



# Spent Pickle Liquor (Spent Acid)

## SDS

### Section 1 – Identification

**Identification Used on Label: Spent Pickle Liquor (Spent Acid)**

**Other names:** Ferrous Chloride Solution., Waste Pickle Liquor, Waste Acid, Ferrous Metal Pickling

**Recommended Use:** None

**Name, Address, and Telephone Number:**

Hanna Steel Corporation

Phone number : (800)633-8252 (8:00 am to 5:00 pm)

4527 Southlake Pkwy

FAX: (205)820-5200

Hoover, AL 35244

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

### Section 2 – Hazard(s) Identification

**Classification of the Chemical:** Ferrous Chloride Solution 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 LABELING 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.

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

Hazard Symbol	Hazard Classification	Signal Word	Hazard Statement(s)	Precautionary Statement(s)
	Eye Irritation - 1	Danger	Causes severe eye damage.	Wear protective gloves / eye protection / face protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. If in eyes: Rinse with water for 20 minutes. Remove contact lenses and continue rinsing. If on skin: Rinse with water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing If swallowed: Rinse Mouth. Call a poison center or doctor if symptoms of illness develop.
	Skin Irritation – 2 Acute Toxicity Oral - 4		Causes skin irritation. Harmful if swallowed.	

**Hazards Not Otherwise Classified:** None Known

**Unknown Acute Toxicity Statement (mixture):** None Known

### Section 3 – Composition/Information on Ingredients

**Chemical Name, Common Name (Synonyms), CAS Number and Other Identifiers, and Concentration::**

Chemical Name	CAS Number	EC Number	% Volume
Ferrous Chloride	7758-94-3	231-843-4	14 - 28
Hydrochloric Acid	7647-01-0	231-595-7	5 - 12
Water	7732-18-5	231-791-2	60 - 80

EC- European Community

CAS- Chemical Abstract Service

## Spent Pickle Liquor

### Section 4 – First-Aid Measures

**Description of Necessary Measures:**

- **Inhalation:** If inhaled: Remove person to fresh air and keep comfortable for breathing.
- **Eye Contact:** If in eyes: Rinse with water for 20 minutes. Remove contact lenses. Continue rinsing
- **Skin Contact:** If on skin: Wash with water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing.
- **Ingestion:** If swallowed: Call a poison center or doctor/physician if you feel unwell. Rinse mouth. Do NOT induce vomiting.

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

**Acute Effects:**

- **Inhalation:** May cause damage to respiratory tract with inhalation.
- **Eye:** Causes serious eye damage.
- **Skin:** Exposure may cause skin burns.
- **Ingestion:** Causes damage to gastrointestinal tracts with oral exposures. Causes damage to cardiovascular system following oral exposure.

**Chronic Effects:**

Individuals with chronic respiratory disorders (i.e., asthma, chronic bronchitis, emphysema, etc.) may be adversely affected by low level exposures. 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

**Suitable (and unsuitable) Extinguishing Media:** Use extinguishers appropriate for surrounding materials.

**Specific Hazards Arising from the Chemical:** Hydrogen chloride fumes may form during firefighting.

**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 acidic 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 should not be used.

### Section 6 - Accidental Release Measures

**Personal Precautions, Protective Equipment and Emergency Procedures:** For spills, 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.

**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

**Precautions for Safe Handling:** Wear protective gloves / eye protection / face protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Emergency safety showers and eye wash stations should be present in every location where this material could come in contact with any part of the body.

**Conditions for Safe Storage, Including any Incompatibilities:** Store away from incompatible materials.

### Section 8 - Exposure Controls / Personal Protection

**Occupational Exposure Limits (OELs):** The following exposure limits are offered as reference

Ingredients	OSHA PEL <sup>1</sup>	ACGIH TLV <sup>2</sup>	NIOSH REL <sup>3</sup>	IDLH <sup>4</sup>
<b>Ferrous Chloride</b>	10 mg/m <sup>3</sup> (as iron oxide fume)	1.0 mg/m <sup>3</sup> (as iron salts (soluble, as Fe)	1.0 mg/m <sup>3</sup> (as iron salts (soluble, as	NE
<b>Hydrochloric Acid</b>	"C" 5.0 ppm	"C" 2.0 ppm	"C" 5.0 ppm	50 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.

## Spent Pickle Liquor

### Section 8 - Exposure Controls / Personal Protection (continued)

#### Occupational Exposure Limits (OELs) (continued)

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.

**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.

#### 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 Acid gas/Particulate filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with an Acid gas/Particulate 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 gloves.
- **Other Protective Equipment:** An eyewash fountain and deluge shower should be readily available in the work area.

### Section 9 - Physical and Chemical Properties

**Appearance (physical state, color, etc.):** Greenish-yellow liquid.

**Odor:** Slightly pungent, irritating odor.

**Odor Threshold:** ND

**pH:** ND

**Melting Point/Freezing Point:** ND

**Initial Boiling Point and Boiling Range:** Approx. 220°F, 104.4°C

**Flash Point:** NA

**Evaporation Rate:** NA

**Flammability (solid, gas):** Not flammable

NA - Not Applicable

ND - Not Determined for product as a whole

**Upper/lower Flammability or Explosive Limits:** NA

**Vapor Pressure:** ND

**Vapor Density (Air = 1):** ND

**Relative Density:** ~ 1.1-1.25 SG

**Solubility(ies):** Soluble

**Partition Coefficient n-octanol/water:** NA

**Auto-ignition Temperature:** ND

**Decomposition Temperature:** ND

**Viscosity:** ND

### Section 10 - Stability and Reactivity

**Reactivity:** Not Determined (ND)

**Chemical Stability:** Spent Pickle Liquor is stable under normal storage and handling conditions.

**Possibility of Hazardous Reaction:** None Known.

**Conditions to Avoid:** Hydrochloric acid is highly corrosive to most metals.

**Incompatible Materials:** Hydroxides, amines, alkalis, copper, brass, zinc.

**Hazardous Decomposition Products:** Chlorine and other toxic vapors may be released at elevated temperatures.

### Section 11 - Toxicological Information

**Information on Toxicological Effects:** The following toxicity data has been determined for Spent Pickle Liquor 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

Hazard Classification	Hazard Category		Hazard Symbols	Signal Word	Hazard Statement
	EU	OSHA			
<b>Acute Toxicity Hazard</b> (covers Categories 1-4)	4	4 <sup>a</sup>		<b>Warning</b>	Harmful if swallowed.
<b>Skin Irritation</b> (covers Categories 1A, 1B, and 2)	NR	2 <sup>b</sup>		<b>Warning</b>	Causes skin irritation.
<b>Eye Damage/Irritation</b> (covers Categories 1, 2A and 2B)	1	1 <sup>c</sup>		<b>Danger</b>	Causes severe eye damage.

## Spent Pickle Liquor

### Section 11 - Toxicological Information (continued)

#### Information on Toxicological Effects: (continued)

\* 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<sub>50</sub> or LD<sub>50</sub> has been established for **Ferrous Chloride Solution**. The following data has been determined for the components:

- **Iron Oxide:** Rat LD<sub>50</sub> = 700 mg/kg  
Rabbit LD<sub>50</sub> = 900 mg/kg
- **Ferrous Chloride:** Rat LD<sub>50</sub> = 500 mg/kg  
Rat LD<sub>50</sub> = 29.74 mg/kg(REACH)  
Rat LD<sub>50</sub> = 450 mg/kg Toxnet

b. Skin (Dermal) Irritation data

- **Hydrochloric Acid:** Corrosive.
- **Ferrous Chloride:** Prolonged skin contact may cause irritation.

c. Eye Irritation data

- **Hydrochloric Acid:** Corrosive
- **Ferrous Chloride:** Rabbit: Irreversible effect on eye (Corrosive) (REACH).

d. No Respiratory Sensitization data available

e. No Aspiration Hazard data available

f. Germ Cell Mutagenicity data

- **Hydrochloric Acid:** Not active. Any positive responses seen as pH artifacts.

g. Carcinogenicity: IARC, NTP, and OSHA do not list **ingredients** as carcinogens.

- **Hydrochloric Acid:** Not carcinogenic in 2 year inhalation study in rats at concentrations up to 10 ppm. IARC Cat 3, ACGIH A4.

h. No Toxic Reproduction data available

i. Specific Target Organ Toxicity (STOT) following a Single Exposure data

- **Hydrochloric Acid:** HSDB reports respiratory tract and gastrointestinal tract irritation or corrosion.
- **Ferrous Chloride:** HSDB reports damage occurs in blood vessels in poisoning.

j. Specific Target Organ Toxicity (STOT) following Repeated Exposure data

- **Hydrochloric Acid:** Respiratory tract irritation observed at 10 ppm and above.

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

#### Acute Effects by Component:

- **FERROUS CHLORIDE:** Signs and symptoms of severe poisoning with large amounts of ferrous salts consist of abdominal pain, diarrhea, or vomiting brown or bloody stomach contents, pallor or cyanosis, lassitude, drowsiness, hyperventilation due to acidosis, and cardiovascular collapse. If death does not occur within 6 hours, there may be a transient period of apparent recovery, followed by death in 12 to 24 hours. The corrosive injury to the stomach may result in subsequent pyloric stenosis or gastric scarring. Hemorrhagic gastroenteritis and hepatic damage are prominent findings at autopsy.
- **HYDROCHLORIC ACID:** The toxicity of HCl is related to exposure to high concentrations of acid. The acid causes irritation to skin, eyes, respiratory tract and other exposed areas. Skin and eye Irritation of HCl aqueous solutions are dependent on concentration of HCl. Aqueous solutions of HCl up to 10% were not irritating to skin in rabbits. However a 15% solution and higher was corrosive to rabbit skin. Aqueous solutions of HCl of 10% and over were corrosive to eye irritation. However, in humans, a 4% solution was slightly irritating to skin of humans.

#### Delayed (chronic) Effects by Component:

- **FERROUS CHLORIDE:** Repeated ingestion may cause liver damage.
- **HYDROGEN CHLORIDE:** Respiratory tract irritation observed at 10 ppm and above in repeat-dose inhalation studies.

### Section 12 - Ecological Information

**Eco toxicity (aquatic & terrestrial):** No Data Available for the product

**Persistence & Degradability:** No Data Available

**Bio accumulative Potential:** No Data Available

**Mobility (in soil):** No Data Available

## Spent Pickle Liquor

### Section 12 - Ecological Information (continued)

**Other Adverse Effects:** None Known

**Additional Information:**

**Hazard Category:** No Category

**Signal Word:** No Signal Word

**Hazard Symbol:** No Hazard Symbol

**Hazard Statement:** No Hazard Statement

### 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 (EWC): 11 01 05 (waste pickling acids), 16 03 (off specification batches and unused products).

**Please note this information is for Ferrous Chloride Solution in its original form. Any alterations can void this information.**

### Section 14 - Transport Information

**Transportation Information:**

**US Department of Transportation (DOT)** under 49 CFR 172.101 regulates **Ferrous Chloride, solution** 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.

**Shipping Name:** Ferrous chloride, solution

**Shipping Symbols:** D

**Hazard Class:** 8

**UN No** NA1760

**Packing Group:** II

**DOT/ IMO Label:** 8

**Special Provisions (172.102):** B3,IB2, T11, TP2, TP27

**Packaging Authorizations**

a) **Exceptions:** 154

b) **Non-bulk:** 202

c) **Bulk:** 242

**Quantity Limitations**

a) **Passenger, Aircraft, or Railcar:** 1L

b) **Cargo Aircraft Only:** 30L

**Vessel Stowage Requirements**

a) **Vessel Stowage:** B

b) **Other:** 40

**DOT Reportable Quantities:** NA

**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 **Ferrous Chloride Solution** as a hazardous material.

**Shipping Name:** Corrosive Liquid, N.O.S.

**Classification Code:** 8

**UN No.:** UN1760

**Packing Group:** II ADR

**Label:** NA Special

**Provisions:** 274 Limited

**Quantities:** 1L

**Packaging**

a) **Packing Instructions:** P001

b) **Special Packing Provisions:** NA

c) **Mixed Packing Provisions:** NA

**Portable Tanks & Bulk Containers**

a) **Instructions:** T11

b) **Special Provisions:** TP2, TP27

**International Air Transport Association (IATA)** regulates **Ferrous Chloride Solution** as a hazardous material.

**Shipping Name:** Corrosive Liquid, N.O.S.

**Class/Division:** 8

**Hazard Label (s):** Corrosive

**UN No.:** UN1760

**Packing Group:** II

**Excepted Quantities (EQ):** E2

**Passenger & Cargo Aircraft Limited Quantity (EQ)**

**Pkg Inst:** Y808

**Max Net Qty/Pkg:**  
0.5 L

**Pkg Inst:** 808

**Max Net Qty/Pkg:**  
1L

**Cargo Aircraft Only**

**Pkg Inst:** 812

**Max Net Qty/Pkg:**  
30L

**Special Provisions:**  
NA

**ERG Code:** 8L

Pkg Inst – Packing Instructions

Max Net Qty/Pkg – Maximum Net Quantity per Package

ERG – Emergency Response Drill Code

**Transport Dangerous Goods (TDG) Classification:** **Ferrous Chloride Solution** does not have a TDG classification.

## Spent Pickle Liquor

### Section 15 - Regulatory Information

**State Regulations:** The product, **Ferrous Chloride Solution** 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, **Spent Pickle Liquor** is not listed as a whole. However individual components are listed.

**Regulatory Information:** The following listing of regulations relating to a product from HANNA Steel 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.

**Section 313 Supplier Notification:** The product, **Ferrous Chloride Solution** 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
7647-01-0	Hydrochloric Acid	7.0 max

### Section 16 - Other Information

**Prepared By:** HANNA Steel Corporation

**Revision History:** 5/15/2015 - Original

**Additional Information:**

**Hazardous Material Identification System (HMIS) Classification**

Health Hazard	3
Fire Hazard	0
Physical Hazard	1

HEALTH= 3, \* Information is taken and medical treatment is given.

FIRE= 0, Materials that will not burn.

PHYSICAL HAZARDS =1, Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures.

**National Fire Protection Association (NFPA)**



HEALTH = 3, Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.

FIRE = 0, Materials that will not burn.

INSTABILITY = 1, Normally stable, but can become unstable at elevated Temperatures and pressures or may react with water with some release of energy, but not violently.

**ABBREVIATIONS/ACRONYMS:**

<b>ACGIH</b>	American Conference of Governmental Industrial Hygienists	<b>NIF</b>	No Information Found
<b>BEIs</b>	Biological Exposure Indices	<b>NIOSH</b>	National Institute for Occupational Safety and Health
<b>CAS</b>	Chemical Abstracts Service	<b>NTP</b>	National Toxicology Program
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act	<b>ORC</b>	Organization Resources Counselors
<b>CFR</b>	Code of Federal Regulations	<b>OSHA</b>	Occupational Safety and Health Administration
<b>CNS</b>	Central Nervous System	<b>PEL</b>	Permissible Exposure Limit
<b>GI, GIT</b>	Gastro-Intestinal, Gastro-Intestinal Tract	<b>PNOR</b>	Particulate Not Otherwise Regulated
<b>HMIS</b>	Hazardous Materials Identification System	<b>PNOC</b>	Particulate Not Otherwise Classified
<b>IARC</b>	International Agency for Research on Cancer	<b>PPE</b>	Personal Protective Equipment
<b>LC50</b>	Median Lethal Concentration	<b>ppm</b>	parts per million
<b>LD50</b>	Median Lethal Dose	<b>RCRA</b>	Resource Conservation and Recovery Act
<b>LD<sub>Lo</sub></b>	Lowest Dose to have killed animals or humans	<b>RTECS</b>	Registry of Toxic Effects of Chemical Substances
<b>LEL</b>	Lower Explosive Limit	<b>SARA</b>	Superfund Amendment and Reauthorization Act
<b>µg/m<sup>3</sup></b>	microgram per cubic meter of air	<b>SCBA</b>	Self-contained Breathing Apparatus
<b>mg/m<sup>3</sup></b>	milligram per cubic meter of air	<b>STEL</b>	Short-term Exposure Limit
<b>mppcf</b>	million particles per cubic foot	<b>TLV</b>	Threshold Limit Value
<b>NFPA</b>	National Fire Protection Association		