SAFETY DATA SHEET
IRON

1. Identification

Product identifier

Product name IRON

Product number 2062/5502

Recommended use of the chemical and restrictions on use

Application Industrial Use

Details of the supplier of the safety data sheet

Supplier

SIFCO Applied Surface Concepts
5708 E. Schaaf Road
Independence, Ohio 44131
U.S.A.
Tel.: +1 216-524-0099
Fax: +1 216-524-6331
E-Mail: info@sifcoasc.com

Emergency telephone number

Emergency telephone CHEMTREC (United States) (800) 424-9300; CHEMTREC (International) +1 703-527-3887

2. Hazard(s) identification

Classification of the substance or mixture

Physical hazards Not Classified

Health hazards Skin Corr. 1A - H314 Eye Dam. 1 - H318 Repr. 1B - H360FD

Environmental hazards Not Classified

Label elements

Pictogram

Signal word Danger

Hazard statements H314 Causes severe skin burns and eye damage.
H360FD May damage fertility. May damage the unborn child.

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Precautionary statements P260 Do not breathe vapor/ spray.
P264 Wash contaminated skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
P304+P340 If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P501 Dispose of contents/ container in accordance with national regulations.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P302+P352 If on skin: Wash with plenty of water.
P270 Do not eat, drink or smoke when using this product.
P284 [In case of inadequate ventilation] wear respiratory protection.

Contains 2.8%

Other hazards

This product does not contain any substances classified as PBT or vPvB.

3. Composition/information on ingredients

Mixtures

FERROUS SULPHATE **10-15%**
CAS number: 7720-78-7

Classification
Acute Tox. 4 - H302
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319

FORMIC ACID 2.8% **1-5%**
CAS number: 64-18-6

Classification
Skin Corr. 1A - H314
Eye Dam. 1 - H318

BORIC ACID **<1%**
CAS number: 10043-35-3

Classification
Repr. 1B - H360FD

The full text for all hazard statements is displayed in Section 16.

4. First-aid measures

Description of first aid measures

Inhalation Move affected person to fresh air at once. Get medical attention.

Ingestion Get medical attention immediately. Do not induce vomiting.

Skin Contact Remove contaminated clothing immediately and wash skin with soap and water. Continue to rinse for at least 15 minutes and get medical attention.

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Eye contact Remove affected person from source of contamination. Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes and get medical attention.

Most important symptoms and effects, both acute and delayed

Inhalation Coughing, chest tightness, feeling of chest pressure.

Ingestion May cause chemical burns in mouth and throat. May cause stomach pain or vomiting.

Skin contact May cause serious chemical burns to the skin.

Eye contact Causes severe burns. May cause serious eye damage.

Indication of immediate medical attention and special treatment needed

Notes for the doctor No specific recommendations.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media The product is not flammable. Use fire-extinguishing media suitable for the surrounding fire.

Special hazards arising from the substance or mixture

Specific hazards Corrosive gases or vapors.

Advice for firefighters

Protective actions during firefighting Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

Special protective equipment for firefighters Use protective equipment appropriate for surrounding materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Follow precautions for safe handling described in this safety data sheet. Avoid inhalation of vapors. Provide adequate general and local exhaust ventilation.

Environmental precautions

Environmental precautions Do not discharge into drains or watercourses or onto the ground. Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).

Methods and material for containment and cleaning up

Methods for cleaning up Wear suitable protective equipment, including gloves, goggles/face shield, respirator, boots, clothing or apron, as appropriate. Flush contaminated area with plenty of water. Avoid the spillage or runoff entering drains, sewers or watercourses. Collect and dispose of spillage as indicated in Section 13. Wash thoroughly after dealing with a spillage.

Reference to other sections Wear protective clothing as described in Section 8 of this safety data sheet. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

7. Handling and storage

Precautions for safe handling

Usage precautions Avoid spilling. Avoid contact with skin and eyes. Avoid inhalation of vapors and spray/mists. Provide adequate general and local exhaust ventilation.

Conditions for safe storage, including any incompatibilities

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Storage precautions Store in tightly-closed, original container in a dry, cool and well-ventilated place. Protect from freezing and direct sunlight.

Storage class Corrosive storage.

Specific end uses(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.

8. Exposure Controls/personal protection

Control parameters

Occupational exposure limits

FORMIC ACID 2.8%

Long-term exposure limit (8-hour TWA): ACGIH 5 ppm 9.4 mg/m³
Long-term exposure limit (8-hour TWA): OSHA 5 ppm 9 mg/m³
Short-term exposure limit (15-minute): ACGIH 10 ppm 19 mg/m³

BORIC ACID

Long-term exposure limit (8-hour TWA): ACGIH 2 mg/m³ inhalable fraction
Short-term exposure limit (15-minute): ACGIH 6 mg/m³ inhalable fraction
A4

ACGIH = American Conference of Governmental Industrial Hygienists.
OSHA = Occupational Safety and Health Administration.
A4 = Not Classifiable as a Human Carcinogen.

Ingredient comments WEL = Workplace Exposure Limits

Exposure controls

Protective equipment

Appropriate engineering controls As this product contains ingredients with exposure limits, process enclosures, local exhaust ventilation or other engineering controls should be used to keep worker exposure below any statutory or recommended limits, if use generates dust, fumes, gas, vapor or mist.

Eye/face protection Tight-fitting safety glasses.

Hand protection It is recommended that chemical-resistant, impervious gloves are worn. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. It is recommended that gloves are made of the following material: Nitrile rubber.

Other skin and body protection Appropriate footwear and additional protective clothing complying with an approved standard should be worn if a risk assessment indicates skin contamination is possible.

Hygiene measures Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet.

Respiratory protection If ventilation is inadequate, suitable respiratory protection must be worn. Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Appearance Liquid.

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Color	Greenish.
Odor	No characteristic odor.
pH	pH (concentrated solution): 1.4-2.0
Relative density	1.135-1.140 @ 20°C
Other information	Not available.
Volatile organic compound	This product contains a maximum VOC content of FORMIC ACID 32 g/l.

10. Stability and reactivity

Reactivity	There are no known reactivity hazards associated with this product.
Stability	Stable at normal ambient temperatures and when used as recommended.
Possibility of hazardous reactions	Not determined.
Conditions to avoid	Avoid excessive heat for prolonged periods of time.
Materials to avoid	Strong alkalis.
Hazardous decomposition products	None at ambient temperatures.

11. Toxicological information

Information on toxicological effects

Acute toxicity - oral

ATE oral (mg/kg) 3,592.51968504

Acute toxicity - inhalation

ATE inhalation (vapours mg/l) 264.28571429

Inhalation	Vapors irritate the respiratory system.
Ingestion	Causes severe burns. May cause chemical burns in mouth, esophagus and stomach.
Skin Contact	May cause serious chemical burns to the skin.
Eye contact	Causes serious eye damage. Immediate first aid is imperative.
Acute and chronic health hazards	May cause burns in mucous membranes, throat, esophagus and stomach.
Route of entry	Ingestion Inhalation Skin and/or eye contact

Toxicological information on ingredients.

FORMIC ACID 2.8%

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	730.0
Species	Rat

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ATE oral (mg/kg)	730.0
Acute toxicity - inhalation	
Acute toxicity inhalation (LC_{50} vapours mg/l)	7.4
Species	Rat
ATE inhalation (vapours mg/l)	7.4

BORIC ACID

Acute toxicity - oral	
Acute toxicity oral (LD_{50} mg/kg)	4,100.0
Species	Rat
Reproductive toxicity	
Reproductive toxicity - fertility	Suspected of damaging fertility.

12. Ecological Information

Ecotoxicity The product contains a substance which may have hazardous effects on the environment.

Toxicity No data available.

Ecological information on ingredients.

FORMIC ACID 2.8%

Acute toxicity - fish	LC_{50}, 96 hours: 130 mg/l, Brachydanio rerio (Zebra Fish)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: 365 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{80}, 72 hours: 1240 mg/l, Selenastrum capricornutum

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Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: 133 mg/l, Daphnia magna

Persistence and degradability

Persistence and degradability No data available.

Bioaccumulative potential

Bio-Accumulative Potential The product does not contain any substances expected to be bioaccumulating.

Mobility in soil

Mobility The product is soluble in water.

Ecological information on ingredients.

FORMIC ACID 2.8%

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Surface tension	71.5 mN/m @ 20°C/°F

Other adverse effects

Other adverse effects	Not determined.

13. Disposal considerations

Waste treatment methods

General information	Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements.
Disposal methods	Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

14. Transport information

UN Number

UN No. (TDG)	3264
UN No. (IMDG)	3264
UN No. (ICAO)	3264
UN No. (DOT)	3264

UN proper shipping name

Proper shipping name (TDG)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (FORMIC ACID...%)
Proper shipping name (IMDG)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (FORMIC ACID...%)
Proper shipping name (ICAO)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (FORMIC ACID...%)
Proper shipping name (DOT)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (FORMIC ACID...%)

Transport hazard class(es)

TDG class	8
TDG label(s)	8
IMDG Class	8
ICAO class/division	8

Transport labels

Packing group

TDG Packing Group	III
IMDG packing group	III
ICAO packing group	III
DOT packing group	III

Environmental hazards

Environmentally Hazardous Substance
No.

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Special precautions for user

EmS F-A, S-B

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information required.

15. Regulatory information

US Federal Regulations

SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities

Exempt.

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)

Ferrous Sulfate
Final CERCLA RQ: 1000 lbs
Formic Acid
Final CERCLA RQ: 5000 lbs

SARA Extremely Hazardous Substances EPCRA Reportable Quantities

Exempt.

SARA 313 Emission Reporting

Formic Acid

CAA Accidental Release Prevention

Exempt.

SARA (311/312) Hazard Categories

Acute
Chronic

OSHA Highly Hazardous Chemicals

Exempt.

US State Regulations

California Proposition 65 Carcinogens and Reproductive Toxins

Exempt.

California Directors List of Hazardous Substances

Ferrous Sulfate
Formic Acid

Inventories

US - TSCA

All ingredients are present.

16. Other information

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Classification abbreviations and acronyms	Acute Tox. = Acute toxicity Carc. = Carcinogenicity Eye Dam. = Serious eye damage Eye Irrit. = Eye irritation Flam. Liq. = Flammable liquid Muta. = Germ cell mutagenicity Resp. Sens. = Respiratory sensitisation Skin Corr. = Skin corrosion Skin Irrit. = Skin irritation Skin Sens. = Skin sensitisation STOT RE = Specific target organ toxicity-repeated exposure STOT SE = Specific target organ toxicity-single exposure
Revision date	3/9/2015
Revision	1
Hazard statements in full	H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H315 Causes skin irritation. H318 Causes serious eye damage. H319 Causes serious eye irritation. H360FD May damage fertility. May damage the unborn child.
NFPA - instability hazard	Normally stable. (0)
NFPA - health hazard	Temporary incapacitation, injury. (2)
NFPA - flammability hazard	Will not burn. (0)