

SAFETY DATA SHEET

1. Identification

Product identifier Iron Reagent #1

Product code R-0851

Recommended useUse as directed by manufacturer for purposes directly related to water testing.

Recommended restrictions None known

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name Taylor Technologies, Inc.

Address 31 Loveton Circle

Sparks, MD 21152

United States

Telephone (410) 472-4340 Monday—Friday, 8:00 a.m.–4:30 p.m.

Website www.taylortechnologies.com

E-mail Not available
Emergency phone number (800) 837-8548

2. Hazard(s) identification

Physical hazards This mixture does not meet the classification criteria according to OSHA HazCom 2012.

Health hazards Acute toxicity, inhalation Category 4

Acute toxicity, oral Category 4

Eye damage/eye irritation Category 1

Sensitization, skin Category 1

Skin corrosion/irritation Category 1

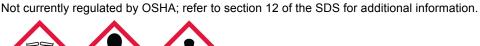
Specific target organ toxicity, repeated Category 2

exposure

Specific target organ toxicity, single exposure Category 3 Respiratory tract irritation

Environmental hazards

Label elements









Signal word Danger

Hazard statement Harmful if inhaled. Harmful if swallowed. Causes severe skin burns and eye damage. May cause

allergic skin reaction. May cause respiratory irritation. May cause damage to organs through

prolonged or repeated exposure.

Precautionary statement

Prevention Do not breathe mist or vapor. Use only outdoors or in a well-ventilated area. Wash skin

thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Do not eat, drink, or smoke when using this product. Wash skin thoroughly after

handling.

Response IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Call a physician or poison control

center if you feel unwell.

IF ON SKIN (OR HAIR): Take off immediately all contaminated clothing. Rinse skin with

water.

Wash contaminated clothing before reuse.

IF SKIN IRRITATION OR RASH OCCURS: Get medical advice/attention.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Immediately call a physician or poison control center if you feel unwell.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if

present and easy to do. Continue rinsing.

Immediately call a physician or poison control center.

Storage Store locked up. Store in a well-ventilated place. Keep container tightly closed.

Dispose of contents/container in accordance with local/regional/national/international

regulations.

Hazard(s) not otherwise classified None
Supplemental information None

Disposal

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Deionized water	Dihydrogen oxide	7732-18-5	70–80
Hydrochloric acid	Muriatic acid; Hydrogen chloride	7647-01-0	5–10
Hydroxylammonium chloride	Hydroxylamine hydrochloride	5470-11-1	5–10
Other components below reportable levels			0.01–0.1

4. First-aid measures

Inhalation Move to fresh air. Give oxygen or artificial respiration if needed. Get medical attention

immediately.

Skin contact Immediately flush skin with running water for at least 20 minutes. Immediately take off all

contaminated clothing. Call a physician or poison control center immediately. Chemical burns

must be treated by a physician. Wash contaminated clothing before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if

present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Call a physician or poison control center immediately. Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless

directed by physician. If vomiting occurs, keep head low so that stomach content does not get

into the lungs.

Most important symptoms/effects, acute and delayed

Ingestion

Direct skin contact may cause corrosive skin burns, deep ulcerations, and possibly permanent scarring. Direct contact with concentrated solutions may be corrosive to the eyes and may cause severe damage, including blindness. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Inhalation of mists can cause severe respiratory irritation. Symptoms may include coughing, choking, and wheezing. Inhalation could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed.

Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus, and possibly the digestive tract. Symptoms may include abdominal pain, vomiting, burns, perforations, or bleeding. Prolonged or repeated exposure may cause damage to the blood system. Ingestion of large amounts may affect oxygen transport in the blood and blood system, causing methemoglobinemia. Symptoms may include cyanosis (bluish discoloration of the skin).

Prolonged or repeated overexposure may cause damage to the kidneys and liver.

Indication of immediate medical attention and special treatment needed

General information

Provide general supportive measures and treat symptomatically. Immediate medical attention is required.

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. Firefighting measures

Suitable extinguishing media
Unsuitable extinguishing
media

Carbon dioxide. Dry chemical powder. Foam. Water fog. Water spray. Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical

Special protective equipment and precautions for firefighters

Firefighting

Specific methods

General fire hazards

equipment/instructions

During fire, gases hazardous to health may be formed.

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Firefighters should wear full protective gear. Evacuate the area promptly. Fight fire from upwind to avoid exposure to combustion products. Cool containers/tanks with water spray. Do not get water inside container. Move containers from fire area if it can be done without risk. Prevent fire-extinguishing water from contaminating surface water or the ground water system.

Use standard firefighting procedures and consider the hazards of other involved materials.

Not combustible; however, the product can react with metals to form flammable and explosive

hydrogen gas.

Hazardous combustion

products

Ammonia. Chlorine gas. Hydrogen chloride. Hydrogen gas. Nitrogen oxides. Other irritating

fumes and smoke.

6. Accidental release measures

Personal precautions, protective equipment, and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during cleanup. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

Methods and materials for containment and cleaning up

Large Spills: Ventilate the area. Stop leak if it can be done without risk. Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth, and place into containers. Prevent entry into waterways, sewer, basements, or confined areas. Following product recovery, flush area with water.

Small Spills: Absorb spillage with noncombustible, absorbent material. Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for reuse. For waste disposal, refer to section 13 of the SDS. Contaminated absorbent material may pose the same hazards as the spilled product.

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Environmental precautions

Avoid discharge into drains, watercourses, or onto the ground.

7. Handling and storage

Precautions for safe handling

Persons with recurrent skin eczema or sensitization problems should be excluded from working with this product.

Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. When using, do not eat, drink, or smoke. Keep away from heat and other incompatibles. Avoid prolonged exposure. Wash skin thoroughly after handling. For personal protective equipment, refer to section 8 of the SDS. Observe good industrial hygiene practices. Label containers appropriately.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (refer to section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

U.S. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Hydrochloric acid (CAS 7647-01-0)	Ceiling	7 mg/m ³	Not available
· · · · · · · · · · · · · · · · · · ·	·	5 ppm	Not available
U.S. ACGIH Threshold Limit Values			
Components	Туре	Value	Form
Hydrochloric acid (CAS 7647-01-0)	Ceiling	2 ppm	Not available
U.S. NIOSH: Pocket Guide to Chemica	l Hazards		
Components	Туре	Value	Form
Hydrochloric acid (CAS 7647-01-0)	Ceiling	7 mg/m ³	Vapor
	•	5 nnm	·

Biological limit values

No biological exposure limits noted for the ingredient(s)

Appropriate engineering

controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation. or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

> Eye/face protection Wear safety glasses with side shields (or goggles) and a face shield. Provide an emergency

eyewash fountain and quick-drench shower in the immediate work area.

Skin protection

Hand protection Wear appropriate chemical-resistant gloves. Advice should be sought from glove suppliers.

Other Wear appropriate chemical-resistant clothing

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA

approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure

limits. Advice should be sought from respiratory protection suppliers.

Thermal hazards When necessary, wear appropriate thermal protective clothing.

General hygiene Always observe good personal hygiene measures, such as washing after handling the material considerations

and before eating, drinking and/or smoking. Routinely wash work clothing and protective

equipment to remove contamination.

9. Physical and chemical properties

Appearance

Physical state Liquid **Form** Liquid

Color Clear, colorless to yellow or orange

Odor Odorless Odor threshold Not available

0 1 pН

Melting point/freezing point Not available Initial boiling point and boiling 215°F (102°C)

range

Flash point Not applicable (does not burn)

Evaporation rate Not available Flammability (solid, gas) Not applicable

Upper/lower flammability or explosive limits

Flammability limit, Not applicable

lower (%)

Flammability limit, Not applicable

upper (%)

Explosive limit. Not applicable

lower (%)

Explosive limit, Not applicable

upper (%)

Vapor pressure 17 mm Hq Vapor density 1.3

1.10 g/cm³ Relative density

Solubility(ies)

Solubility (water) Soluble in all proportions

Partition coefficient Not available

(n-octanol/water)

Auto-ignition temperature Not applicable **Decomposition temperature** Not available

Viscosity Not available

Other information

Explosive properties Not applicable

Oxidizing properties Not applicable

Percent volatile 90% Specific gravity 1.10

10. Stability and reactivity

ReactivityThis product is stable and nonreactive under normal conditions of use, storage, and transport.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous

reactions

No dangerous reaction known under conditions of normal use

Conditions to avoid High temperatures. Direct sources of heat. Exposure to light. Direct sunlight. Contact with

incompatible materials. Do not use in areas without adequate ventilation.

Incompatible materials Bases. Cyanides. Formaldehyde. Metal compounds. Metal oxides. Oxidizing agents. Sulfides.

Sulfites.

Hazardous decomposition

products

None known. For hazardous combustion products, refer to section 5 of the SDS.

11. Toxicological information

Information on likely routes of exposure

Inhalation Harmful if inhaled

Skin contactCauses severe skin burnsEye contactCauses serious eye damage

Ingestion Harmful if swallowed. Causes digestive tract burns.

Most important

symptoms/effects, acute

and delayed

Direct skin contact may cause corrosive skin burns, deep ulcerations, and possibly permanent scarring. Direct contact with concentrated solutions may be corrosive to the eyes and may cause severe damage, including blindness. Symptoms may include stinging, tearing, redness, swelling,

and blurred vision.

Inhalation of mists can cause severe respiratory irritation. Symptoms may include coughing, choking, and wheezing. Inhalation could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed.

Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus, and possibly the digestive tract. Symptoms may include abdominal pain, vomiting, burns, perforations, or bleeding. Prolonged or repeated exposure may cause damage to the blood system. Ingestion of

large amounts may affect oxygen transport in the blood and blood system, causing methemoglobinemia. Symptoms may include cyanosis (bluish discoloration of the skin). Prolonged or repeated overexposure may cause damage to the kidneys and liver.

Acute toxicity Harmful if inhaled

Harmful if swallowed

Product Species Test Results Iron Reagent #1 (CAS Mixture) Acute Dermal Rabbit Not available LD_{50} Inhalation LC_{50} Rat Not available Oral LD_{50} Rat 1292 mg/kg Components **Species Test Results**

Hydrochloric acid (CAS 7647-01-0)

Acute

Dermal

LD₅₀ Rabbit Not available

Inhalation

 LC_{50} Rat 3124 mg/L, 1 hour

Oral

 LD_{50} Rabbit 900 mg/kg

Hydroxylammonium chloride

(CAS 5470-11-1)

Acute

Dermal

LD₅₀ Rabbit Not available

Inhalation

LC₅₀ Rat Not available

Oral

 LD_{50} Rat 141 mg/kg

Deionized water (CAS 7732-18-5)

Acute

Dermal

LD₅₀ Rabbit Not available

Inhalation

LC₅₀ Rat Not available

Oral

 LD_{50} Rat >89840 mg/kg

Skin corrosion/irritation Causes severe skin burns
Serious eye damage/eye Causes severe eye damage

irritation

Respiratory sensitization
Not expected to be a respiratory sensitizer

Skin sensitization May cause severe skin sensitization with allergic contact dermatitis symptoms such as swelling,

rash, and eczema

Germ cell mutagenicity Not expected to be mutagenic

Carcinogenicity This product is not considered to be a carcinogen by IARC, NTP, OSHA, or U.S. ACGIH.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1096)

Not regulated

Reproductive toxicityThis product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity,

single exposure

May cause respiratory irritation

Specific target organ toxicity,

repeated exposure

May cause damage to organs through prolonged or repeated exposure

Aspiration toxicity Not expected to be an aspiration hazard

Chronic effects Frequent or prolonged overexposure may affect the kidneys and liver.

12. Ecological information

EcotoxicityThis product is not classified as environmentally hazardous; however, this does not exclude the

possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components Species Test Results

Hydrochloric acid

(CAS 7647-01-0) - Aquatic

Acute

Algae

EC₅₀ Green algae (Selenastrum capricomutum) 0.482 mg/L, 72 hours

Crustacea

EC₅₀ Water flea (Daphnia magna) 0.492 mg/L, 48 hours

Fish

LC₅₀ Carp (Cyprinus carpio communis) 4.92 mg/L, 96 hours

Chronic

Algae

NOEC Green algae (Selenastrum capricomutum) 0.097 mg/L, 72 hours

Hydroxylammonium chloride

(CAS 5470-11-1)

Acute Algae

EC₅₀ Green algae (Selenastrum capricomutum) 0.72 mg/L, 72 hours

Crustacea

 EC_{50} Water flea (Daphnia magna) 1.62 mg/L, 48 hours

Fish

LC50 Fathead minnow (Pimephales promelas) 7.2 mg/L, 96 hours

Chronic Crustacea

NOEC Water flea (Daphnia magna) 0.31 mg/L, 21 days

Persistence and degradability Not available Bioaccumulative potential Not available Mobility in soil Not available

Other adverse effects No other adverse environmental effects (e.g., ozone depletion, photochemical ozone creation

potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose of in sealed containers at licensed waste disposal site. Dispose of

contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose of in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion with the user, the producer, and the waste

disposal company.

Waste from residues/unused

products

Empty containers or liners may retain some product residues. This material and its container

Corrosive liquid, Acidic, Inorganic, N.O.S. (Hydrochloric acid; Hydroxylammonium chloride)

must be disposed of in a safe manner (refer to Disposal instructions).

Empty containers should be taken to an approved waste-handling site for recycling or disposal. Contaminated packaging

Since emptied containers may retain product residue, follow label warnings even after container

is emptied.

14. Transportation information

DOT

UN number UN3264

UN proper shipping name Transport hazard class(es)

Class 8

Subsidiary risk Not listed Label(s) 8

Packing group Ш

Special precautions for user Read safety instructions, SDS, and emergency procedures before handling.

Special provisions B2, IB2, T11, TP2, TP27

Packaging exceptions 154 Packaging, non-bulk 202 242 Packaging, bulk

IATA

UN number UN3264

UN proper shipping name Transport hazard class(es)

Corrosive liquid, Acidic, Inorganic, N.O.S. (Hydrochloric acid; Hydroxylammonium chloride)

Class R

Subsidiary risk Not listed Packing group Ш

Environmental hazards Not listed ERG code 81

Special precautions for user

Other information

Read safety instructions, SDS, and emergency procedures before handling.

Passenger and cargo Allowed aircraft

Cargo aircraft only Allowed

IMDG

UN number UN3264

UN proper shipping name Corrosive liquid, Acidic, Inorganic, N.O.S. (Hydrochloric acid; Hydroxylammonium chloride)

Transport hazard class(es)

Class

Subsidiary risk Not listed

Packing group

Environmental hazards

Marine pollutant Not listed EmS F-A, S-B

Special precautions for user Read safety instructions, SDS, and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and

the IBC Code

DOT

This substance/mixture is not intended to be transported in bulk.



IATA; IMDG

15. Regulatory information

U.S. federal regulationsThis product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication

Standard, 29 CFR 1910.1200.

One or more components are on the U.S. EPA TSCA Inventory list.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated

CERCLA Hazardous Substance (40 CFR 302.4)

Hydrochloric acid (CAS 7647-01-0)

SARA 304 Emergency Release Notification

Not regulated

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1096)

Not regulated

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate hazard — yes

Delayed hazard — yes Fire hazard — no Pressure hazard — no Reactivity hazard — no

SARA 302 Extremely Hazardous Substance

Not regulated

SARA 311/312 Hazardous Chemical

Not regulated

SARA 313 (TRI reporting)

Not regulated

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs)

Not regulated

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Hydrochloric acid (CAS 7647-01-0) 6545

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Hydrochloric acid (CAS 7647-01-0) 20% W/V

DEA Exempt Chemical Mixtures Code Number

Hydrochloric acid (CAS 7647-01-0) 6545

Safe Drinking Water Act (SDWA)

Not regulated

U.S. state regulations

California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not regulated

Massachusetts Right-to-Know Act

Hydrochloric acid (CAS 7647-01-0)

New Jersey Worker and Community Right-to-Know Act

Hydrochloric acid (CAS 7647-01-0)

Pennsylvania Worker and Community Right-to-Know Act

Hydrochloric acid (CAS 7647-01-0)

Rhode Island Right-to-Know Act

Hydrochloric acid (CAS 7647-01-0)

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International inventories

Country(ies) or region	Inventory name	On inventory	
		(yes/no)*	
Australia	Australian Inventory of Chemical Substances (AICS)	yes	
Canada	Domestic Substances List (DSL)	yes	
Canada	Non-Domestic Substances List (NDSL)	no	
China	Inventory of Existing Chemical Substances Produced or Imported in China (IECSC)	yes	
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	yes	
Europe	European List of Notified Chemical Substances (ELINCS)	no	
Japan	Existing and New Chemical Substances (ENCS)	yes	
Korea	Existing Chemicals List (ECL)	yes	
New Zealand	New Zealand Inventory of Chemicals (NZIoC)	yes	
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	yes	
United States & Puerto Rico	Toxic Substances Control Act (TSCA)	yes	

^{*}A "yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(ies).

16. Other information, including date of preparation or last revision

List of abbreviations ACGIH: American Conference of Governmental Industrial Hygienists

AICS: Australian Inventory of Chemical Substances

CAA: Clean Air Act

CAS: Chemical Abstract Services

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act

A "no" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(ies).

CFR: Code of Federal Regulations
CSA: Canadian Standards Association
DEA: Drug Enforcement Agency
DOT: Department of Transportation
DSL: Domestic Substances List

EC: effective concentration ECL: Existing Chemicals List

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

ENCS: Existing and New Chemical Substances

EPA: Environmental Protection Agency

HAP: hazardous air pollutants

HMIS: Hazardous Materials Identification System

HNOC: hazards not otherwise classified

HPA: Hazardous Products Act

HSDB: Hazardous Substances Data Bank

IARC: International Agency for Research on Cancer

IATA: International Air Transport Association

IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous

Chemicals in Bulk

ICAO: International Civil Aviation Organization

IECSC: Inventory of Existing Chemical Substances Produced or Imported in China

IMDG: International Maritime Dangerous Goods

IUCLID: International Uniform Chemical Information Database

LC: lethal concentration

LD: lethal dose

MARPOL: marine pollution

MSHA: Mine Safety and Health Administration NDSL: Non-Domestic Substances List NFPA: National Fire Protection Association

NIOSH: National Institute of Occupational Safety and Health

NOEC: no observable effect concentration NTP: National Toxicology Program

NZIoC: New Zealand Inventory of Chemicals

OECD: Organisation for Economic Co-operation and Development

OEL: occupational exposure limits

OSHA: Occupational Safety and Health Administration

PEL: permissible exposure limits

PICCS: Philippine Inventory of Chemicals and Chemical Substances

PPE: personal protective equipment

RCRA: Resource Conservation and Recovery

Act RQ: reportable quantity

RTECS: Registry of Toxic Effects of Chemical Substances

RTK: right to know

SARA: Superfund Amendments and Reauthorization Act

SDS: Safety Data Sheet

SDWA: Safe Drinking Water Act STEL: short-term exposure limit TLV: threshold limit values

TSCA: Toxic Substances Control Act

TWA: time-weighted average VOC: volatile organic compounds WEL: workplace exposure limit

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