.11	0.25
77-316-155	0.0015"	0.038	80	80	180	0.12	0.26
77-316-195	0.002"	0.051	80	80	180	0.19	0.42
77-316-215	0.0025"	0.064	80	80	180	0.20	0.43
77-316-245	0.003"	0.076	80	80	180	0.26	0.58
77-316-280	0.004"	0.102	80	80	180	0.38	0.72
77-316-320	0.005"	0.127	80	80	180	0.44	0.96
77-316-345	0.006"	0.152	80	80	180	0.52	1.14
77-316-370	0.007"	0.178	80	80	180	0.59	1.31
77-316-395	0.008"	0.203	80	80	180	0.69	1.52
77-316-415	0.009"	0.229	80	80	180	0.75	1.66
77-316-450	0.010"	0.254	80	80	180	0.83	1.83
77-316-480	0.012"	0.305	120	120	180	1.02	2.24
77-316-500	0.0135	0.343	120	120	180	1.04	2.30
77-316-530	0.015"	0.381	120	120	180	1.25	2.76
77-316-550	0.0165	0.419	210	165	210	1.45	3.19
77-316-560	0.018"	0.457	210	165	210	1.65	3.63
77-316-590	0.020"	0.508	210	165	210	1.75	3.85
77-316-610	0.022	0.559	210	165	210	1.79	3.94
77-316-630	0.025"	0.635	315	165	315	2.29	5.04
77-316-660	0.031"	0.787	315	165	315	2.98	6.58

Inch Shim Assortment Pack: 6" wide x 12" long

Code	Description	Range	No. Of Sheets	Weight kilos
77-316-680	Steel Assortment Pack Inch	0.001" – 0.015"	12	0.791

Packed Weight and Dimensions

Code	W mm	H mm	L mm	Weight kilos
77-316-680	165	25	170	0.791

Precision Brand Steel Shim Stock

Inch Shim Rolls: 12" wide

Code	Thickness Inch	Thickness mm	Box Qty	Width in	Length in	Weight kilos	Weight lbs
77-316-140	0.001"	0.025	1	12"	120"	0.39	0.87
77-316-205	0.002"	0.051	1	12"	120"	0.47	1.09
77-316-255	0.003"	0.076	1	12"	120"	0.67	1.48
77-316-290	0.004"	0.102	1	12"	120"	0.86	1.90
77-316-330	0.005"	0.127	1	12"	120"	1.03	2.28
77-316-355	0.006"	0.152	1	12"	120"	1.23	2.72
77-316-380	0.007"	0.178	1	12"	120"	1.38	3.05
77-316-405	0.008"	0.203	1	12"	120"	1.65	3.63
77-316-425	0.009"	0.229	1	12"	120"	1.88	4.15
77-316-460	0.010"	0.254	1	12"	120"	2.10	4.64
77-316-490	0.012"	0.305	1	12"	120"	2.43	5.35
77-316-540	0.015"	0.381	1	12"	120"	3.03	6.69
77-316-570	0.018"	0.457	1	12"	120"	3.89	8.58
77-316-600	0.020	0.508	1	12"	120"	4.21	9.28
77-316-640	0.025	0.635	1	12"	120"	5.10	11.25
77-316-670	0.031	0.787	1	12"	120"	6.16	13.58

Packed Weight and Dimensions

Code	Thickness Inch	W mm	H mm	L mm	Weight kilos	Weight lbs
77-316-140	0.001"	105	105	330	0.39	0.87
77-316-205	0.002"	105	105	330	0.47	1.09
77-316-255	0.003"	105	105	330	0.67	1.48
77-316-290	0.004"	105	105	330	0.86	1.90
77-316-330	0.005"	105	105	330	1.03	2.28
77-316-355	0.006"	105	105	330	1.23	2.72
77-316-380	0.007"	105	105	330	1.38	3.05
77-316-405	0.008"	105	105	330	1.65	3.63
77-316-425	0.009"	165	165	330	1.88	4.15
77-316-460	0.010"	165	165	330	2.10	4.64
77-316-490	0.012"	165	165	330	2.43	5.35
77-316-540	0.015"	165	165	330	3.03	6.69
77-316-570	0.018"	165	165	330	3.89	8.58
77-316-600	0.020	305	315	315	4.21	9.28
77-316-640	0.025	305	315	315	5.10	11.25
77-316-670	0.031	305	315	315	6.16	13.58

Precision Brand Steel Shim Stock

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Inch Shim Sheets: 6" wide x 18" long

Code	Thickness Inch	Thickness mm	Box Qty	Width in	Length in	Weight kilos	Weight lbs
77-316-810	0.001"	0.025	10	6"	18"	0.29	0.63
77-316-815	0.0015"	0.038	10	6"	18"	0.34	0.75
77-316-820	0.002"	0.051	10	6"	18"	0.45	0.99
77-316-825	0.0025"	0.064	10	6"	18"	0.54	1.18
77-316-830	0.003"	0.076	10	6"	18"	0.57	1.25
77-316-835	0.0035	0.089	10	6"	18"	0.62	1.37
77-316-840	0.004"	0.102	10	6"	18"	0.68	1.50
77-316-845	0.005"	0.127	10	6"	18"	0.74	1.63
77-316-850	0.006"	0.152	10	6"	18"	0.97	2.13
77-316-855	0.007"	0.178	10	6"	18"	1.11	2.45
77-316-860	0.008"	0.203	10	6"	18"	1.25	2.75
77-316-865	0.009"	0.229	10	6"	18"	1.36	2.99
77-316-870	0.010"	0.254	10	6"	18"	1.53	3.38
77-316-875	0.012"	0.305	10	6"	18"	1.78	3.93
77-316-880	0.0135	0.343	10	6"	18"	1.87	4.13
77-316-885	0.015"	0.381	10	6"	18"	2.24	4.93
77-316-890	0.0165	0.419	10	6"	18"	2.29	5.05
77-316-895	0.018"	0.457	10	6"	18"	2.69	5.93
77-316-900	0.020"	0.508	10	6"	18"	2.81	6.50
77-316-905	0.022	0.559	10	6"	18"	3.05	6.73
77-316-910	0.025	0.635	10	6"	18"	3.65	8.00
77-316-915	0.031	0.787	10	6"	18"	4.50	9.93

Packed Weight and Dimensions

Code	Thickness Inch	W mm	H mm	L mm	Weight kilos	Weight lbs
77-316-810	0.001"	165	25	470	0.29	0.63
77-316-815	0.0015"	165	25	470	0.34	0.75
77-316-820	0.002"	165	25	470	0.45	0.99
77-316-825	0.0025"	165	25	470	0.54	1.18
77-316-830	0.003"	165	25	470	0.57	1.25
77-316-835	0.0035	165	25	470	0.62	1.37
77-316-840	0.004"	165	25	470	0.68	1.50
77-316-845	0.005"	165	25	470	0.74	1.63
77-316-850	0.006"	165	25	470	0.97	2.13
77-316-855	0.007"	165	25	470	1.11	2.45
77-316-860	0.008"	165	25	470	1.25	2.75
77-316-865	0.009"	165	25	470	1.36	2.99
77-316-870	0.010"	165	25	470	1.53	3.38
77-316-875	0.012"	165	25	470	1.78	3.93
77-316-880	0.0135	165	25	470	1.87	4.13
77-316-885	0.015"	165	25	470	2.24	4.93
77-316-890	0.0165	165	25	470	2.29	5.05
77-316-895	0.018"	165	25	470	2.69	5.93
77-316-900	0.020"	165	25	470	2.81	6.50
77-316-905	0.022	165	25	470	3.05	6.73
77-316-910	0.025	165	25	470	3.65	8.00
77-316-915	0.031	165	25	470	4.50	9.93

Precision Brand Steel Shim Stock

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Traceable Material Report

To obtain a Material Report covering the Shim you have purchased, please supply the following information marked on the shim and box to Precision Brand by email to mpotyrala@pbrand.com with the following information.

Example:

Material	Thickness	Width	Lot Number: marked on the shim	UPC Number
Steel	0.003"	6"	3743301	16245

 **PRECISION BRAND**
ISO 9001:2000 Certified Company

April 29, 2010

.003" x 6" 1010 Cold Rolled Full Hard Steel

Chemical Analysis

Carbon (C)	.070	Chromium (Cr)		Boron (B)	
Manganese (Mn)	.350	Titanium (Ti)		Vanadium (V)	
Phosphorus (P)	.013	Molybdenum (Mo)		Nitrogen (N)	
Sulfur (S)	.017	Aluminum (Al)		Niobium (Nb)	
Silicon (Si)		Copper (Cu)			
Nickel (Ni)		Tin (Sn)			

Physical Properties

Tensile p.s.i.	96,100-101,000
Specification(s)	ASTM A109 (Chemistry) AISI 1010
Heat No.	PMS412L969
Coil No.	717071-006
Branded™ Shim No.	37433-xx

We hereby certify that the above information conforms to the mill certificates provided by our suppliers for the material imprinted with the "Branded™ Shim" number listed above.

Sincerely Yours,
Precision Brand Products, Inc.


K. Hahn
Downers Grove, IL
2010.04.29
15:23:14 -05'00'

Representative
K. Hahn

www.precisionbrand.com

PRECISION BRAND PRODUCTS, INC. 2250 CURTISS STREET, DOWNERS GROVE IL 60515 USA
PHONE: (630)969-7200 FAX: (630) 969-7275

Material Safety Data Sheet



Material Safety Data Sheet

Common Name

Cold Rolled Carbon Steel

Identity (Trade Name As Used On Label)

Product Code (First two digits of UPC No.)

Steel Shim

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Arbor Spacers

24 & 38

Arbor Shims

25 & 39

Manufacturer Precision Brand Products Inc.	Phone Number (For Information) 630-969-7200
Address 2250 Curtiss Street Downers Grove IL 60515 USA	Emergency Phone Number Chemtrec 800-424-9300 USA & Canada 202-483-7616 International
Date Prepared : 08-01-85	Date Reviewed: 12-10-09

SECTION 1 – COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS Number	% by weight.	OSHA Pel ¹	ACGIH TLV ²
Base Metal				
Iron	7439-89-6	>97.0	10 mg/m ³ - Iron oxide fume	5 mg/m ³ - Iron oxide dust & fume
Alloying Elements				
Calcium	7440-70-2	0.10 max.	5 mg/m ³ - Calcium oxide	2 mg/m ³ - Calcium oxide
Carbon	7440-44-0	0.60 max.	15 mg/m ³ - Total dust (PNOR) ³ 5 mg/m ³ - Respirable fraction (PNOR)	10 mg/m ³ - Inhalable fraction ⁴ (PNOS) ⁵ 3 mg/m ³ - Respirable fraction ⁶ (PNOS)
Copper	7440-50-8	0.50 max.	0.1 mg/m ³ - Fume (as Cu) 1 mg/m ³ - Dusts & mists (as Cu)	0.2 mg/m ³ - Fume 1 mg/m ³ - Dusts & mists (as Cu)
Manganese	7439-96-5	1.50 max.	5 mg/m ³ (C) - Fume & Mn compounds	0.2 mg/m ³
Phosphorus	8049-19-2	0.15 max.	15 mg/m ³ - Total dust (PNOR) 5 mg/m ³ - Respirable fraction (PNOR)	10 mg/m ³ - Inhalable fraction (PNOS) 3 mg/m ³ - Respirable fraction (PNOS)
Silicon	7440-21-3	0.60 max.	15 mg/m ³ - Total dust 5 mg/m ³ - Respirable fraction	10 mg/m ³
Sulfur	7704-34-9	0.04 max.	15 mg/m ³ - Total dust (PNOR) 5 mg/m ³ - Respirable fraction (PNOR)	10 mg/m ³ - Inhalable fraction (PNOS) 3 mg/m ³ - Respirable fraction (PNOS)

Notes:

- Hot or Cold Rolled Carbon Steel Sheet/Strip surfaces may be treated with small amounts (<0.05%) of corrosion-inhibiting oil.
- All commercial steel products may contain small amounts of various elements in addition to those specified. These small quantities (less than 0.1%) may exist as intentional additions, or as "trace" or "residual" elements that generally originate in the raw materials used. These elements may include: aluminum, antimony, arsenic, boron, cadmium, calcium, chromium, cobalt, columbium, copper, lead, molybdenum, nickel, silicon, tin, titanium, vanadium, and zirconium.

¹OSHA Permissible Exposure Limits (PELs) are 8-hour TWA (time-weighted average) concentrations unless otherwise noted. A ("C") designation denotes a ceiling limit, which should not be exceeded during any part of the working exposure unless otherwise noted. A Short Term Exposure Limit (STEL) is defined as a 15-minute exposure, which should not be exceeded at any time during a workday.

²Threshold Limit Values (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH) are 8-hour TWA concentrations unless otherwise noted.

³PNOR (Particulates Not Otherwise Regulated). All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the PNOR limit which is the same as the inert or nuisance dust limit of 15 mg/m³ for total dust or 5 mg/m³ for the respirable fraction.

⁴Inhalable fraction. The concentration of inhalable particulate for the application of this TLV is to be determined from the fraction passing a size-selector with the characteristics defined in the ACGIH TLVs and BEIs Appendix D, paragraph A.

⁵PNOS (Particulates Not Otherwise Specified). Particulates identified under the PNOS heading are "nuisance dusts" containing no asbestos and <1% crystalline silica. A TWA-TLV of 10 mg/m³ for inhalable particulate and 3mg/m³ for respirable particulate has been recommended.

⁶Respirable fraction. The concentration of respirable dust for the application of this limit is to be determined from the fraction passing a size-selector with the characteristics defined in the ACGIH TLVs and BEIs Appendix D, paragraph C.

Material Safety Data Sheet

PRECISION BRAND PRODUCTS, INC. PAGE 2 – MSDS:
STEEL SHIM, CODE 16; ARBOR SPACERS, CODES 24/38; ARBOR SHIMS, CODES 25/39.

SECTION 2 – HAZARDS IDENTIFICATION

*** Emergency Overview ***

This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding, or other similar processes, potentially hazardous airborne particulate and fumes may be generated. Avoid inhalation of metal dusts and fumes. Operations having the potential to generate airborne particulates should be performed in well ventilated areas and, if appropriate, respiratory protection and other personal protective equipment should be used. Iron or steel foreign bodies imbedded in the cornea of the eye may produce rust stains unless removed fairly promptly.

Potential Health Effects

Primary Entry Routes: Inhalation and skin, if coated. Steel products in the natural state do not present an inhalation, ingestion or contact hazard. However, operations such as burning, welding, sawing, brazing, machining and grinding may result in the following effects if exposures exceed recommended limits as listed in Section 1.

Target Organs: Respiratory system.

Acute Effects:

- **Inhalation:** Excessive exposure to high concentrations of dust may cause irritation to the eyes, skin and mucous membranes of the upper respiratory tract. Excessive inhalation of fumes of freshly formed metal oxide particles sized below 1.5 microns and usually between 0.02-0.05 microns from many metals can produce an acute reaction known as "metal fume fever". Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), metallic taste in the mouth, dryness and irritation of the throat followed by weakness and muscle pain. The symptoms come on in a few hours after excessive exposures and usually last for 12 to 48 hours. Long-term effects from metal fume fever have not been noted. Freshly formed oxide fumes of manganese and copper have been associated with causing metal fume fever.
- **Eye:** Excessive exposure to high concentrations of dust may cause irritation to the eyes. Particles of iron or iron compounds, which become imbedded in the eye, may cause rust stains unless removed fairly promptly. Torching or burning operations on steel products with oil coatings may produce emissions that can be irritating to the eyes.
- **Skin:** Skin contact with dusts may cause irritation or sensitization, possibly leading to dermatitis. Repeated or prolonged contact with oil residue may cause skin irritation, dermatitis or allergic reactions in sensitized individuals.
- **Ingestion:** Ingestion of harmful amounts of this product as distributed is unlikely due to its solid insoluble form. Ingestion of dust may cause nausea or vomiting.

Chronic Effects: Chronic inhalation of metallic fumes and dusts are associated with the following conditions:

- **IRON OXIDE:** Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in the development of a benign pneumoconiosis, called siderosis, which is observable as an X-ray change. No physical impairment of lung function has been associated with siderosis.
- **CALCIUM:** Depending on the concentration and duration of exposure, repeated or prolonged inhalation may cause inflammation of the respiratory passages, ulcers of the mucous membranes, and possible perforation of the nasal septum. Repeated or prolonged skin contact may cause dermatitis.
- **CARBON:** Chronic inhalation of high concentrations to carbon may cause pulmonary disorders.
- **COPPER:** Chronic exposure to copper dusts may result in runny nose, irritation of mucous membranes, and atrophic changes with resultant dementia. Chronic inhalation of copper dust has caused, in animals, hemolysis of the red blood cells, deposition of hemofuscin in the liver and pancreas, injury to lung cells and gastrointestinal symptoms.
- **MANGANESE:** Chronic exposure to high concentrations of manganese fumes and dusts may adversely affect the central nervous system with symptoms including languor, sleepiness, weakness, emotional disturbances, spastic gait, mask-like facial expression and paralysis. Animal studies indicate that manganese exposure may increase susceptibility to bacterial and viral infections.
- **PHOSPHOROUS:** Inhalation of dusts and fumes of ferrophosphorous and phosphorus oxides may cause respiratory irritation.
- **SILICON:** Silicon dusts are a low health risk by inhalation and should be treated as a nuisance dust.
- **SULFUR:** Sulfur compounds, present in the fumes, may irritate the skin, eyes, lungs and gastrointestinal tract.

Long-term inhalation exposure to high concentrations (over-exposure) to pneumoconiotic agents may act synergistically with inhalation of oxides, fumes or dusts of this product to cause toxic effects.

Chemical Surface Treatments/Coatings: The possible presence of oil coatings should be considered when evaluating potential employee health hazards and exposures during handling and welding or other fume generating activities. Removal of surface coatings should be considered prior to such activities. Repeated or prolonged contact with oil residue may cause skin irritation, dermatitis or allergic reactions in sensitized individuals. Torching or burning operations on steel products with oil coatings may produce emissions that can be irritating to the eyes and respiratory tract.

Carcinogenicity: The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP), and OSHA do not list steel products as carcinogens. IARC identifies welding fumes as a Group 2B carcinogen, a mixture that is possibly carcinogenic to humans.

Medical Conditions Aggravated by Long-Term Exposure: Individuals with chronic respiratory disorders (i.e., asthma, chronic bronchitis, emphysema, etc.) may be adversely affected by any fume or airborne particulate matter exposure.

SARA Potential Hazard Categories: Immediate Acute Health Hazard; Delayed Chronic Health Hazard

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SECTION 3 – FIRST AID MEASURES

Inhalation: For over-exposure to airborne fumes and particulate, remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Seek medical attention promptly. Metal fume fever may be treated by bed rest, and administering a pain and fever reducing medication.

Eye Contact: Flush with large amounts of clean water to remove particles. Seek medical attention if irritation persists.
Skin Contact: Remove contaminated clothing. Wash affected areas with soap or mild detergent and water. If thermal burn has occurred, flush area with cold water and seek medical attention. If mechanical abrasion has occurred, seek medical attention.

Ingestion: Not a probable route of industrial exposure. However, if ingested, seek medical attention immediately.

SECTION 4 -- FIRE AND EXPLOSION HAZARD DATA

Flash Point and Method Used	N/A	Auto-Ignition Temperature	N/A	Burning Rate	N/A	LEL	N/A	UEL	N/A
Flammability Classification	Non-flammable, non-combustible								
Extinguishing Media	Not applicable for solid product. Use extinguishers appropriate for surrounding materials.								
Unusual Fire or Explosion Hazards	Not applicable for solid product. Do not use water on molten metal.								
Hazardous Combustion Products	At temperatures above the melting point, fumes containing metal oxides and other alloying elements may be liberated.								
Fire-Fighting Instructions	Do not release runoff from fire control methods to sewers or waterways.								
Fire-Fighting Equipment	Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive pressure mode and full protective clothing.								

SECTION 5 – ACCIDENTAL RELEASE MEASURES

Spill/Leak Precautions: Not applicable to steel in solid state. For spills involving finely divided particles, clean-up personnel should be protected against contact with eyes and skin. If material is in a dry state, avoid inhalation of dust. Fine, dry material should be removed by vacuuming or wet sweeping methods to prevent spreading of dust. Avoid using compressed air. Do not release into sewers or waterways. Collect material in appropriate labeled containers for recovery or disposal in accordance with federal, state, and local regulations.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120) and all other pertinent state and federal requirements.

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

SECTION 6 – HANDLING AND STORAGE

Handling Procedures: Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Practice good housekeeping. Avoid breathing metal fumes and/or dust.

Storage Requirements: Store away from acids and incompatible materials.

SECTION 7 – EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Use controls as appropriate to minimize exposure to metal fumes and dusts during handling operations.

Ventilation: Provide general or local exhaust ventilation systems to minimize airborne concentrations. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Do not use compressed air to clean-up spills.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen.

Protective Clothing/Equipment: For operations which result in elevating the temperature of the product to or above its melting point or result in the generation of airborne particulates, use protective clothing, gloves and safety glasses to prevent skin and eye contact. Contact lenses should not be worn where industrial exposures to this material are likely. Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations. Protective gloves should be worn as required for welding, burning or handling operations. Where an oil coating is applied to the product, wear gloves when handling. Do not continue to use gloves or work clothing that has become saturated or soaked through with oil coating. Wash skin that has been exposed to oil with soap and water or waterless hand cleaner.

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SECTION 8 -- PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid	Water Solubility	Insoluble
Appearance and Odor	Metallic Gray, Odorless	Other Solubilities	Not applicable
Odor Threshold	Not applicable	Boiling Point	Not applicable
Vapor Pressure	Not applicable	Viscosity	Not applicable
Vapor Density (Air = 1)	Not applicable	Refractive Index	Not applicable
Formula Weight	Not applicable	Surface Tension	Not applicable
Density	7.85 gm/cc	% Volatile	Not applicable
Specific Gravity (H ₂ O = 1, at 4°C)	7.85	Evaporation Rate	Not applicable
pH	Not applicable	Freezing/Melting Point	~2750°F

SECTION 9 -- REACTIVITY HAZARD DATA

STABILITY	Steel products are stable under normal storage and handling conditions.
POLYMERIZATION	Hazardous polymerization cannot occur.
CHEMICAL INCOMPATIBILITIES	Will react with strong acids to form hydrogen. Iron oxide dusts in contact with calcium hypochlorite evolve oxygen and may cause an explosion.
CONDITIONS TO AVOID	Storage with strong acids or calcium hypochlorite.
HAZARDOUS DECOMPOSITION PRODUCTS	Thermal oxidative decomposition of steel products can produce fumes containing oxides of iron and manganese as well as other alloying elements.

SECTION 10 – TOXICOLOGICAL INFORMATION

No information is available for the product as a mixture. The possible presence of oil coatings should be considered when evaluating potential employee health hazards and exposures during handling and welding or other fume generating activities.

Eye Effects: Eye contact with the individual components may cause particulate irritation. Implantation of iron particles in guinea pig corneas have resulted in rust rings with corneal softening about rust ring.

Skin Effects: Skin contact with individual dust components may cause physical abrasion, irritation, dermatitis, and sensitization.

- See NIOSH, RTECS (NO4565500) for additional toxicity data on iron, (EV8040000) for calcium, (FF5250100) for carbon, (QT9900000) for columbium, (GL5325000) for copper, (OO9275000) for manganese, (VW0400000) for silicon (WS4250000) for sulfur.

Toxicity Data:*

Acute Inhalation Effects: Inhalation of the individual alloy components has been shown to cause various respiratory effects.

Acute Oral Effects: No data available.

Other: No LC50 or LD50 has been established for the mixture as a whole. Iron LD50: 30 g/kg oral (rat). Calcium LD50: No data. Carbon LD50: No data. Copper TD_{Lo}: 120 ug/kg oral (human). Manganese LD50: 9 g/kg oral (rat). Phosphorous LD50: No data. Silicon LD50: 3160 mg/kg oral (rat). Sulfur LD50: >8437 mg/kg oral (rat).

Chronic Effects: See Section 2

Carcinogenicity: See Section 2

Mutagenicity: No data available.

Teratogenicity: No data available.

SECTION 11: ECOLOGICAL INFORMATION

Ecotoxicity: No data available for the product as a whole. However, individual components of the product have been found to be toxic to the environment. Metal dusts may migrate into soil and groundwater and be ingested by wildlife.

Environmental Fate: No data available.

Environmental Degradation: No data available.

Soil Absorption/Mobility: No data available for the product as a whole. However, individual components of the product have been found to be absorbed by plants from soil.

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SECTION 12 – DISPOSAL CONSIDERATIONS

Disposal: Steel scrap should be recycled whenever possible. Product dusts and fumes from processing operations should also be recycled, or classified by a competent environmental professional and disposed of in accordance with applicable Federal, state or local regulations.

Container Cleaning and Disposal: Follow applicable Federal, state and local regulations. Observe safe handling precautions.

SECTION 13 – TRANSPORT INFORMATION**DOT Transportation Data (49 CFR 172.101):**

Hot or Cold Rolled Carbon Steel Sheet/Strip and Hot Rolled Skelp are not listed as hazardous substances under 49 CFR 172.101.

Shipping Name: Not applicable

Packaging Authorizations

Quantity Limitations

Shipping Symbols: Not applicable.

a) Exceptions: None

a) Passenger, Aircraft, or Railcar: Not applicable

Hazard Class: Not applicable.

b) Non-bulk Packaging: Not applicable.

b) Cargo Aircraft Only: Not applicable

ID No.: Not applicable

c) Bulk Packaging: Not applicable.

Packing Group: Not applicable.

Vessel Stowage Requirements

Label: Not applicable.

a) Vessel Stowage: Not applicable
b) Other: Not applicable

Special Provisions (172.102):
None

SECTION 14 – REGULATORY INFORMATION

Regulatory Information: The following listing of regulations relating to this product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities.

OSHA Regulations: Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): The product as a whole is not listed. However, individual components of the product are listed.

EPA Regulations:

RCRA (40CFR261): Steel scrap is not regulated as a solid waste or a hazardous waste under this act. If product dusts and/or fumes from processing operations are not recycled, they are considered to be a solid waste and may be classified as a hazardous waste depending on the toxicity characteristics of the dust as defined within 40CFR261.24.

CERCLA Hazardous Substance (40 CFR 302.4): The product as a whole is not listed. However, individual components of the product are listed: Copper (Reportable Quantity(RQ)-5000#). Manganese compounds are listed although no reportable quantity is assigned to this generic or broad class.

SARA 311/312 Codes (40CFR370): Immediate (acute) health hazard and delayed (chronic) health hazard.

SARA 313 (40CFR372.65): Manganese is subject to SARA 313 reporting requirements. Please note that if you prepackage or redistribute this product to industrial customers, SARA 313 requires that a notice be sent to those customers.

State Regulations: The product as a whole is not listed in any state regulations. However, individual components of the product are listed in various state regulations.

Pennsylvania Right to Know: Contains regulated material in the following categories:

- Hazardous Substances: Calcium, Silicon, and Sulfur
- Environmental Hazards: Copper and Manganese

New Jersey Right to Know: Contains regulated material in the following categories:

- Hazardous Substance: Copper, Manganese, and Sulfur
- Special Health Hazard Substances: Calcium

California Prop. 65: The product may possibly contain trace quantities (generally much less than 0.1%) of metallic elements known to the State of California to cause cancer or reproductive toxicity. These include arsenic (inorganic), cadmium, lead and nickel.

Other Regulations: The product as a whole is not listed in any state regulations. However, individual components of the product are listed in various state regulations.

WHMIS Classification (Canadian): D-2

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SECTION 15 – OTHER INFORMATION**Hazard Rating Systems:**

NFPA Code: 0-0-0

HMIS Code: 1*-0-0 PPE: See Section 7.

*Denotes possible chronic hazard if airborne dusts or fumes are generated.

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