



SAFETY DATA SHEET

Issue Date 17-Jul-2020

Revision Date 17-Jul-2020

Version 1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Spent Sulfuric Acid Pickle Liquor/Sludge

Other means of identification

Product Code FRP101

UN/ID No. 1832

Synonyms Spent Sulfuric Acid Pickle Liquor/Sludge: Spent Sulfuric Acid, Pickle Tub Solution, Pickle Liquor/Sludge - Spent, Sulfuric Sludge

Recommended use of the chemical and restrictions on use

Recommended Use Chemical intermediate.

Uses advised against

Details of the supplier of the safety data sheet

Manufacturer Address

ATI, 1000 Six PPG Place, Pittsburgh, PA
15222 USA

Emergency telephone number

Emergency Telephone Chemtrec: 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

This material is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin corrosion/irritation	Category 1A
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Carcinogenicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 2

Label elements

Emergency Overview

Danger

Hazard statements

Causes severe skin burns and eye damage

Causes serious eye damage

May cause an allergic skin reaction

May cause cancer

May cause damage to respiratory track through prolonged and repeated exposure if inhaled



Appearance Dark grey/black liquid/sludge	Physical state Liquid/Sludge	Odor Odorless
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Precautionary Statements - Prevention

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

Do not breathe gas/mist/vapor/spray

Wear protective gloves/protective clothing/eye protection/face protection

Contaminated work clothing should not be allowed out of the workplace

Precautionary Statements - Response

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician

IF ON SKIN (or hair): Wash with plenty of water and soap. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower

If skin irritation or rash occurs: Get medical advice/attention

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Wash contaminated clothing before reuse

Precautionary Statements - Storage

Store in corrosion-resistant container

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

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3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms

Spent Sulfuric Acid Pickle Liquor/Sludge: Spent Sulfuric Acid, Pickle Tub Solution, Pickle Liquor/Sludge - Spent, Sulfuric Sludge.

Chemical Name	CAS No.	Weight-%
Water	7732-18-5	10 - 75
Diron trioxide	1309-37-1	0.1 - 50
Iron	7439-89-6	0.1 - 50
Sulfuric acid	7664-93-9	2 - 25
Calcium dihydroxide	1305-62-0	0 - 7.5
Chromium Oxide	1308-38-9	0 - 5
Nickel monoxide	1313-99-1	0 - 5
Aluminum	7429-90-5	0 - 5
Manganese	7439-96-5	0 - 5
Nickel	7440-02-0	0 - 5
Chromium	7440-47-3	0 - 5

4. FIRST AID MEASURES

First aid measures**Eye contact**

In case of contact with eyes, rinse immediately. If eye irritation persists: Get medical advice/attention.

Skin Contact

Wash off immediately with soap and plenty of water. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing; Call a physician or poison control center immediately.
Ingestion	Do NOT induce vomiting. Have patient drink large quantities of water if able. Call Physician immediately for further instructions.

Most important symptoms and effects, both acute and delayed

Symptoms	May cause acute gastrointestinal effects if swallowed. Contact with skin may cause skin burns. May cause breathing difficulties if inhaled. Contact with eyes may cause burning sensation or redness in the eyes.
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Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Non-combustible.

Unsuitable extinguishing media Non-combustible.

Specific hazards arising from the chemical

Non-combustible.

Hazardous combustion products Hexavalent Chromium (Chromium VI) may cause lung, nasal, and/or sinus cancer.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Use personal protective equipment as required.

For emergency responders Use personal protective equipment as required. Follow Emergency Response Guidebook, Guide No. 137.

Environmental precautions

Environmental precautions Collect spillage to prevent release to the environment.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Wash the spill location thoroughly with water. Neutralize washwaters with soda ash or lime. Respiratory protection may be needed. Skin and eye protection should be used during cleanup.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation, especially in confined areas. Do not breathe gas/mist/vapor/spray.

Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep in corrosion resistant containers.
Incompatible materials	Organic materials, chlorates, carbides, and metals that react with acids, such as aluminum, magnesium, and zinc.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Control parameters**

Chemical Name	ACGIH TLV	OSHA PEL
Water 7732-18-5	-	-
Iron 7439-89-6	-	-
Diron trioxide 1309-37-1	-	-
Sulfuric acid 7664-93-9	TWA: 0.2 mg/m ³ thoracic fraction	TWA: 1 mg/m ³
Calcium dihydroxide 1305-62-0	-	-
Nickel monoxide 1313-99-1	TWA: 0.2 mg/m ³ Ni inhalable fraction	TWA: 1 mg/m ³ Ni
Nickel 7440-02-0	TWA: 1.5 mg/m ³ inhalable fraction	TWA: 1 mg/m ³
Manganese 7439-96-5	TWA: 0.02 mg/m ³ respirable fraction TWA: 0.1 mg/m ³ inhalable fraction TWA: 0.02 mg/m ³ Mn TWA: 0.1 mg/m ³ Mn	(vacated) STEL: 3 mg/m ³ fume (vacated) Ceiling: 5 mg/m ³ Ceiling: 5 mg/m ³ fume Ceiling: 5 mg/m ³ Mn
Chromium Oxide 1308-38-9	-	-
Chromium 7440-47-3	TWA: 0.5 mg/m ³	TWA: 1 mg/m ³
Aluminum 7429-90-5	TWA: 1 mg/m ³ respirable fraction	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction

Appropriate engineering controls

Engineering Controls	Avoid generation of uncontrolled mist. Local exhaust ventilation during processing is recommended.
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Individual protection measures, such as personal protective equipment

Eye/face protection	If a risk of eye injury or irritation is present, appropriate eye protection is recommended; for example, tight-fitting goggles, foam-lined safety glasses, face shield, or other protective equipment that shields the eyes.
Skin and body protection	Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Respiratory protection	When gases/mists/vapors are generated and if exposure limits are exceeded or irritation is experienced, proper approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations	Handle in accordance with good industrial hygiene and safety practice.
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9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties**

Physical state	Liquid/Sludge
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Appearance	Dark grey/black liquid/sludge	Odor	Odorless
Color	Dark grey/black	Odor threshold	Not applicable
Property	Values	Remarks • Method	
pH	<1		
Melting point / freezing point	< 0 °C / < 32 °F		
Boiling point / boiling range	> 100 °C / > 212 °F		
Flash point	-	Not applicable	
Evaporation rate	-		
Flammability (solid, gas)	-	Not flammable	
Flammability Limit in Air			
Upper flammability limit:	-		
Lower flammability limit:	-		
Vapor pressure	-	Not applicable	
Vapor density	-	Not applicable	
Specific Gravity	-		
Water solubility	-	Miscible	
Solubility in other solvents	-		
Partition coefficient	-	Not applicable	
Autoignition temperature	-	Not applicable	
Decomposition temperature	-		
Kinematic viscosity	-	Not applicable	
Dynamic viscosity	-	Not applicable	
Explosive properties	Not applicable		
Oxidizing properties	Not applicable		

Other Information

Softening point	-
Molecular weight	-
VOC Content (%)	Not applicable
Density	-
Bulk density	-

10. STABILITY AND REACTIVITY**Reactivity**

Reacts with organic materials, chlorates, carbides, and metals that react with acids, such as aluminum, magnesium, and zinc.

Chemical stability

Stable under normal conditions.

Possibility of Hazardous Reactions

Reacts with organic materials, chlorates, carbides, and metals that react with acids, such as aluminum, magnesium, and zinc.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid

Heat. Agitation.

Incompatible materials

Organic materials, chlorates, carbides, and metals that react with acids, such as aluminum, magnesium, and zinc.

Hazardous Decomposition Products

Sulfur dioxide may cause increased respiratory symptoms and/or difficulty in breathing. Hexavalent Chromium (Chromium VI) may cause lung, nasal, and/or sinus cancer.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure**Product Information**

Inhalation	May cause cancer by inhalation. May cause damage to respiratory track through prolonged and repeated exposure if inhaled.
Eye contact	Causes severe eye damage.
Skin Contact	Causes severe skin burns. May cause sensitization by skin contact.
Ingestion	Harmful if swallowed.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Water 7732-18-5	-	-	-
Iron 7439-89-6	98,600 mg/kg bw	-	> 0.25 mg/L
Diron trioxide 1309-37-1	> 5000 mg/kg bw	-	> 5 mg/L
Sulfuric acid 7664-93-9	2140 mg/kg bw	-	375 mg/m ³
Calcium dihydroxide 1305-62-0	> 2000 mg/kg bw	> 2,500 mg/kg bw	> 6.04 mg/L
Nickel monoxide 1313-99-1	> 11,000 mg/kg bw	-	> 5.08 mg/L
Nickel 7440-02-0	> 9000 mg/kg bw	-	> 10.2 mg/L
Manganese 7439-96-5	>2000 mg/kg bw	-	>5.14 mg/L
Chromium Oxide 1308-38-9	> 1500 mg/kg bw	-	> 5.41 mg/L
Chromium 7440-47-3	> 3400 mg/kg bw	-	> 5.41 mg/L
Aluminum 7429-90-5	15,900 mg/kg bw	-	> 1 mg/L

Information on toxicological effects

Symptoms	May cause skin burns. May cause burning sensation or redness in the eyes. May cause severe upper respiratory irritation if inhaled. May cause acute gastrointestinal effects if swallowed. May cause sensitization by skin contact.
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Delayed and immediate effects as well as chronic effects from short and long-term exposure

Acute toxicity	Harmful if swallowed.
Skin corrosion/irritation	Causes severe skin burns.
Serious eye damage/eye irritation	Causes severe eye damage.
Sensitization	May cause sensitization by skin contact.
Germ cell mutagenicity	Product not classified.
Carcinogenicity	May cause cancer by inhalation.

Chemical Name	ACGIH	IARC	NTP	OSHA
Sulfuric acid 7664-93-9	A2	Group 1	Known	X
Nickel monoxide 1313-99-1	A1	Group 1	Known	X
Nickel 7440-02-0		Group 1 Group 2B	Known Reasonably Anticipated	X
Chromium 7440-47-3		Group 3		

Reproductive toxicity	Product not classified.
STOT - single exposure	Product not classified.

STOT - repeated exposure
Aspiration hazard

May cause disorder and damage to the: Respiratory system.
Product not classified.

12. ECOLOGICAL INFORMATION

Ecotoxicity

This product as shipped is not classified for aquatic toxicity.

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Water 7732-18-5	-	-	-	-
Iron 7439-89-6	-	The 96 h LC50 of 50% iron oxide black in water to Danio rerio was greater than 10,000 mg/L.	The 3 h EC50 of iron oxide for activated sludge was greater than 10,000 mg/L.	The 48 h EC50 of iron oxide to Daphnia magna was greater than 100 mg/L.
Diiron trioxide 1309-37-1	-	The 96 h LC50 of Diiron trioxide to Danio rerio was greater than or equal to 50,000 mg/L.	The 3 h EC50 of Diiron trioxide for activated sludge was greater than 10,000 mg/L.	The 48 h EC50 of Diiron trioxide to Daphnia magna was greater than or equal to 100 mg/L.
Sulfuric acid 7664-93-9	The 72 h EC50 of Sulfuric acid to Desmodesmus subspicatus was greater than 100 mg/L.	The 96 h LC50 of Sulfuric acid to Lepomis macrochirus was between 16 and 28 mg/L.	The 37 d NOEC of Sodium sulphate for activated sludge was 26 g/L.	The 48 h EC50 of Sulfuric acid to Daphnia Magna was greater than 100 mg/L.
Calcium dihydroxide 1305-62-0	The 72 h EC50 of Calcium Dihydroxide to Pseudokirchneriella subcapitata was 184.57 mg/L.	The 96 h LC50 of Calcium Dihydroxide to Oncorhynchus mykiss was 50.6 mg/L.	The 3 h EC50 of Calcium Dihydroxide for activated sludge was 300.4 mg/L.	The 48-hr EC50 of Calcium Dihydroxide for Daphnia magna was 49.1 mg/L.
Nickel monoxide 1313-99-1	The 72 h EC50 of Nickel to Pseudokirchneriella subcapitata ranged from 81.5 to 148 µg/L.	The 96 h LC50 of Nickel dichloride to Oncorhynchus mykiss was 15.3 mg/L.	The 30 min EC50 of Nickel for activated sludge was 33 mg/L.	The 48h LC50 of Nickel range from 74.4 µg Ni/L to 276 µg Ni/L for Ceriodaphnia dubia.
Nickel 7440-02-0	NOEC/EC10 values range from 12.3 µg/l for Scenedesmus accuminatus to 425 µg/l for Pseudokirchneriella subcapitata.	The 96h LC50s values range from 0.4 mg Ni/L for Pimephales promelas to 320 mg Ni/L for Brachydanio rerio.	The 30 min EC50 of nickel for activated sludge was 33 mg Ni/L.	The 48h LC50s values range from 0.013 mg Ni/L for Ceriodaphnia dubia to 4970 mg Ni/L for Daphnia magna.
Manganese 7439-96-5	The 72 h EC50 of manganese to Desmodesmus subspicatus was 2.8 mg of Mn/L.	The 96 h LC50 of manganese to Oncorhynchus mykiss was greater than 3.6 mg of Mn/L.	The 3 h EC50 of manganese for activated sludge was greater than 1000 mg/L.	The 48 h EC50 of manganese to Daphnia magna was greater than 1.6 mg/L.
Chromium Oxide 1308-38-9	The 72 h EC50 of Chromium hydroxide sulphate to Desmodesmus subspicatus was greater than 848.6 µg/L.	The 96 h LC50 of Chromium oxide to Danio rerio was greater than 10,000 mg/L (solubility of Chromium oxide was 2.9 µg/L).	The 3 h EC50 of Potassium chromium sulphate dodecahydrate was greater than 10,000 mg/L.	-
Chromium 7440-47-3	-	-	-	-
Aluminum 7429-90-5	The 96-h EC50 values for reduction of biomass of Pseudokirchneriella subcapitata in AAP-Medium at pH 6, 7, and 8 were estimated as 20.1, 5.4, and 150.6 µg/L, respectively, for dissolved Al.	The 96 h LC50 of aluminum to Oncorhynchus mykiss was 7.4 mg of Al/L at pH 6.5 and 14.6 mg of Al/L at pH 7.5	-	The 48-hr LC50 for Ceriodaphnia dubia exposed to Aluminium chloride increased from 0.72 to greater than 99.6 mg/L with water hardness increasing from 25 to 200 mg/L.

Other adverse effects

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations. Spent Pickle Liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332) is RCRA Hazardous Waste K062, if disposed.

Contaminated packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

Chemical Name	RCRA - D Series Wastes
Chromium 7440-47-3	5.0 mg/L regulatory level

14. TRANSPORT INFORMATION

DOT Regulated

UN/ID No. 1832

Proper shipping name Sulfuric Acid, Spent

Hazard Class 8

Packing Group II

Reportable Quantity (RQ) "(RQ)", if quantity in an individual container equals or exceeds the Reportable Quantity (RQ) of 5000 pounds of sulfuric acid.

Special Provisions A3, A7, B2, B83, B84, IB2, N34, T8, TP2

Emergency Response Guide Number 137

15. REGULATORY INFORMATION

International Inventories

TSCA Complies

DSL/NDSL Complies

EINECS/ELINCS Complies

ENCS Complies

IECSC Complies

KECL Complies

PICCS Complies

AICS Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372. Sulfuric acid only applies if it is in aerosol form.

Chemical Name	CAS No.	Weight-%	SARA 313 - Threshold Values %
Sulfuric acid - 7664-93-9	7664-93-9	2 - 25	1.0
Nickel monoxide - 1313-99-1	1313-99-1	0 - 5	0.1
Nickel - 7440-02-0	7440-02-0	0 - 5	0.1
Manganese - 7439-96-5	7439-96-5	0 - 5	1.0

Chromium - 7440-47-3	7440-47-3	0 - 5	1.0
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SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Sulfuric acid 7664-93-9	1000 lb			X
Nickel monoxide 1313-99-1		X		
Nickel 7440-02-0		X	X	
Chromium 7440-47-3		X	X	

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs
Sulfuric acid 7664-93-9	1000 lb
Nickel 7440-02-0	100 lb
Chromium 7440-47-3	5000 lb

US State Regulations**California Proposition 65**

This product contains the Proposition 65 chemicals listed below. Proposition 65 warning label available at ATImetals.com.

Chemical Name	California Proposition 65
Sulfuric acid - 7664-93-9	Carcinogen
Nickel monoxide - 1313-99-1	Carcinogen
Nickel - 7440-02-0	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Water 7732-18-5			X
Sulfuric acid 7664-93-9	X	X	X
Nickel monoxide 1313-99-1	X	X	X
Nickel 7440-02-0	X	X	X
Manganese 7439-96-5	X	X	X
Chromium 7440-47-3	X	X	X
Aluminum 7429-90-5	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not Applicable

16. OTHER INFORMATION

<u>NFPA</u>	Health hazards 1	Flammability 0	Instability 0	Physical and Chemical Properties -
<u>HMIS</u>	Health hazards 2*	Flammability 0	Physical hazards 0	Personal protection X
<i>Chronic Hazard Star Legend</i>	<i>* = Chronic Health Hazard</i>			

Issue Date 17-Jul-2020

Revision Date 17-Jul-2020

Revision Note

Updated to comply with GHS

Note:

The information provided in this safety data sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Additional information available from: Safety data sheets and labels available at ATImetals.com