

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

1. Identification**1.1. Product identifier****Product Identity**Carbon, Alloy and Tool Steels AISI Grades: 1008 -
1045, 4130 - 4150, 4320**Alternate Names**Carbon, Alloy and Tool Steels AISI Grades: 1008 -
1045, 4130 - 4150, 4320 - 4340
,52100, 8620.
,MSDS # : 300**1.2. Relevant identified uses of the substance or mixture and uses advised against****Intended use**

See Technical Data Sheet.

Application Method

See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet**Company Name**TW Metals Company, Inc.
The Arboretum 760 Constitution Drive
Exton PA 19341**Emergency****CHEMTREC (USA)**

(800) 424-9300

2. Hazard(s) identification**2.1. Classification of the substance or mixture**

Skin Irrit. 3;H316

Causes mild skin irritation. (Not adopted by US OSHA)

Skin Sens. 1;H317

May cause an allergic skin reaction.

Resp. Sens. 1;H334

May cause allergy or asthma symptoms of breathing difficulties if inhaled.

Carc. 1A;H350

May cause cancer.

STOT RE 1;H372

Causes damage to organs through prolonged or repeated exposure. Specific Target
Organs: (lungs)

Aquatic Acute 1;H400

Very toxic to aquatic life.

Aquatic Chronic 2;H411

Toxic to aquatic life with long lasting effects.

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.

**Danger**

H316 Causes mild skin irritation.

H317 May cause an allergic skin reaction.

H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

H350 May cause cancer.

H372 Causes damage to organs through prolonged or repeated exposure.

H400 Very toxic to aquatic life.

H411 Toxic to aquatic life with long lasting effects.

[Prevention]:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P261 Avoid breathing dust / fume / gas / mist / vapors / spray.

P262 Do not get in eyes, on skin, or on clothing.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P272 Contaminated work clothing should not be allowed out of the workplace.

P273 Avoid release to the environment.

P280 Wear protective gloves / eye protection / face protection.

P285 In case of inadequate ventilation wear respiratory protection.

[Response]:

P301+310 IF SWALLOWED: Immediately call a POISON CENTER or doctor / physician.

P302+352 IF ON SKIN: Wash with plenty of soap and water.

P304+341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

P308+313 IF exposed or concerned: Get medical advice / attention.

P314 Get Medical advice / attention if you feel unwell.

P321 Specific treatment (see information on this label).

P331 Do NOT induce vomiting.

P333+313 If skin irritation or a rash occurs: Get medical advice / attention.

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

P342+311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor / physician.

P363 Wash contaminated clothing before reuse.

P391 Collect spillage.

[Storage]:

P405 Store locked up.

[Disposal]:

P501 Dispose of contents / container in accordance with local / national regulations.

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Iron CAS Number: 0007439-89-6	75 - 100	Not Classified	[1]
Tungsten CAS Number: 0007440-33-7	5 - 10	Flam. Sol. 1;H228 SelfHeat. 2;H252	[1][2]
Chromium compounds (as Cr (III)) CAS Number: 0007440-47-3	5 - 10	Skin Sens. 1;H317 Resp. Sens. 1;H334 Eye Irrit. 2;H319 Aquatic Chronic 4;H413	[1][2]
Nickel CAS Number: 0007440-02-0	5 - 10	Carc. 2;H351 STOT RE 1;H372 Skin Sens. 1;H317 Aquatic Chronic 3;H412	[1][2]
Zinc powder (stabilized) CAS Number: 0007440-66-6	5 - 10	Aquatic Acute 1;H400 Aquatic Chronic 1;H410	[1]
Silicon CAS Number: 0007440-21-3	1 - 5	Not Classified	[1][2]
Manganese compounds (as Mn) CAS Number: 0007439-96-5	1 - 5	Not Classified	[1][2]
Carbon CAS Number: 0007440-44-0	1 - 5	Not Classified	[1][2]
Lead Compounds (as Pb) CAS Number: 0007439-92-1	0.10 - 1.0	Carc. 1A;H350 Aquatic Acute 1;H400	[1][2]

In accordance with paragraph (i) of §1910.1200, the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

[1] Substance classified with a health or environmental hazard.

[2] Substance with a workplace exposure limit.

[3] PBT-substance or vPvB-substance.

*The full texts of the phrases are shown in Section 16.

4. First aid measures

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

4.1. Description of first aid measures

General	In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.
Inhalation	Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth.
Eyes	Immediately flush the eyes with large amounts of water for at least 15 minutes, alternately lifting the upper and lower eyelids. After 5 minutes, if appropriate, remove contact lenses and continue flushing the eyes for an additional 15 minutes. Call a physician at once.
Skin	Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.
Ingestion	Do not induce vomiting. Get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Overview	Carbon, alloy and tool steels in their solid state present no inhalation, ingestion or contact health hazard. However, inhaling dusts, fumes or mists which may be generated during certain manufacturing procedures (burning, melting, welding, sawing, brazing, grinding and machining) may be hazardous to your health. Dusts may also be irritating to the unprotected skin or eyes. ACUTE EFFECTS: Excessive exposure to dusts / fumes may cause irritation of eyes, nose or throat. Inhalation of dusts / fumes may result in metal fume fever (metallic taste in mouth, dryness and irritation of throat, chills and fever). CHRONIC EFFECTS: Prolonged inhalation of fumes or dusts may cause a variety of adverse health effects to the respiratory system, including (but not necessarily limited to) lesions of the mucous membrane, bronchitis, pneumonia and cancers of the nasal cavity and respiratory tract. POTENTIAL HEALTH EFFECTS/MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Any pre-existing chronic respiratory condition (asthma, chronic bronchitis, emphysema). ROUTES OF ENTRY: Inhalation (dusts / fumes / mists), Contact with Skin and Eyes (dusts / mists), Ingestion (dusts). Possible cancer hazard. Contains an ingredient which may cause cancer based on animal data (See Section 3 and Section 15 for each ingredient). Risk of cancer depends on duration and level of exposure. See section 2 for further details.
Inhalation	May cause allergy or asthma symptoms of breathing difficulties if inhaled.
Skin	May cause an allergic skin reaction. Causes mild skin irritation.

5. Fire-fighting measures**5.1. Extinguishing media**

Use what is appropriate for surrounding fire.

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: No hazardous decomposition data available.

Avoid breathing dust / fume / gas / mist / vapors / spray.

Do not get in eyes, on skin, or on clothing.

5.3. Advice for fire-fighters

Nonflammable at low temperatures, but will burn at high temperatures.

ERG Guide No. ----**6. Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Put on appropriate personal protective equipment (see section 8).

6.2. Environmental precautions

Do not allow spills to enter drains or waterways.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up

No special procedures needed.

7. Handling and storage**7.1. Precautions for safe handling**

Minimize activities which may generate dusts, mists or fumes. Keep areas well ventilated. Use suitable equipment to move materials.

See section 2 for further details. - [Prevention]:

7.2. Conditions for safe storage, including any incompatibilities

Handle containers carefully to prevent damage and spillage.

Incompatible materials: Strong Acids (such as Sulfuric, Hydrochloric, Nitric).

See section 2 for further details. - [Storage]:

7.3. Specific end use(s)

No data available.

8. Exposure controls and personal protection

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

8.1. Control parameters

Exposure

CAS No.	Ingredient	Source	Value
0007439-89-6	Iron	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
0007439-92-1	Lead Compounds (as Pb)	OSHA	[1910.1025] TWA 0.050 mg/m3
		ACGIH	TWA: 0.05 mg/m3 R, 2B, 2A
		NIOSH	TWA (8-hour) 0.050 mg/m3
		Supplier	No Established Limit
0007439-96-5	Manganese compounds (as Mn)	OSHA	C 5 mg/m3 *See specific listings for specific compounds.
		ACGIH	TWA: 0.2 mg/m3 R
		NIOSH	TWA 1 mg/m3 ST 3 mg/m3 *See specific listings for specific compounds.
		Supplier	No Established Limit
0007440-02-0	Nickel	OSHA	TWA 1 mg/m3 [*Note: The PEL does not apply to Nickel carbonyl.]
		ACGIH	Insoluble TWA: 0.05 mg/m3 A1, 1, (I) Soluble TWA: 0.05 mg/m3 A1, 1, 2B, (I)
		NIOSH	Ca TWA 0.015 mg/m3 [*Note: The REL does not apply to Nickel carbonyl.]
		Supplier	No Established Limit
0007440-21-3	Silicon	OSHA	TWA 15 mg/m3 (total) TWA 5 mg/m3 (resp)
		ACGIH	No Established Limit
		NIOSH	TWA 10 mg/m3 (total) TWA 5 mg/m3 (resp)
		Supplier	No Established Limit
0007440-33-7	Tungsten	OSHA	No Established Limit
		ACGIH	TWA: 1 mg/m3 (soluble) 5 mg/m3 (insoluble) STEL: 3 mg/m3 (soluble) 10 mg/m3 (insoluble)
		NIOSH	TWA 5 mg/m3 ST 10 mg/m3 [*Note: The REL also applies to other insoluble tungsten compounds (as W).]
		Supplier	No Established Limit
0007440-44-0	Carbon	OSHA	TWA 15 mg/m3 (total) TWA 5 mg/m3 (resp)
		ACGIH	No Established Limit
		NIOSH	no established RELs
		Supplier	No Established Limit
0007440-47-3	Chromium compounds (as Cr (III))	OSHA	TWA 1 mg/m3 [*Note: The PEL also applies to insoluble chromium salts.]
		ACGIH	TWA: 0.5 mg/m3 (III)
		NIOSH	TWA 0.5 mg/m3
		Supplier	No Established Limit
0007440-66-6	Zinc powder (stabilized)	OSHA	No Established Limit
		ACGIH	No Established Limit

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

		NIOSH	No Established Limit
		Supplier	No Established Limit

The exposure limits for nuisance dust are: OSHA PEL: 15 mg/m³ (50 mppcf*) TWA, ACGIH 10 mg/m³.

Carcinogen Data

CAS No.	Ingredient	Source	Value
0007439-89-6	Iron	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007439-92-1	Lead Compounds (as Pb)	OSHA	Select Carcinogen: Yes
		NTP	Known: No; Suspected: Yes
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No;
0007439-96-5	Manganese compounds (as Mn)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-02-0	Nickel	OSHA	Select Carcinogen: Yes
		NTP	Known: Yes; Suspected: Yes
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No;
0007440-21-3	Silicon	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-33-7	Tungsten	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-44-0	Carbon	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-47-3	Chromium compounds (as Cr (III))	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: Yes; Group 4: No;
0007440-66-6	Zinc powder (stabilized)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

8.2. Exposure controls

Respiratory

Wear NIOSH approved dust / mist / fume respirator when welding or burning this metal.

Eyes

Face shields (welding or burning), Safety glasses (cutting or grinding).

Skin

Use appropriate protective clothing such as welding aprons and gloves when welding or burning.

Engineering Controls

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

Other Work Practices Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details. - [Prevention]:

9. Physical and chemical properties

Appearance	Metal Solid
Odor	Odorless
Odor threshold	Not determined
pH	Not Measured
Melting point / freezing point	Not Measured
Initial boiling point and boiling range	NA
Flash Point	Nonflammable
Evaporation rate (Ether = 1)	Not Measured
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	Lower Explosive Limit: Not Measured Upper Explosive Limit: Not Measured
Vapor pressure (Pa)	NA
Vapor Density	NA
Specific Gravity	7.20 - 7.86
Solubility in Water	Insoluble
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	NA
Decomposition temperature	Not Measured
Viscosity (cSt)	Not Measured

9.2. Other information

No other relevant information.

10. Stability and reactivity

10.1. Reactivity

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

No data available.

10.5. Incompatible materials

Strong Acids (such as Sulfuric, Hydrochloric, Nitric).

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

10.6. Hazardous decomposition products

No hazardous decomposition data available.

11. Toxicological information

Acute toxicity

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Iron - (7439-89-6)	30,000.00, Rat - Category: NA	No data available	No data available	No data available	No data available
Tungsten - (7440-33-7)	No data available	No data available	No data available	No data available	No data available
Chromium compounds (as Cr (III)) - (7440-47-3)	422.00, Rat - Category: 4	No data available	No data available	No data available	No data available
Nickel - (7440-02-0)	No data available	No data available	No data available	No data available	No data available
Zinc powder (stabilized) - (7440-66-6)	No data available	No data available	No data available	No data available	No data available
Silicon - (7440-21-3)	No data available	No data available	No data available	No data available	No data available
Manganese compounds (as Mn) - (7439-96-5)	9,000.00, Rat - Category: NA	500.00, Rabbit - Category: 3	19.00, Rat - Category: 4	No data available	No data available
Carbon - (7440-44-0)	10,000.00, Rat - Category: NA	No data available	No data available	64.40, Rat - Category: NA	No data available
Lead Compounds (as Pb) - (7439-92-1)	No data available	No data available	No data available	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	3	Causes mild skin irritation. (Not adopted by US OSHA)
Serious eye damage/irritation	---	Not Applicable
Respiratory sensitization	1	May cause allergy or asthma symptoms of breathing difficulties if inhaled.
Skin sensitization	1	May cause an allergic skin reaction.

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	1A	May cause cancer.
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	1	Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard	---	Not Applicable

12. Ecological information

12.1. Toxicity

Very toxic to aquatic life.

Toxic to aquatic life with long lasting effects.

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Iron - (7439-89-6)	Not Available	Not Available	Not Available
Tungsten - (7440-33-7)	Not Available	Not Available	Not Available
Chromium compounds (as Cr (III)) - (7440-47-3)	77.50, Pimephales promelas	1.20, Daphnia magna	580.00 (72 hr), Chlorella pyrenoidosa
Nickel - (7440-02-0)	Not Available	Not Available	Not Available
Zinc powder (stabilized) - (7440-66-6)	0.182, Oncorhynchus tshawytscha	0.068, Daphnia magna	0.106 (72 hr), Pseudokirchneriella subcapitata
Silicon - (7440-21-3)	Not Available	Not Available	Not Available
Manganese compounds (as Mn) - (7439-96-5)	40.00, Daphnia magna	Not Available	Not Available
Carbon - (7440-44-0)	Not Available	Not Available	Not Available
Lead Compounds (as Pb) - (7439-92-1)	0.44, Cyprinus carpio	4.40, Daphnia magna	0.25 (72 hr), Scenedesmus subspicatus

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

No data available.

13. Disposal considerations

13.1. Waste treatment methods

Observe all federal, state and local regulations when disposing of this substance.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not Applicable	Not Regulated	Not Regulated
14.2. UN proper shipping name	Not Regulated	Not Regulated	Not Regulated
14.3. Transport hazard class(es)	DOT Hazard Class: Not Applicable	IMDG: Not Applicable Sub Class: Not Applicable	Air Class: Not Applicable
14.4. Packing group	Not Applicable	Not Applicable	Not Applicable
14.5. Environmental hazards			
IMDG	Marine Pollutant: Yes; (Zinc powder (stabilized))		
14.6. Special precautions for user:	No further information		

15. Regulatory information

Regulatory Overview	The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.
Toxic Substance Control Act (TSCA)	All components of this material are either listed or exempt from listing on the TSCA Inventory.
WHMIS Classification	D2A
US EPA Tier II Hazards	Fire: No Sudden Release of Pressure: No Reactive: No Immediate (Acute): Yes Delayed (Chronic): Yes
EPCRA 311/312 Chemicals and RQs (lbs):	
	Chromium compounds (as Cr (III)) (5,000.00)
	Nickel (100.00)
	Zinc powder (stabilized) (1,000.00)
EPCRA 302 Extremely Hazardous:	
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.	

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

EPCRA 313 Toxic Chemicals:

Chromium compounds (as Cr (III))
Lead Compounds (as Pb)
Manganese compounds (as Mn)
Nickel
Zinc powder (stabilized)

Proposition 65 - Carcinogens (>0.0%):

Lead Compounds (as Pb)
Nickel

Proposition 65 - Developmental Toxins (>0.0%):

Lead Compounds (as Pb)

Proposition 65 - Female Repro Toxins (>0.0%):

Lead Compounds (as Pb)

Proposition 65 - Male Repro Toxins (>0.0%):

Lead Compounds (as Pb)

New Jersey RTK Substances (>1%):

Chromium compounds (as Cr (III))
Manganese compounds (as Mn)
Nickel
Silicon
Tungsten
Zinc powder (stabilized)

Pennsylvania RTK Substances (>1%):

Chromium compounds (as Cr (III))
Manganese compounds (as Mn)
Nickel
Silicon
Tungsten
Zinc powder (stabilized)

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

Carbon, Alloy and Tool Steels AISI Grades

SDS Revision Date: 01/14/2016

H228 Flammable solid.

H252 Self-heating in large quantities; may catch fire.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

H350 May cause cancer.

H351 Suspected of causing cancer.

H372 Causes damage to organs through prolonged or repeated exposure.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

H412 Harmful to aquatic life with long lasting effects.

H413 May cause long lasting harmful effects to aquatic life.

The information contained herein is furnished without warranty of any kind. The above information is believed to be correct but does not purport to be all inclusive and should be used only as a guide. Users should make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.

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