



United States Steel Corporation

Anhydrous Ammonia

Safety Data Sheet (SDS)

USS IHS Number: 44

(Replaces USS Code Number: 5B81-83)

Location(s): Clairton

Original: 12/16/2010

Revision: 6/21/2017

Expiration: 6/21/2020

Section 1 – Identification

1(a) Product Identifier Used on Label: Anhydrous Ammonia

1(b) Other Means of Identification: Ammonia

1(c) Recommended Use of the Chemical and Restrictions on Use: None

1(d) Name, Address, and Telephone Number:



United States Steel Corporation Phone number: (412) 433-6840 (8:00 am to 5:00 pm)
600 Grant Street, Room 1662 FAX: (412) 433-5019
Pittsburgh, PA 15219-2800

1(e) Emergency Phone Number: 1-800-262-8200 (CHEMTREC)

Section 2 – Hazard(s) Identification

2(a) Classification of the Chemical: Anhydrous Ammonia is considered a hazardous material according to the criteria specified in REACH [REGULATION (EC) No 1907/2006] and CLP [REGULATION (EC) No 1272/2008] and OSHA 29 CFR 1910.1200 Hazard Communication Standard. The categories of Health Hazards as defined in "GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS), Third revised edition ST/SG/AC.10/30/Rev. 3" United Nations, New York and Geneva, 2009 have been evaluated. Refer to Section 3, 8 and 11 for additional information.

2(b) Signal Word, Hazard Statement(s), Symbols and Precautionary Statement(s):

Hazard Symbol	Hazard Classification	Signal Word	Hazard Statement(s)	Precautionary Statement(s)
	Acute Toxicity Inhalation - 3	Danger	Toxic if inhaled. Causes severe skin burns and serious eye damage.	Do not breathe gas/mist/vapors or spray. Use only outdoors or in a well-ventilated area. Wear protective gloves / protective clothing / eye protection / face protection. Wash thoroughly after handling. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center or doctor/physician. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If swallowed: Rinse mouth. Do NOT induce vomiting. Store locked up. Store in a well-ventilated place. Keep container tightly closed. Dispose of contents in accordance with federal, state and local regulations.
	Skin Irritation - 1A Eye Irritation - 1			

2(c) Hazards Not Otherwise Classified: None Known

2(d) Unknown Acute Toxicity Statement (mixture): None Known

Section 3 – Composition/Information on Ingredients

3(a-c) Chemical Name, Common Name (Synonyms), CAS Number and Other Identifiers, and Concentration:

Chemical Name	CAS Number	EC Number	% Volume
Anhydrous Ammonia	7664-41-7	231-635-3	99.5

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Section 3 – Composition/Information on Ingredients (continued)

3(a-c) Chemical Name, Common Name (Synonyms), CAS Number and Other Identifiers, and Concentration (continued):

Chemical Name	CAS Number	EC Number	% Volume
Water	7732-18-5	231-791-2	0-0.4

EC- European Community

CAS- Chemical Abstract Service

Section 4 – First-aid Measures

4(a) Description of Necessary Measures:

- **Inhalation: CRYOGENIC LIQUID** If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center or doctor/physician.
- **Eye Contact: CRYOGENIC LIQUID** If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.
- **Skin Contact: CRYOGENIC LIQUID** If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.
- **Ingestion: CRYOGENIC LIQUID** If swallowed: Rinse mouth. Do NOT induce vomiting.

4(b) Most Important Symptoms/Effects, Acute and Delayed (Chronic):

Acute Effects: Exposure to liquid or rapidly expanding gases may cause severe chemical burns and frostbite to the eyes, lungs and skin. Ammonia produces corrosive burns. Injury is dependent upon duration of exposure and ammonia concentration. Injury varies from mild edema and erythema to severe burns and life threatening pulmonary edema.

- **Inhalation:** Breathing mist and vapors can cause severe chemical burns and frostbite and can be extremely destructive to mucous membranes, and upper respiratory tract.
- **Eye:** Causes severe chemical burns and frostbite
- **Skin:** Causes severe chemical burns and frostbite. May be harmful if absorbed through skin.
- **Ingestion:** Causes irritation to the gastrointestinal tract.

Chronic Effects:

Prolonged or repeated exposures may result in respiratory disorders. Chronic obstructive pulmonary disease may also develop from fibrous obstruction of the smaller airways. Repeated exposure may cause chronic cough, bronchitis, asthma, vocal cord dysfunction, reactive airways disease, and lung fibrosis. A permanent decrement in pulmonary function has been noted to occur.

4(c) Immediate Medical Attention and Special Treatment: Treat symptomatically.

Section 5 – Fire-fighting Measures

5(a) Suitable (and unsuitable) Extinguishing Media: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.

5(b) Specific Hazards Arising from the Chemical: Explosion potential if vessel containing liquid ammonia is exposed to heat. Irritating ammonia and nitrogen oxide vapors/gas may form in fire.

5(c) Special Protective Equipment and Precautions for Fire-fighters: Self-contained NIOSH approved respiratory protection and full protective clothing should be worn when fumes and/or smoke from fire are present. Heat and flames cause emittance of acrid smoke and fumes. Do not release runoff from fire control methods to sewers or waterways. Firefighters should wear full face-piece self-contained breathing apparatus and chemical protective clothing with thermal protection. Direct water stream will scatter and spread flames and, therefore, should not be used.

Section 6 - Accidental Release Measures

6(a) Personal Precautions, Protective Equipment and Emergency Procedures: Use only outdoors or in a well-ventilated area. This product is either a liquid (at elevated pressure and/or low temperature or a vapor (gas) under ambient conditions. A "spill" would rapidly form a cloud of vapor. If a vapor cloud were sprayed with water, the ammonia would go into solution, which could then be released to the ground or into a sewer or waterway. Personnel should be protected against contact with eyes and skin and avoid inhalation of vapor/mist. 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.

6(b) Methods and Materials for Containment and Clean Up: Collect material in appropriate, labeled containers for recovery or disposal in accordance with federal, state, and local regulations. Follow applicable OSHA regulations (29 CFR 1910.120) and all other pertinent state and federal requirements.

Section 7 - Handling and Storage

7(a) Precautions for Safe Handling: Do not breathe gas/mist/vapors or spray. Use only outdoors or in a well-ventilated area. Wear protective gloves / protective clothing / eye protection / face protection. Wash thoroughly after handling. Emergency safety showers and eye wash stations should be present.

7(b) Conditions for Safe Storage, including any Incompatibilities: Store locked up. Store in a well-ventilated place. Keep container tightly closed.

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Section 8 - Exposure Controls / Personal Protection

8(a) Occupational Exposure Limits (OELs): The following exposure limits are offered as reference, for an experienced industrial hygienist to review.

Ingredients	OSHA PEL ¹	ACGIH TLV ²	NIOSH REL ³	IDLH ⁴
Ammonia	50 ppm	25 ppm 35 ppm "STEL"	25 ppm 35 ppm "STEL"	300 ppm

NE - None Established

1. OSHA PELs (Permissible Exposure Limits) 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. An Action level (AL) is used by OSHA and NIOSH to express a health or physical hazard. They indicate the level of a harmful or toxic substance/activity, which requires medical surveillance, increased industrial hygiene monitoring, or biological monitoring. Action Levels are generally set at one half of the PEL but the actual level may vary from standard to standard. The intent is to identify a level at which the vast majority of randomly sampled exposures will be below the PEL.
2. Threshold Limit Values (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH) are 8-hour TWA concentrations unless otherwise noted. ACGIH TLVs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes. A Short Term Exposure Limit (STEL) is defined as the maximum concentration to which workers can be exposed for a short period of time (15 minutes) for only four times throughout the day with at least one hour between exposures.
3. The National Institute for Occupational Safety and Health Recommended Exposure Limits (NIOSH-REL) - Compendium of Policy and Statements. NIOSH, Cincinnati, OH (1992). NIOSH is the federal agency designated to conduct research relative to occupational safety and health. As is the case with ACGIH TLVs, NIOSH RELs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes.
4. The "Immediately Dangerous to Life or Health air concentration values (IDLHs)" are used by NIOSH as part of the respirator selection criteria and were first developed in the mid-1970's by NIOSH. The Documentation for Immediately Dangerous to Life or Health Concentrations (IDLHs) is a compilation of the rationale and sources of information used by NIOSH during the original determination of 387 IDLHs and their subsequent review and revision in 1994.

8(b) Appropriate Engineering Controls: Local exhaust ventilation should be used to control the emission of air contaminants. General dilution ventilation may assist with the reduction of air contaminant concentrations. Emergency eye wash stations and deluge safety showers should be available in the work area.

8(c) Individual Protection Measures:

- **Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, use only 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. Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-face, negative-pressure, air-purifying respirator equipped with an Ammonia/Methylamine filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with an Ammonia/Methylamine filter is acceptable for concentrations up to 50 times the exposure limit. Protection by air-purifying negative-pressure and powered air respirators is limited. Use a positive-pressure-demand, full-face, supplied air respirator or self-contained breathing apparatus (SCBA) for concentrations above 50 times the exposure limit. If exposure is above the IDLH (Immediately dangerous to life or health) for any of the constituents, or there is a possibility of an uncontrolled release or exposure levels are unknown, then use a positive-demand, full-face, supplied air respirator with escape bottle or SCBA.

Warning! Air-purifying respirators both negative-pressure, and powered-air do not protect workers in oxygen-deficient atmospheres.

- **Eyes:** Wear appropriate eye protection to prevent eye contact. Use safety glasses with side shields or chemical goggles.
- **Skin:** Persons handling this product should wear appropriate clothing to prevent skin contact. Wear protective gloves.
- **Other Protective Equipment:** An eyewash fountain and deluge shower should be readily available in the work area.

Section 9 - Physical and Chemical Properties

<p>9(a) Appearance (physical state, color, etc.): Colorless gas/liquid.</p> <p>9(b) Odor: Pungent characteristic odor</p> <p>9(c) Odor Threshold: 46.8 ppm</p> <p>9(d) pH: 11.6 for 1N soln. in water</p> <p>9(e) Melting Point/Freezing Point: -107.9°F(-77.7°C)</p> <p>9(f) Initial Boiling Point and Boiling Range: - 28.1°F (-33.4°C)</p> <p>9(g) Flash Point: NA</p> <p>9(h) Evaporation Rate: NA</p> <p>9(i) Flammability (solid, gas): Not flammable</p>	<p>9(j) Upper/lower Flammability or Explosive Limits: 28%/15%</p> <p>9(k) Vapor Pressure: at 20°C (68°F) is 6491 mm Hg (absolute) or 110.8 psig</p> <p>9(l) Vapor Density (Air = 1): 0.60</p> <p>9(m) Relative Density: 0.62 SG</p> <p>9(n) Solubility(ies): Highly Soluble</p> <p>9(o) Partition Coefficient n-octanol/water: NA</p> <p>9(p) Auto-ignition Temperature: 651°C</p> <p>9(q) Decomposition Temperature: Decomposes above 454°C</p> <p>9(r) Viscosity: ND</p>
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NA - Not Applicable

ND - Not Determined for product as a whole

Section 10 - Stability and Reactivity

10(a) Reactivity: Not Determined (ND)

10(b) Chemical Stability: Anhydrous Ammonia is stable under normal storage and handling conditions.

10(c) Possibility of Hazardous Reaction: None Known.

10(d) Conditions to Avoid: Heat, incompatibles. May react violently with acids, aldehydes, alkylene oxides, amides, boron, boron halides, calcium, chlorine azide, chloric acid, chlorine monoxide, chlorites, halogens, heavy metals and many other materials.

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Section 10 - Stability and Reactivity (continued)

10(e) Incompatible Materials: Acids, aldehydes, alkylene oxides, amides, boron, boron halides, calcium, chlorine azide, chloric acid, chlorine monoxide, chlorites, halogens, and heavy metals.

10(f) Hazardous Decomposition Products: May emit ammonia and oxides of nitrogen.

Section 11 - Toxicological Information

11(a-e) Information on Toxicological Effects: The following toxicity data has been determined for **Anhydrous Ammonia** by using the information available for its components applied to the guidance on the preparation of an SDS under the GHS requirements of OSHA and the EU CPL:

Hazard Classification	Hazard Category		Hazard Symbols	Signal Word	Hazard Statement
	EU	OSHA			
Acute Toxicity Hazard (covers Categories 1-4)	3	3 ^a		Danger	Toxic if inhaled.
Skin Irritation (covers Categories 1A, 1B, and 2)	1B	1A ^b		Danger	Causes severe skin burns and eye damage.
Eye Damage/Irritation (covers Categories 1, 2A and 2B)	2	1 ^c		Danger	Causes serious eye damage.

* NR Not Rated - Available data does not meet criteria for classification.

The Toxicological data listed below are presented regardless to classification criteria. Individual hazard classification categories where the toxicological information has met or exceeded a classification criteria threshold are listed above.

a. The following LC₅₀ or LD₅₀ has been established for **Anhydrous Ammonia**:

- LD₅₀ = 350 mg/kg (Oral/ Rat)
- LC₅₀ = LC₅₀ = 2000 ppm (Inhalation/Rat)

b. The Following Skin (Dermal) Irritation data is available for **Anhydrous Ammonia**:

- Corrosive

c. The Following Eye Irritation data available for **Anhydrous Ammonia**:

- Causes eye irritation

d. No Skin (Dermal)/Respiratory Sensitization data available for **Anhydrous Ammonia**.

e. No Aspiration Hazard data available for **Anhydrous Ammonia**.

f. No Germ Cell Mutagenicity data available for **Anhydrous Ammonia**.

g. Carcinogenicity: IARC, NTP, and OSHA does not list **Anhydrous Ammonia** as a carcinogen.

h. No Toxic Reproduction data available for **Anhydrous Ammonia**.

i. No Specific Target Organ Toxicity (STOT) following a Single Exposure data available for **Anhydrous Ammonia**.

j. No Specific Target Organ Toxicity (STOT) following Repeated Exposure data was available for **Anhydrous Ammonia**.

The above toxicity information was determined from available scientific sources to illustrate the prevailing posture of the scientific community. The scientific resources includes: The American Conference of Governmental Industrial Hygienist (ACGIH) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure indices (BEIs) with Other Worldwide Occupational Exposure Values 2009, The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP) updated documentation, the World Health Organization (WHO) and other available resources, the International Uniform Chemical Information Database (IUCLID), European Union Risk Assessment Report (EU-RAR), Concise International Chemical Assessment Documents (CICAD), European Union Scientific Committee for Occupational Exposure Limits (EU-SCOEL), Agency for Toxic Substances and Disease Registry (ATSDR), Hazardous Substance Data Bank (HSDB), and International Programme on Chemical Safety (IPCS).

The following health hazard information is provided regardless to classification criteria and is based on the individual component(s):

Acute Effects by Component:

- **AMMONIA:** Breathing mist and vapors can cause severe chemical burns and can be extremely destructive to mucous membranes, and upper respiratory tract. Causes chemical burns to the eyes and skin.

Delayed (chronic) Effects by Component:

- **AMMONIA:** Prolonged or repeated exposures may result in respiratory disorders. Chronic obstructive pulmonary disease may also develop from fibrous obstruction of the smaller airways. Repeated exposure may cause chronic cough, bronchitis, asthma, vocal cord dysfunction, reactive airways disease, and lung fibrosis. A permanent decrement in pulmonary function has been noted to occur.

Section 12 - Ecological Information

12(a) Ecotoxicity (aquatic & terrestrial):

- **Ammonia:** LC₅₀ *Oncorhynchus mykiss* = 11 – 48 mg/L; LC₅₀ *Lepomis cyanellus*=0.5 mg/L; LC₅₀ *Daphnia magna* =101 mg/L.

12(b) Persistence & Degradability: No Data Available

12(c) Bioaccumulative Potential: No Data Available

12(d) Mobility (in soil): No Data Available

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Section 12 - Ecological Information (continued)

12(e) Other Adverse Effects: None Known

Additional Information:

Hazard Category: Acute 1, Chronic 2

Signal Word: Warning

Hazard Symbol:



Hazard Statement: Very Toxic to aquatic life with long lasting effects.

Section 13 - Disposal Considerations

Disposal: Dispose of contents/container in accordance with local/regional/international regulations.

Container Cleaning and Disposal: Follow applicable federal, state and local regulations. Observe safe handling precautions. European Waste Catalogue 16-03-05 (organic wastes containing dangerous substances).

Please note this information is for Anhydrous Ammonia in its original form. Any alterations can void this information.

Section 14 - Transport Information

14 (a-g) Transportation Information:

US Department of Transportation (DOT) under 49 CFR 172.101 regulates **Anhydrous Ammonia** as a hazardous material. All federal, state, and local laws and regulations that apply to the transport of this type of material must be adhered to.

<p>Shipping Name: Ammonia, Anhydrous Shipping Symbols: D Hazard Class: 2.2 UN No UN1005 Packing Group: NA DOT/ IMO Label: Nonflammable Gas Special Provisions (172.102): 13, T50</p>	<p>Packaging Authorizations a) Exceptions: None b) Non-bulk: 304 c) Bulk: 314, 315</p>	<p>a) Passenger Aircraft or Railcar: Forbidden b) Cargo Aircraft Only: Forbidden Vessel Stowage Requirements a) Vessel Stowage: D b) Other: 40, 57 DOT Reportable Quantities: 100 lb</p>
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International Maritime Dangerous Goods (IMDG) and the Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID) classification, packaging and shipping requirements follow the US DOT Hazardous Materials Regulation.

Regulations Concerning the International Carriage of Dangerous Goods by Road (ADR) regulates **Anhydrous Ammonia** as a hazardous material.

<p>Shipping Name: Ammonia, Anhydrous Classification Code: 2.3 UN No.: UN1005 Packing Group: NA ADR Label: Poison Gas, Corrosive Special Provisions: 23 Limited Quantities: 0</p>	<p>Packaging a) Packing Instructions: P200 b) Special Packing Provisions: NA c) Mixed Packing Provisions: NA</p>	<p>Portable Tanks & Bulk Containers a) Instructions: T50 b) Special Provisions: NA</p>
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International Air Transport Association (IATA) regulates **Anhydrous Ammonia** as a hazardous material.

<p>Shipping Name: Ammonia, Anhydrous Class/Division: 2.3 (8) Hazard Label (s): NA UN No.: UN1005 Packing Group: NA Excepted Quantities (EQ): NA</p>	<p>Passenger & Cargo Aircraft - FORBIDDEN Limited Quantity (EQ) Pkg Inst: NA Max Net Qty/Pkg: NA</p>	<p>Cargo Aircraft Only FORBIDDEN Pkg Inst: NA Max Net Qty/Pkg: NA</p>	<p>Special Provisions: A2 ERG Code: 2CP</p>
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Pkg Inst – Packing Instructions Max Net Qty/Pkg – Maximum Net Quantity per Package ERG – Emergency Response Drill Code

Anhydrous Ammonia has a TDG classification of 2.3 Toxic Gas

Section 15 - Regulatory Information

Regulatory Information: *The following listing of regulations relating to a U. S. Steel product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities.* This product and/or its constituents are subject to the following regulations:

SARA Potential Hazard Categories: Immediate Acute Health Hazard, delayed Chronic Health Hazard

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Section 15 - Regulatory Information (continued)

Section 313 Supplier Notification: Anhydrous Ammonia is subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372:

CAS #	Chemical Name	Percent by Weight
7664-41-7	Anhydrous Ammonia	99.5

State Regulations: The product, **Anhydrous Ammonia** as a whole is listed in state regulations.

California Prop. 65: Does not contain elements known to the State of California to cause cancer or reproductive toxicity.

Other Regulations:

WHMIS Classification (Canadian): The product, **Anhydrous Ammonia** is not listed as a whole. However individual components are listed.

Ingredients	WHMIS Classification
Ammonia	Acute Toxicity- Inhalation - 3; Skin Irritation - 1; Eye Irritation - 1; Health Hazards Not Otherwise Classified (corrosion) - 1

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

Section 16 - Other Information

Prepared By: United States Steel Corporation

Revision History:

- 06/21/17 – Update WHMIS 2015
- 4/02/2014 - Update to OSHA HAZ COM 2012
- 1/18/11 – Update of content and format to comply with GHS
- 8/1985 - Original

Expiration Date: 06/21/2020

Additional Information:

Hazardous Material Identification System (HMIS) Classification

Health Hazard	3
Fire Hazard	1
Physical Hazard	0

HEALTH= 3 (Major injury likely unless prompt action is taken and medical treatment is given.)
 FIRE= 1, Materials that must be preheated before ignition will occur.
 PHYSICAL HAZARDS = 0, Materials that are normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosives.

National Fire Protection Association (NFPA)



HEALTH = 3 (Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.)
 FIRE = 1, Must be preheated before ignition can occur.
 INSTABILITY = 0, Normally stable, even under fire exposure conditions, and are not reactive with water.

ABBREVIATIONS/ACRONYMS:

ACGIH	American Conference of Governmental Industrial Hygienists	NIF	No Information Found
BEIs	Biological Exposure Indices	NIOSH	National Institute for Occupational Safety and Health
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	ORC	Organization Resources Counselors
CFR	Code of Federal Regulations	OSHA	Occupational Safety and Health Administration
CNS	Central Nervous System	PEL	Permissible Exposure Limit
GI, GIT	Gastro-Intestinal, Gastro-Intestinal Tract	PNOR	Particulate Not Otherwise Regulated
HMIS	Hazardous Materials Identification System	PNOC	Particulate Not Otherwise Classified
IARC	International Agency for Research on Cancer	PPE	Personal Protective Equipment
LC50	Median Lethal Concentration	ppm	parts per million
LD50	Median Lethal Dose	RCRA	Resource Conservation and Recovery Act
LD_{Lo}	Lowest Dose to have killed animals or humans	RTECS	Registry of Toxic Effects of Chemical Substances
LEL	Lower Explosive Limit	SARA	Superfund Amendment and Reauthorization Act
µg/m³	microgram per cubic meter of air	SCBA	Self-contained Breathing Apparatus
mg/m³	milligram per cubic meter of air	STEL	Short-term Exposure Limit
mppcf	million particles per cubic foot	TLV	Threshold Limit Value
SDS	Safety Data Sheet	TWA	Time-weighted Average
MSHA	Mine Safety and Health Administration	UEL	Upper Explosive Limit
NFPA	National Fire Protection Association		

Disclaimer: This information is taken from sources or based upon data believed to be reliable. However, United States Steel Corporation makes no warranty as to the absolute correctness or sufficiency of any of the foregoing or that additional or other measures may not be required under particular conditions.