SDS ID No.: CLF-9008

Safety Data Sheet (SDS)

Facilities: Riverdale, Burns Harbor

Section 1 – Identification

1(a) Product Identifier used on Label: BOF Cooling Tower Drop-Out

1(b) Other means of identification: BOF Cooling Tower Sludge, Cooling Tower Grit, CLF-9008

1(c) Recommended use of the chemical and restrictions on use: None

1(d) Name, address, and telephone number:

Cleveland-Cliffs Steel
1 South Dearborn Street
Chicago, IL 60603-9888

Phone number: 219-787-4901 or
email at: sdssupport@clevelandcliffs.com

1(e) Emergency phone number: 1-760-476-3962 (Verisk 3E Company Code: 333211) or CHEMTREC (Day or Night): 1-800-424-9300

Section 2 – Hazard(s) Identification

2(a) Classification of the Chemical: BOF Cooling Tower Drop-Out 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)
	Carcinogenicity - 1A Single Target Organ Toxicity (STOT) Single Exposure - 2 STOT Repeat Exposure - 1	**DANGER**	May cause cancer. May cause mechanical irritation to skin and lung irritation. Causes damage to lungs. Causes skin irritation. Causes serious eye irritation. Harmful if swallowed.
	Skin Irritation - 2 Eye Irritation - 1		
	Acute Toxicity-Oral - 4		

Precautionary Statement(s):

Prevention	Response	Storage/Disposal
Do not breathe dusts or fume. Wear protective gloves / protective clothing / eye protection / face protection. Wash thoroughly after handling. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product.	If exposed, concerned or feel unwell: Get medical advice/attention, call a poison center or doctor. 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. If on skin: Take off contaminated clothing and wash it before reuse. Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. If swallowed: Call a poison center or doctor if you feel unwell. Rinse mouth.	Dispose of contents in accordance with federal, state and local regulations. Store locked up.

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	% weight
Iron and Iron Oxides	7439-89-6 1309-37-1	231-096-4 215-168-2	67-100
Calcium Oxide	1305-78-8	215-138-9	5-7
Magnesium Oxide	1309-48-4	215-171-9	1-2
Moisture	Varies	Varies	5-15

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	% weight
Silicon and silicon dioxides	14808-60-7 7631-86-9 7440-21-3	238-878-4 231-545-4 231-130-8	1-3

EC - European Community

CAS - Chemical Abstract Service

BOF Cooling Tower Drop Out contains small amounts of various constituents in addition to those listed. These small quantities are frequently referred to as "trace" or "residual" constituents that generally originate in the raw materials used. **BOF Cooling Tower Drop Out** may contain the following trace or residual constituents: aluminum oxide, titanium dioxide, manganese oxide, potassium, strontium, chromium oxide, zirconium dioxide, carbon, sulfur, sodium oxide, and potassium oxide.

Section 4 – First-aid Measures

4(a) Description of Necessary Measures: If exposed, concerned or feel unwell: Get medical advice/attention, call a poison center or doctor.

- **Inhalation:** If exposed, concerned or feel unwell: Get medical advice/attention, call a poison center or doctor.
- **Eye Contact:** 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.
- **Skin Contact:** If on skin: Take off contaminated clothing and wash it before reuse. Wash with plenty of water. If skin irritation occurs: Get medical advice/attention.
- **Ingestion:** If swallowed: Call a poison center or doctor if you feel unwell. Rinse mouth.

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

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.
- **Eye:** Particles of iron or iron compounds may become imbedded in the eye. Excessive exposure to high concentrations of dust may cause irritation to the eyes.
- **Skin:** Skin contact with dusts may cause irritation or sensitization, possibly leading to dermatitis. Skin contact with metallic fumes and dusts may cause physical abrasion.
- **Ingestion:** Ingestion of dust may cause nausea and/or vomiting.

Chronic Effects:

Individuals with chronic respiratory disorders (i.e., asthma, chronic bronchitis, emphysema, etc.) may be adversely affected by any fume or airborne particulate matter exposure. Persons with pre-existing skin disorders may be more susceptible to dermatitis.

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

Section 5 – Fire-fighting Measures

5(a) Suitable (and unsuitable) Extinguishing Media: Use steam, water fog, dry chemical or carbon dioxide.

5(b) Specific Hazards Arising from the Chemical: It is unlikely based on the chemistry of this material, in the metal oxide forms that it will present an explosion hazard. However, High concentrations of airborne metallic fines may present an explosion hazard.

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. If material is in a dry state, avoid inhalation of dust. Personnel should be protected against contact with eyes and skin. 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.

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 eat, drink or smoke when using this product. Wash thoroughly after handling. Do not breathe dusts or fumes. Wear protective gloves / protective clothing / eye protection / face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid direct contact on skin, eyes or on clothing. Emergency safety showers and eye wash stations should be present. Store locked up.

Section 7 - Handling and Storage (continued)

7(b) Conditions for Safe Storage, including any Incompatibilities: Store away from acids and incompatible materials.

Section 8 - Exposure Controls / Personal Protection

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

Ingredients	OSHA PEL [1]	ACGIH TLV [2]	NIOSH REL [3]	IDLH [4]
Iron and iron oxides	10 mg/m³ (iron oxide fume)	5.0 mg/m³ (iron oxide, respirable fraction[5])	5.0 mg/m³ (iron oxide dust and fume)	2,500 mg/m³ (as Fe)
Calcium Oxide and Calcium compounds	5.0 mg/m³ (as calcium oxide) 15 mg/m³ (as calcium hydroxide & calcium silicate, total dust) 5.0 mg/m³ (as calcium hydroxide & calcium silicate, respirable fraction)	2.0 mg/m³ (as calcium oxide) 5.0 mg/m³ (as calcium hydroxide)	2.0 mg/m³ (as calcium oxide) 5.0 mg/m³ (as calcium hydroxide) 10 mg/m³ (as calcium silicate, total dust) 5.0 mg/m³ (as calcium hydroxide, respirable fraction)	25 mg/m³ (as calcium oxide)
Silicon and silicon dioxides (amorphous)	15 mg/m³ (as silicon, total dust) 5.0 mg/m³ (as silicon, respirable fraction) 80 mg/m³ / % SiO_2 (as amorphous)	NE	10 mg/m³ (as total dust) 5.0 mg/m³ (as respirable dust)	3,000 mg/m³ (as amorphous)
Crystalline Silica (as Quartz)	0.05 mg/m³ "AL" 0.025 mg/m³	0.025 mg/m³ (as respirable fraction)	0.05 mg/m³ (as respirable dust), Ca	50 mg/m³ (as quartz, Tripoli) 25 mg/m³ (as cristobalite, tridymite), Ca
Magnesium Oxide	15 mg/m³ (as magnesium oxide fume, total particulate)	10 mg/m³ (as magnesium oxide, inhalable fraction[6])	NE	750 mg/m³ (as magnesium oxide fume)

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. A Short Term Exposure Limit (STEL) is defined as a 15-minute exposure, which should not be exceeded at any time during a workday. 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. DSEN – May cause dermal sensitization. This notation is used to indicate the potential for dermal sensitization resulting from the interaction of an absorbed agent and ultraviolet light (i.e. photosensitization). RSEN – May cause respiratory sensitization.
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. Ca is designated as carcinogen.
5. Respirable 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 ACGIH 2022 TLVs ® and BEIs ® Appendix D, paragraph C.
6. Inhalable 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 2022 TLVs ® and BEIs ® (Biological Exposure Indices) Appendix D, paragraph A.

8(b) Appropriate Engineering Controls: Use controls as appropriate to minimize exposure to metal fumes and dusts during handling operations. Provide general or local exhaust ventilation systems to minimize airborne concentrations. Local exhaust is necessary for use in enclosed or confined spaces. Provide sufficient general/local exhaust ventilation in pattern/volume to control inhalation exposures below current exposure limits.

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 P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with P100 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.

Section 8 - Exposure Controls / Personal Protection (continued)

8(c) Individual Protection Measures (continued):

- **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

9(a) Appearance (physical state, color, etc.): Solid medium to dark brown
9(b) Odor: Organic and occasionally metallic odor
9(c) Odor Threshold: NA
9(d) pH: 11.9
9(e) Melting Point/Freezing Point: >2500^{0}F (average)
9(f) Initial Boiling Point and Boiling Range: NA
9(g) Flash Point: NA
9(h) Evaporation Rate: NA
9(i) Flammability (solid, gas): Not flammable
9(j) Upper/lower Flammability or Explosive Limits: NA
9(k) Vapor Pressure: NA
9(l) Vapor Density (Air = 1): NA
9(m) Relative Density: 1.44 g/cm^3
9(n) Solubility(ies): <0.1% Insoluble
9(o) Partition Coefficient n-octanol/water: NA
9(p) Auto-ignition Temperature: ND
9(q) Decomposition Temperature: ND
9(r) Viscosity: ND

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: **BOF Cooling Tower Drop Out** is stable under normal storage and handling conditions.
10(c) Possibility of Hazardous Reaction: None Known
10(d) Conditions to Avoid: Storage with strong acids or calcium hypochlorite.
10(e) Incompatible Materials: Iron oxide dusts in contact with calcium hypochlorite evolve oxygen and may cause an explosion.
10(f) Hazardous Decomposition Products: Toxic fumes and vapors may be released at elevated temperatures.

Section 11 - Toxicological Information

11(a-e) Information on Toxicological Effects: The following toxicity data has been determined for **BOF Cooling Tower Drop-Out** 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)	4	4 [a]		**Warning**	Harmful if swallowed.
Skin Irritation (covers Categories 1A, 1B, and 2)	2	2 [b]		**Warning**	Causes skin irritation.
Eye Damage/Irritation (covers Categories 1, 2A and 2B)	1	1 [c]		**Danger**	Causes serious eye damage.
Germ Cell Mutagenicity (covers Categories 1A, 1B and 2)	2	NR *	NA	**NA**	NA
Carcinogenicity (covers Categories 1A, 1B and 2)	1A	1A [g]		**Danger**	May cause cancer.
Specific Target Organ Toxicity (STOT) Following Single Exposure (covers Categories 1-3)	2	2 [i]		**Warning**	May cause mechanical irritation to skin and lung irritation.
STOT Following Repeated Exposure (covers Categories 1 and 2)	1	1 [j]		**Danger**	Causes damage to lungs.

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. No LC_{50} or LD_{50} has been established for **BOF Cooling Tower Drop Out**. The following data has been determined for the components:

- **Iron Oxide:** LD_{50}= >10,000 mg/kg (Oral/ Rat)
- **Silica:** LD_{50} = 500 mg/kg (Oral/ Rat)

Section 11 - Toxicological Information (continued)

11 Information on toxicological effects (continued):

b. No Skin (Dermal) Irritation data available for **BOF Cooling Tower Drop-Out** as a as a mixture. The following Skin (Dermal) Irritation information was found for the components:

- **Iron Oxide:** Moderately irritating.
- **Calcium:** Reacts with moisture to cause burns of skin.
- **Magnesium Dioxide:** Severe skin irritant in human (HSDB).

c. No Eye Irritation data available for **BOF Cooling Tower Drop-Out** as a mixture. The following Eye Irritation information was found for the components:

- **Iron Oxide:** Severely irritating; may cause burns. Human Corrosive (IUCLID).
- **Iron:** Irritating when administered as Iron metal. Rabbit Draize - irritating (IUCLID).
- **Calcium Oxide:** Rabbit Irritating (REACH).
- **Magnesium dioxide**: Severe eye irritant in human (HSDB).
- **Silicon Dioxide:** Crystalline silica may cause abrasion of the cornea**.**

d. No Skin (Dermal) Sensitization data available for **BOF Cooling Tower Drop-Out** as a mixture or its components.

e. No Respiratory Sensitization data available for **BOF Cooling Tower Drop-Out** as a mixture or its components.

f. No Germ Cell Mutagenicity data available for **BOF Cooling Tower Drop-Out** as a mixture. The following Mutagenicity and Genotoxicity information was found for the components:

- **Iron:** IUCLID has found some positive and negative findings in vitro.
- **Iron Oxide:** Both positive and negative data.

g. Carcinogenicity: IARC, NTP, and OSHA do not list **BOF Cooling Tower Drop-Out** as carcinogens. The following Carcinogenicity information was found for the components:

- **Iron Oxide (Fe_2O_3):** IARC-3, unclassifiable as to carcinogenicity in humans; ACGIH TLV-A4, not classifiable as a human carcinogen
- **Silicon Dioxide:** IARC-1 (silica, crystalline), carcinogen to humans; ACGIH TLV-A2 (silica, crystalline), suspected human carcinogen; NTP–K, known to be a carcinogen; NIOSH–Ca, potential occupational carcinogen; OSHA-Ca, carcinogen
- **Magnesium (oxide)**: ACGIH TLV-A4, not classifiable as a human carcinogen

h. No Toxic Reproduction data available for **BOF Cooling Tower Drop-Out** as a mixture or its components.

i. No Specific Target Organ Toxicity (STOT) following a Single Exposure data available for **BOF Cooling Tower Drop-Out** as a mixture. The following STOT following a Single Exposure data was found for the components:

- **Iron Oxide:** May cause lung irritation.
- **Iron:** Irritating to Respiratory tract.
- **Calcium Oxide**: Can cause respiratory tract irritation, skin and eye irritation.
- **Silicon Dioxide:** Single exposure to very high airborne levels may cause lung irritation in exposed humans.

j. No Specific Target Organ Toxicity (STOT) following Repeated Exposure data was available for **BOF Cooling Tower Drop-Out** as a whole. The following STOT following Repeated Exposure data was found for the components:

- **Iron Oxide:** Some pulmonary and lung effects reported.
- **Silicon Dioxide:** Repeated exposure to crystalline silica causes silicosis and kidney damage as well as increased incidence of autoimmune disorders in humans.

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 2022, 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:

- **IRON (and Iron Oxide):** Iron is harmful if swallowed, causes skin irritation, and causes eye irritation. Contact with iron oxide has been reported to cause skin irritation and serious eye damage.
- **CALCIUM OXIDE:** Calcium oxide is an eye and skin irritant.
- **MAGNESIUM OXIDE:** Headache, cough, sweating, nausea and fever may be caused by exposure to freshly formed fumes. The symptoms of metal fume fever do not become manifest until 4-12 hours after exposure.
- **CRYSTALINE SILICA (Silicon Dioxide):** Causes irritation and inflammation of the respiratory tract. May cause abrasion of the cornea. Inhalation may cause cough. A single exposure to very high airborne levels may cause lung irritation in exposed humans.

Delayed (chronic) Effects by Component:

- **IRON (and Iron Oxide):** Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in the development of a benign lung disease, called siderosis, which is observable as an X-ray change. No physical impairment of lung function has been associated with siderosis. Inhalation of excessive concentrations of ferric oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.
- **MAGNESIUM OXIDE:** Irritation of eyes, nose, and throat. Symptoms may include dryness of nose and mouth, cough, feeling of weakness, tightness of chest, muscular pain, chills, fever, headache, nausea, and vomiting.

Section 11 - Toxicological Information (continued)

Delayed (chronic) Effects by Component (continued):

- **CALCIUM OXIDE:** 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.
- **SILICA (Crystalline Quartz):** Chronic exposure can cause silicosis, a form of lung scarring that can cause shortness of breath, reduced lung function, and in severe cases, death. Repeated exposure may cause kidney damage as well as increased incidence of autoimmune disorder.

Section 12 - Ecological Information

12(a) Ecotoxicity (aquatic & terrestrial): No data available for the product, **BOF Cooling Tower Drop-Out** as a whole. However, individual components of the product have been found to be toxic to the environment. Dusts may migrate into soil and groundwater and be ingested by wildlife as follows:

- **Iron Oxide**: LC_{50}: >1000 mg/L; Fish
- **Calcium Oxide:** LC_{50}: 159 mg/L; invertebrates

12(b) Persistence & Degradability: No Data Available

12(c) Bioaccumulative Potential: No Data Available

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

12(e) Other Adverse Effects: None Known

Additional Information:

Hazard Category: Not Rated **Signal Word:** Not Rated

Hazard Symbol: Not Rated

Hazard Statement: Not Rated

Section 13 - Disposal Considerations

Disposal: Dispose of in accordance with Local, State, Federal and International regulations. Observe safe handling precautions.

Container Cleaning and Disposal: Follow Local, State, Federal and International regulations. Observe safe handling precautions.

Section 14 - Transport Information

14 (a-g) Transportation Information:

US Department of Transportation (DOT) under 49 CFR 172.101 may regulate **BOF Cooling Tower Drop-Out** as a hazardous material under certain circumstances. All Local, State, Federal and international regulations that apply to the transport of this type of material must be adhered to.

Section 15 - Regulatory Information

Regulatory Information: *The following listing of regulations relating to a Cleveland-Cliffs 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:

OSHA Regulations: Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-2, Z-3): The product, **BOF Cooling Tower Drop-Out** as a whole is not listed. However, individual components of the product are listed refer to Section 8.

EPA Regulations: The product, **BOF Cooling Tower Drop-Out** and its components are not listed.

SARA 311/312 Potential Hazard Categories: Immediate Acute Health Hazard; Delayed Chronic Health Hazard

Regulations Key:

CAA	Clean Air Act (42 USC Sec. 7412; 40 CFR Part 61 [As of: 8/18/06])
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (42 USC Secs. 9601(14), 9603(a); 40 CFR Sec. 302.4, Table 302.4, Table 302.4 and App. A)
CWA	Clean Water Act (33 USC Secs. 1311; 1314(b), (c), (e), (g); 136(b), (c); 137(b), (c) [as of 8/2/06])
RCRA	Resource Conservation Recovery Act (42 USC Sec. 6921; 40 CFR Part 261 App VIII)
SARA	Superfund Amendments and Reauthorization Act of 1986 Title III Section 302 Extremely Hazardous Substances (42 USC Secs. 11023, 13106; 40 CFR sec. 372.65) and Section 313 Toxic Chemicals (42 USC Secs. 11023, 13106; 40 CFR Sec. 372.65 [as of 6/30/05])
TSCA	Toxic Substance Control Act (15 U.S.C. s/s 2601 et seq. [1976])
SDWA	Safe Drinking Water Act (42 U.S.C. s/s 300f et seq. [1974])

SARA 313 Supplier Notification: The product, **BOF Cooling Tower Drop-Out** does not contain any of the toxic chemicals 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.

State Regulations: The product, **BOF Cooling Tower Drop-Out** 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: Iron oxide, Calcium Oxide, Magnesium Oxide (compounds), Crystalline silica.

Section 15 - Regulatory Information(continued)

State Regulations (continued):

California Prop. 65:

The product, **BOF Cooling Tower Drop-Out** can expose you to chemicals including silica, crystalline (airborne particles of respirable size) which is known to the State of California to cause cancer; and does not contain chemicals known to the State of California to cause reproductive toxicity. For more information go to www.P65Warnings.ca.gov.

New Jersey: Contains regulated material in the following categories:

- Hazardous Substance: Iron Oxide, Magnesium Oxide, Zinc, Calcium Oxide, Crystalline silica
- Special Health Hazard Substances: Calcium Oxide, Crystalline silica

Minnesota: Iron Oxide (fume), Magnesium Oxide, Crystalline silica (inhaled in the form of quartz or cristobalite from occupational source)

Massachusetts: Iron Oxide (dust or fume), Calcium Oxide, Magnesium Oxide, Crystalline silica

Other Regulations:

WHMIS Classification (Canadian): The product, **BOF Cooling Tower Drop-Out** is not listed as a whole. However individual components are listed.

Ingredients	WHMIS Classification
Iron	Combustible dusts - Category 1 (may form combustible dust concentrations in air)
Calcium Oxide	Skin corrosion/irritation - Category 1; Serious eye damage/eye irritation - Category 1; Health hazards not otherwise classified (corrosion) - Category 1
Silicon	Flammable solids - Category 2 (The classification "Flammable solids" refers to the amorphous form of silicon powder); Combustible dusts*
Silicon Dioxide	Carcinogenicity - Category 1A; Specific target organ toxicity - repeated exposure - Category 1

* This product belongs to the hazard class "Combustible dust" if 5% or more by weight of its composition has a particle size < 500 µm.

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: Cleveland-Cliffs Steel

Original Issue Date: 03/19/2016 **Revised Date:** 5/02/2022

Additional Information:

Hazardous Material Identification System (HMIS) Classification

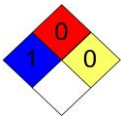
Health Hazard	1
Fire Hazard	0
Physical Hazard	0

HEALTH= **1**, Denotes possible chronic hazard if airborne dusts or fumes are generated Irritation or minor reversible injury possible.

FIRE= **0**, Materials that will not burn.

PHYSICAL HAZARD= **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 = **1**, Exposure could cause irritation but only minor residual injury even if no treatment is given.

FLAMMABILITY = **0,** Materials that will not burn.

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
LOEL	Lowest Observed Effect Level	**SCBA**	Self-contained Breathing Apparatus
LOAEC	Lowest Observable Adverse Effect Concentration	**SDS**	Safety Data Sheet
µg/m³	microgram per cubic meter of air	**STEL**	Short-term Exposure Limit
mg/m³	milligram per cubic meter of air	**TLV**	Threshold Limit Value

Section 16 - Other Information (continued)

ABBREVIATIONS/ACRONYMS:

mppcf	million particles per cubic foot		**TWA**	Time-weighted Average
MSHA	Mine Safety and Health Administration		**UEL**	Upper Explosive Limit
NFPA	National Fire Protection Association			

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BOF Cooling Tower Drop-Out

Signal Word: **DANGER**

Symbols:

HAZARD STATEMENTS:

May cause cancer.
May cause mechanical irritation to skin and lung irritation.
Causes damage to lungs.
Causes skin irritation.
Causes serious eye irritation.
Harmful if swallowed.

PRECAUTIONARY STATEMENTS

Do not breathe dusts or fume.
Wear protective gloves / protective clothing / eye protection / face protection.
Wash thoroughly after handling.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not eat, drink or smoke when using this product.
If exposed, concerned or feel unwell: Get medical advice/attention, call a poison center or doctor.
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.
If on skin: Take off contaminated clothing and wash it before reuse. Wash with plenty of water. If skin irritation occurs: Get medical advice/attention.
If swallowed: Call a poison center or doctor if you feel unwell. Rinse mouth.
Dispose of contents in accordance with federal, state and local regulations.
Store locked up.

SDS ID No.: CLF-003

Cleveland-Cliffs Steel
1 South Dearborn Street
Chicago, IL 60603-9888

General Information: Phone: 219-787-4901 or email at: sdssupport@clevelandcliffs.com

CHEMTREC (Day or Night): 1-800-424-9300

Emergency Contact: 1-760-476-3962, (Verisk 3E Company Code: 333211)

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