



# Safety Data Sheet

## SECTION 1: Identification

### Product identifiers:

**Product name:** Sodium Benzoate  
**Other means of identification:** Sodium benzoic acid; Benzoic acid sodium salt

### Recommended use of the chemical and restrictions on use:

**Uses:** Additive. Industrial applications. Food and pharmaceutical applications.  
**Restrictions on use:** This product is not authorized for uses within the scope of the Biocidal Products Regulation (BPR, Regulation (EU) 528/2012).

### Details of the supplier:

**Supplier:** Chemistry Connection  
253 Sturgis Road  
Conway, AR 72034  
United States  
(501) 470-9689

**For further information about this SDS:** Email: [contact@thechemistryconnection.com](mailto:contact@thechemistryconnection.com)

**Emergency telephone number:** CHEMTREC (24 hours): 1-800-424-9300

## SECTION 2: Hazard(s) identification

Information in accordance with U.S. 29 CFR 1910.1200 (Hazcom 2012) and Canada Hazardous Products Regulations (WHMIS 2015):

### Classification of the product:

Eye Irritation, category 2  
Combustible Dust

### Label elements:

#### Hazard pictogram(s):



#### Signal word:

Warning

#### Hazard statements:

H319 Causes serious eye irritation.  
USH001 May form combustible dust concentrations in air.

#### Precautionary statements:

P264 Wash skin thoroughly after handling.  
P280 Wear eye protection/face protection.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337+P313 If eye irritation persists: Get medical advice/attention.

**Supplemental information:** No Additional Information

Precautionary statements are listed according to the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Annex III. Regulations in individual countries/regions may determine which statements are required on the product label. See product label for specifics.

**Hazards not otherwise classified:****Physical hazards not otherwise classified:** No Additional Information**Health hazards not otherwise classified:** No Additional Information

See Section 11 for toxicological information.

**SECTION 3: Composition/information on ingredients****Substance:**

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Weight%</u>
0000532-32-1	Sodium benzoate	98-100

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, non-hazardous, and/or present at amounts below reportable limits.

**SECTION 4: First-aid measures****Description of first aid measures:**

**General:** If irritation or other symptoms occur or persist from any route of exposure, remove the affected individual from the area: see a physician/get medical attention.

**Eye contact:** Immediately flush eyes with plenty of clean water for an extended time, not less than fifteen (15) minutes. Flush longer if there is any indication of residual chemical in the eye. Ensure adequate flushing of the eyes by separating the eyelids with fingers and roll eyes in a circular motion. If eye irritation persists: Get medical advice/attention.

**Skin contact:** Wash the affected area thoroughly with plenty of soap and water. Get medical attention if symptoms occur.

**Inhalation:** If affected, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a POISON CENTER or doctor/physician if you feel unwell.

**Ingestion:** Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse out the mouth with water. Get medical attention immediately.

**Protection of first aid responders:** Wear proper personal protective clothing and equipment.

**Most important symptoms and effects, both acute and delayed:** Coughing, Irritation. Preexisting sensitization, skin and/or respiratory disorders or diseases may be aggravated. See section 11 for additional information.

**Indication of any immediate medical attention and special treatment needed, if necessary:** Treat symptomatically.

**SECTION 5: Fire-fighting measures**

**NFPA flammability class:** N/A (Combustible solid)

**Extinguishing media:**

**Suitable:** Use water spray, dry chemical, or foam. Carbon dioxide may be ineffective on larger fires due to a lack of cooling capacity which may result in reignition.

**Unsuitable:** Avoid hose streams or any method which will create dust clouds.

**Special hazards arising from the chemical:**

**Unusual fire/explosion hazards:** Concentrated dust/air combinations may produce explosive conditions. As with all organic dusts, fine particles suspended in air in critical proportions and in the presence of an ignition source may ignite and/or explode. Dust may be sensitive to ignition by electrostatic discharge, electrical arcs, sparks, welding torches, cigarettes, open flame, or other significant heat sources. As a precaution, implement standard safety measures for handling finely divided organic powders. See Section 7 for suggested measures.

**Hazardous combustion products:** Irritating or toxic substances may be emitted upon burning, combustion or decomposition. See section 10 (Hazardous decomposition products) for additional information.

**Special protective equipment and precautions for fire-fighters:** Water spray (fog) can be used to absorb heat and to cool and protect surrounding exposed material. Avoid hose streams or any method which will create dust clouds. Wear self-contained

breathing apparatus (SCBA) equipped with a full facepiece and operated in a pressure-demand mode (or other positive pressure mode) and approved protective clothing. Personnel without suitable respiratory protection must leave the area to prevent significant exposure to hazardous gases from combustion, burning or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

See section 9 for additional information.

## SECTION 6: Accidental release measures

**Personal precautions, protective equipment and emergency procedures:** See Section 8 for recommendations on the use of personal protective equipment. If spilled in an enclosed area, ventilate. Avoid raising powdered material due to explosion hazard. Use spark-proof and explosion-proof equipment. If inhalation of dust cannot be avoided, wear an approved particulate respirator. Personal Protective Equipment must be worn.

**Environmental precautions:** Do not flush product into public sewer, water systems or surface waters.

**Methods and materials for containment and cleaning up:** Contain spill. Wear proper personal protective clothing and equipment. Using care to avoid dust generation, vacuum or sweep into a closed container for reuse or disposal. Use approved industrial vacuum cleaner for removal. Avoid causing dust. Place into labeled, closed container; store in safe location to await disposal. Change contaminated clothing and launder before reuse.

## SECTION 7: Handling and storage

**Precautions for safe handling:** As with any chemical product, use good laboratory/workplace procedures. Wash thoroughly after handling this product. Always wash up before eating, smoking or using the facilities. Use under well-ventilated conditions. Avoid eye and skin contact. Avoid drinking, tasting, swallowing or ingesting this product. Avoid routine inhalation of dust of any kind. Exercise care when emptying containers, sweeping, mixing or doing other tasks which can create dust. Wash contaminated clothing before reuse. Provide eyewash fountains and safety showers in the work area. As a precaution to control dust explosion potential, implement the following safety measures: Eliminate ignition sources (e.g., sparks, static buildup, excessive heat, etc.). In general, dust of organic materials is a static charge generator which may be ignited by electrostatic discharge, electrical arcs, sparks, welding torches, cigarettes, open flame, or other significant heat sources. Use spark-proof tools and equipment. Bond, ground and properly vent conveyors, dust control devices and other transfer equipment. Prohibit flow of polymer, powder or dust through non-conductive ducts, vacuum hoses or pipes, etc.; only use grounded, electrically conductive transfer lines when pneumatically conveying product. Good housekeeping and controlling of dusts are necessary for safe handling of product. Prevent accumulation of dust (e.g., well-ventilated conditions, promptly vacuuming spills, cleaning overhead horizontal surfaces, etc.). A properly engineered explosion suppression system must be considered. See standards such as the National Fire Protection Association NFPA 654, "Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids"; NFPA 69, "Standard on Explosion Prevention Systems"; NFPA 68, "Standard on Explosion Protection by Deflagration Venting"; NFPA 77, "Recommended Practice on Static Electricity" and other standards as the need exists.

**Conditions for safe storage, including any incompatibilities:** Store cool and dry, under well-ventilated conditions. Store this material away from incompatible substances (see section 10). Do not store in open, unlabeled or mislabeled containers. Keep container closed when not in use. Do not reuse empty container without commercial cleaning or reconditioning. Product will absorb water vapor (hygroscopic).

## SECTION 8: Exposure controls / personal protection

**Control parameters:**

**Occupational exposure limits (OEL):**

<u>Chemical Name</u>	<u>ACGIH - TWA/Ceiling</u>	<u>ACGIH - STEL</u>		
Sodium benzoate	N/E			
<u>Chemical Name</u>	<u>OSHA - PEL</u>	<u>OSHA - STEL</u>	<u>OSHA - Ceiling</u>	<u>AIHA - WEEL</u>
Sodium benzoate	N/E	N/E	N/E	N/E

N/E=Not established (no exposure limits established for the listed substances for listed country/region/organization).

**Exposure controls:**

**Appropriate engineering controls:** Always provide effective general and, when necessary, local exhaust ventilation (minimum

5 air changes per hour) to draw dust away from workers to prevent routine inhalation. Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the SDS. Eliminate ignition sources (e.g., sparks, static buildup, excessive heat, etc.). Prohibit flow of powder or dust through non-conductive ducts, vacuum hoses, or pipes, etc. Bond, ground, and properly vent conveyors, dust control devices and other transfer equipment. (Ventilation guidelines/techniques may be found in publications such as Industrial Ventilation: American Conference of Governmental Industrial Hygienists, 1330 Kemper Meadow Drive, Cincinnati, OH, 45240-1634, USA.) (<http://www.acgih.org/home.htm>).

**Individual protection measures, such as personal protective equipment (PPE):**

**Eye/face protection:** Safety glasses or goggles required.

**Skin and body protection:** Wear protective gloves. Use good laboratory/workplace procedures including personal protective clothing: labcoat, safety glasses and protective gloves.

**Respiratory protection:** In case of insufficient ventilation, wear suitable respiratory equipment. If inhalation of dust cannot be avoided, wear an approved particulate respirator. Use respirator in accordance with manufacturer's use limitations and OSHA standard 1910.134 (29CFR).

**Further information:** Eyewash fountains and safety showers are recommended in the work area.

**SECTION 9: Physical and chemical properties**

<b>Form:</b>	Granules, pellets or powder	<b>pH:</b>	8 (10% aqueous solution)
<b>Appearance:</b>	White	<b>Relative density:</b>	1.5 @ 20°C
<b>Odor:</b>	Odorless	<b>Partition coefficient (n-octanol/water):</b>	1.88 (Benzoic acid)
<b>Odor threshold:</b>	Not Available	<b>% Volatile by weight:</b>	Not Available
<b>Solubility in water:</b>	556 g/L	<b>VOC:</b>	Not Available
<b>Evaporation rate:</b>	Not Available	<b>Boiling point °C:</b>	Decomposes before boiling
<b>Vapor pressure:</b>	Negligible @ 20 °C	<b>Boiling point °F:</b>	Decomposes before boiling
<b>Vapor density:</b>	Not Available	<b>Flash point:</b>	Not Applicable
<b>Viscosity:</b>	Not Available	<b>Auto-ignition temperature:</b>	Not Available
<b>Melting point/Freezing point:</b>	436 °C (817 °F)	<b>Flammability (solid, gas):</b>	Not flammable (may form combustible dust concentrations in air)
<b>Oxidizing properties:</b>	Not oxidizing	<b>Flammability or explosive limits:</b>	LFL/LEL: Not Available
<b>Explosive properties:</b>	Not explosive		UFL/UEL: Not Available
<b>Decomposition temperature:</b>	450-475 °C (842-887 °F)	<b>Surface tension:</b>	72.9 mN/m @ 20°C (1 g/L)

**Other information:** Amounts specified are typical and do not represent a specification.

**Dust combustibility data:** Product data (Sodium Benzoate EDF, tested sample, particle size 1380 um mean (distribution: 2% <75 um, 14% <500 um) and 0.4% moisture content): Minimum ignition energy (EDF): >1000 mJ with inductance, >1000 mJ without inductance. Minimum explosive concentration (EDF): 50-60 g/m3. Dust explosion class: St1.

Particle size variation is considered a critical factor in regards to dust explosion hazard information. The Minimum Ignition Energy (MIE) of a dust/air mix depends on the particle size the water content and the temperature of the dust. The finer and the dryer the dust the lower the MIE. The following results are not typical of the product as the test samples were processed by milling and/or sieving prior to testing. Unless specified differently below, the test samples were characterized with particle size: 8 um mean (distribution: 100% <75 um) and 0.2-0.3% moisture content.

- Minimum ignition energy: 30-<100 mJ with inductance, 30-<100 mJ without inductance.
- Minimum explosive concentration: 50-60 g/m3.
- Minimum autoignition temperature (MIT dust cloud): 540°C.
- Maximum rate of pressure rise (dP/dT average): 598 bars/sec.
- Maximum pressure of explosion (Pmax average): 7.4 bars-gauge.
- Deflagration Index, Kst: 162 bar-m/sec.
- Dust explosion class: St1.
- Volume resistivity (ambient relative humidity): >10(14) ohm-m (powder, particle size 100% <75 um).
- Volume resistivity (low relative humidity): >10(14) ohm-m (powder, particle size 100% <75 um).
- Charge decay (ambient relative humidity): 4.8 hours (powder, particle size 100% <75 um).
- Charge decay (low relative humidity): 6.8 hours (powder, particle size 100% <75 um).

## SECTION 10: Stability and reactivity

**Reactivity:** None known.

**Chemical stability:** This product is stable.

**Possibility of hazardous reactions:** Hazardous polymerization will not occur.

**Conditions to avoid:** Excessive heat and ignition sources. Contact with water or moist air. Avoid static discharge. Avoid dust formation.

**Incompatible materials:** Avoid strong acids and oxidizing agents. Avoid contact with iron salts.

**Hazardous decomposition products:** Carbon dioxide and carbon monoxide.

## SECTION 11: Toxicological information

**Information on likely routes of exposure:**

**General:** Caution must be exercised through the prudent use of protective equipment and handling procedures to minimize exposure.

**Eyes:** Causes serious eye irritation.

**Skin:** Repeated or prolonged skin contact may cause irritation. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

**Inhalation:** Dust inhalation may cause respiratory irritation.

**Ingestion:** May be harmful if swallowed. Ingestion may cause irritation.

**Symptoms/effects, acute and delayed:** Coughing, Irritation

**Acute toxicity information:** Not classified (based on available data, the classification criteria are not met).

<u>Chemical Name</u>	<u>Inhalation LC50</u>	<u>Species</u>	<u>Oral LD50</u>	<u>Species</u>	<u>Dermal LD50</u>	<u>Species</u>
Sodium benzoate	>12.2 mg/L (4 hours, based on benzoic acid)	Rat/ adult	>2000 mg/kg (weight of evidence)	Rat/ adult	>2000 mg/kg (based on benzoic acid)	Rabbit/ adult

**Skin corrosion/irritation:** Not classified (based on available data, the classification criteria are not met).

<u>Chemical Name</u>	<u>Skin irritation</u>	<u>Species</u>
Sodium benzoate	Non-irritant (OECD 404)	Rabbit/ adult

**Serious eye damage/irritation:** Causes serious eye irritation (Category 2A).

<u>Chemical Name</u>	<u>Eye irritation</u>	<u>Species</u>
Sodium benzoate	Irritant (OECD 405)	Rabbit/ adult

**Respiratory or skin sensitization:** Not classified (based on available data, the classification criteria are not met). READ-ACROSS (BENZOIC ACID): Not a skin sensitizer in the mouse local lymph node assay or Buehler guinea pig test.

<u>Chemical Name</u>	<u>Skin sensitisation</u>	<u>Species</u>
Sodium benzoate	Non-sensitizer (read-across)	Guinea pig and Mouse local lymph node assay

**Carcinogenicity:** Not classified (based on available data, the classification criteria are not met). SODIUM BENZOATE: In a 2-year animal feeding study (2% in food), sodium benzoate was not carcinogenic.

**Carcinogenic status:** Not listed or regulated by IARC (Group 1 or 2), NTP, OSHA, or ACGIH.

**Germ cell mutagenicity:** Not classified (based on available data, the classification criteria are not met). SODIUM BENZOATE: No mutagenic activity was observed in the in-vitro Ames tests. Positive mutagenic effects have been observed in most in-vitro chromosome aberration testing. Sodium benzoate showed no genotoxicity during in-vivo testing.

**Reproductive toxicity:** Not classified (based on available data, the classification criteria are not met). BENZOIC ACID AND BENZOATE SALTS: Reproductive toxicity (benzoic acid), 4-generation oral study in rats: NOAEL (no-observed adverse-effect-level) 500 mg/kg bw/day. Developmental toxicity (sodium benzoate), oral, rats and mice: NOAEL of  $\geq 175$  mg/kg bw/day can be

established for developmental effects.

**Specific target organ toxicity (STOT) - single exposure:** Not classified (based on available data, the classification criteria are not met).

**Specific target organ toxicity (STOT) - repeated exposure:** Not classified (based on available data, the classification criteria are not met). BENZOIC ACID AND BENZOATE SALTS: At higher doses (oral) increased mortality, reduced weight gain, convulsions (central nervous system effects), liver and kidney effects were observed. SODIUM BENZOATE: Repeated dose oral toxicity studies for salts of benzoic acids: NOAEL (no-observed-adverse-effect-level) 1000 mg/kg bw/day. READ-ACROSS (BENZOIC ACID): Repeated dose toxicity study, inhalation: NOAEC (No-Observed-Adverse-Effect-Concentration), inhalation, rat: 250 mg/m<sup>3</sup> (systemic effects); 25 mg/m<sup>3</sup> (local). Local effects including nasal redness, pulmonary fibrosis and inflammatory cell infiltrates in the lungs were observed at lowest dose of 25 mg/m<sup>3</sup> and can be attributed to the irritant properties and to the physico-chemical properties of fine low-solubility particles of benzoic acid. NOAEL (No-Observed-Adverse-Effect-Level), dermal, rabbit - 2500 mg/kg bw/day.

**Aspiration hazard:** Not classified (technical impossibility to obtain the data).

**Other toxicity information:** No additional information available.

## SECTION 12: Ecological information

### Ecotoxicity:

<u>Chemical Name</u>	<u>Species</u>	<u>Acute</u>	<u>Acute</u>	<u>Chronic</u>
Sodium benzoate	Fish	LC50 484 mg/L (96 hours)	LC50 >100 mg/L(96 hours)	NOEC 10 mg/L (144 hours)
Sodium benzoate	Invertebrates	EC50 >100 mg/L (96 hours)	EC50 650 mg/L(48 hours)	N/E
Sodium benzoate	Algae	EC50 >30.5 mg/L (72 hours)	N/E	EC10 6.5 mg/L(72 hours)
Sodium benzoate	Micro-organisms	EC50 >100 mg/L (168 hours)		

### Persistence and degradability:

<u>Chemical Name</u>	<u>Biodegradation</u>
Sodium benzoate	Readily biodegradable

### Bioaccumulative potential:

<u>Chemical Name</u>	<u>Bioconcentration Factor (BCF)</u>	<u>Log Kow</u>
Sodium benzoate	N/E	1.88 (Benzoic acid)

### Mobility in soil:

<u>Chemical Name</u>	<u>Mobility in soil (Koc/Kow)</u>
Sodium benzoate	N/E

**Other adverse effects:** No additional information available.

## SECTION 13: Disposal considerations

Although this product is not defined or designated as hazardous by current provisions of the Federal (EPA) Resource Conservation and Recovery Act (RCRA, 40CFR261), recognize that in appropriate dust/air ratio, dust cloud in air may have explosion potential. Incinerate or landfill waste in a properly permitted facility in accordance with federal, state and local regulations.

See Section 8 for recommendations on the use of personal protective equipment.

## SECTION 14: Transport information

The information below is provided to assist in documentation. It may supplement the information on the package. The package in your possession may carry a different version of the label depending on the date of manufacture. Depending on inner packaging quantities and packaging instructions, it may be subject to specific regulatory exceptions.

**UN number:** N/A

### UN proper shipping name:

Not regulated - See Bill of Lading for Details

### Transport hazard class(es):

U.S. DOT hazard class: N/A

Canada TDG hazard class: N/A  
Europe ADR/RID hazard class: N/A  
IMDG Code (ocean) hazard class: N/A  
ICAO/IATA (air) hazard class: N/A

A "N/A" listing for the hazard class indicates the product is not regulated for transport by that regulation.

**Packing group:** N/A

**Environmental hazards:**

**Marine pollutant:** Not Applicable  
**Hazardous substance (USA):** Not Applicable

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:**

<u>Chemical Name</u>	<u>Category</u>
Sodium benzoate	Category Z

**Special precautions for user:** Not Applicable

## SECTION 15: Regulatory information

**Safety, health and environmental regulations specific for the product in question:**

**U.S. federal and state regulations/legislation:**

This SDS has been prepared in accordance with the hazard criteria of the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**U.S. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Reportable Quantity (RQ):**

Not Applicable

**U.S. Superfund Amendments and Reauthorization Act (SARA) - SARA Section 313:**

This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and 40 CFR 372:

None known

**U.S. TSCA Section 12(b) Export Notification:**

This product contains the following chemicals subject to the TSCA Section 12(b) Export Notification (40 CFR 707, Subpart D):

Lead

**California Proposition 65:**

The following ingredient(s) present in the product is [are] known to the State of California to cause cancer:

None known to be present or none in reportable amounts for occupational exposure as per OSHA's approval of the California Hazard Communication Standard, Federal Register, page 31159 ff, 6 June 1997.

The following ingredient(s) present in the product is [are] known to the State of California to cause birth defects or other reproductive harm:

None known to be present or none in reportable amounts for occupational exposure as per OSHA's approval of the California Hazard Communication Standard, Federal Register, page 31159 ff, 6 June 1997.

**Notes:** No additional information

**Canada regulations/legislation:**

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

**Notes:** No additional information

**Chemical inventories:**

<u>Regulation</u>	<u>Status</u>
Australian Inventory of Industrial Chemicals (AIIC):	Y

<u>Regulation</u>	<u>Status</u>
Canadian Domestic Substances List (DSL):	Y
Canadian Non-Domestic Substances List (NDSL):	N
China Inventory of Existing Chemical Substances (IECSC):	Y
European EC Inventory (EINECS, ELINCS, NLP):	Y
Japan Existing and New Chemical Substances (ENCS):	Y
Japan Industrial Safety and Health Law (ISHL):	Y
Korean Existing and Evaluated Chemical Substances (KECL):	Y
New Zealand Inventory of Chemicals (NZIoC):	Y
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Y
Taiwan Inventory of Existing Chemicals:	Y
U.S. Toxic Substances Control Act (TSCA) (Active):	Y

A "Y" listing indicates all intentionally added components are either listed or are otherwise compliant with the regulation. A "N" listing indicates that for one or more components: 1) there is no listing on the public inventory (or is not on the ACTIVE inventory for U.S. TSCA); 2) no information is available; or 3) the component has not been reviewed. A "Y" for New Zealand may mean that a qualified group standard may exist for the components in this product.

**Europe REACH (EC) 1907/2006:** Applicable components are registered, exempt or otherwise compliant. REACH is only relevant to substances either manufactured or imported into the EU. Emerald Performance Materials has met its obligations under the REACH regulation. REACH information regarding this product is provided for informational purposes only. Each Legal Entity may have differing REACH obligations, depending on their place in the supply chain. For material manufactured outside of the EU, the importer of record must understand and meet their specific obligations under the regulation.

## SECTION 16: Other information

**SDS Revision date:** 2020-10-07

**HMIS (Hazardous Materials Identification System) Ratings:**

**Health:** 2      **Flammability:** 1      **Physical hazard:** 0      **Personal Protection:** X

**NFPA (National Fire Protection Association) Ratings:**

**Health:** 2      **Flammability:** 1      **Instability:** 0      **Special hazards:**

Key: 0=Insignificant; 1=Slight; 2=Moderate; 3=High; 4=Extreme. An asterisk appearing after the HMIS Health numerical rating denotes a chronic hazard.

Hazardous Materials Identification System (HMIS), National Paint and Coating Association, rating applies to product "as packaged" (i.e., ambient temperature). Ratings are based upon HMIS® III and NFPA 704 (2007). An asterisk appearing after the HMIS Health® III numerical rating denotes a chronic hazard. National Fire Protection Association (NFPA) rating identifies the severity of hazards of material during a fire emergency (i.e., "on fire").

**Legend:**

- ACGIH: American Conference of Governmental Industrial Hygienists
- AIHA WEEL: American Industrial Hygiene Association (AIHA) Workplace Environmental Exposure Level (WEEL)
- N/A: Not Applicable
- N/E: None Established
- STEL: Short Term Exposure Limit
- TWA: Time Weighted Average (exposure for 8-hour workday)

**Users Responsibility/Disclaimer of Liability:**

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this product. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state, and local laws and local regulations remains the responsibility of the user.

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of your operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this bulletin should be provided to your employees or customers. It is your responsibility to develop appropriate work practice guidelines and employee instructional programs for your operation.