SDS DATE: May 29, 2023

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Iron Assay**
PRODUCT CODES: **Cat# MA-0103**
RESTRICTIONS ON USE: **For laboratory research purposes. Not for drug or household use.**
MANUFACTURER: **AkrivisBio, Inc.**
ADDRESS: **48511 Warm Springs Blvd., Suite 213, Fremont, CA 94539**
EMERGENCY PHONE: **408-739-9315**
OTHER CALLS:
FAX PHONE:
EMAIL: **sds@akrivisbio.com**

SECTION 2: HAZARDS IDENTIFICATION

Component	Description	Volume	Safety Information
Assay Buffer	Proprietary Buffer (contains Thiourea)	25 ml	See below
Ferene S	Liquid (contains Guanidine hydrochloride)	12 ml	See below
Iron Reducer	Liquid	0.7 ml	No hazards
Iron Standard (100 mM)	contains Iron(III) chloride	0.1 ml	See below

Guanidine hydrochloride:
Emergency Overview
GHS Classification: Acute toxicity, (category 4), oral
Eye irritation, (category 2)
Skin irritation, (category 2)
GHS Label elements, including precautionary statements
Pictogram:

Signal word: warning
Hazard statement(s): H302 Harmful if swallowed.
H319 Causes serious eye irritation.
H315 Causes skin irritation.
Precautionary statement(s): P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 IF ON SKIN: Wash with plenty of water/…
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P311 IF exposed or concerned: Call a POISON CENTER/doctor/…

HMIS Classification
Health hazard: 2
Flammability: 0
Physical hazards: 1
NFPA Rating
Health Hazard: 2
Fire: 0
Reactivity Hazard: 1
Potential Health Effects
Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.
Skin: May be harmful if absorbed through skin. May cause skin irritation.
Eyes: May cause eye irritation.
Ingestion: May be harmful if swallowed.

Iron (III) Chloride:
Emergency Overview
GHS Classification: Corrosive to metals (Category 1), Acute toxicity, Oral (Category 4), Skin irritation (Category 2), Serious eye damage (Category 1), Acute aquatic toxicity (Category 2)
GHS Label elements, including precautionary statements
Pictogram:

Signal word: warning
Hazard statement(s): H290 May be corrosive to metals.
H302 Harmful if swallowed.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H401 Toxic to aquatic life.
Precautionary statement(s): P234 Keep only in original container.

P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P273 Avoid release to the environment.
P280 Wear eye protection/ face protection.
P280 Wear protective gloves.
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTer. See doctor/ physician.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P390 Absorb spillage to prevent material damage.
P406 Store in corrosive resistant stainless steel container with a resistant inner liner.
P501 Dispose of contents/ container to an approved waste disposal plant.

HMIS Classification
Health hazard: 2
Flammability: 0
Physical hazards: 0
NFPA Rating
Health Hazard: 2
Fire: 0
Reactivity Hazard: 0
Potential Health Effects
Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.
Skin: May be harmful if absorbed through skin. May cause skin irritation.
Eyes: May cause eye irritation.
Ingestion: May be harmful if swallowed.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	EC-No.	Molecular Weight	Chemical Formula	Concentration
Guanidine hydrochloride	50-01-1	200-002-3	95.53	$CH_5N_3.HCl$	<10%
Ferric chloride	7705-08-0	231-729-4	162.20	Cl_3Fe	<10%

SECTION 4: FIRST AID MEASURES

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact: Wash off with soap and plenty of water. Consult a physician.
In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

SECTION 5: FIRE-FIGHTING MEASURES

Condition of flammability: Not flammable or combustible.
Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Special protective equipment for fire-fighters: Wear self-contained breathing apparatus for firefighting if necessary.
Hazardous combustion products: Hazardous combustion products formed under fire conditions— nitrogen oxides, hydrogen chloride.
Further Information: May explode when heated

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
Environmental precautions: Do not let product enter drains.
Methods for cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling
Avoid inhalation of vapor or mist. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhause ventilation at places where dust is formed.
Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.
Recommended storage temperature: -20°C

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Components	CAS-No.	Value	Control parameters	Basis
Iron trichloride	7705-08-0	TWA	1 mg/m3	USA. ACGIH Threshold Limit Values (TLV)

Remarks:	Upper Respiratory Tract irritation; Skin irritation; varies			
		TWA	1mg/m^3	USA. NIOSH RecommendedExposure Limits

Guanidine hydrochloride:
Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Avoid contact with skin, eyes, and clothing. Wash hands before breaks and immediately after handling the product.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (Isopropanol)

Property	Guanidine hydrochloride	Ferric Chloride
Appearance:	solid	yellow solid
pH:	4.5-5.5	No data available
Water Solubility:	2,150 g/l (20 °C)	No data available
Other Solubility:	No data available	No data available
Boiling Point (°C):	No data available	No data available
Melting Point (°C):	185 °C	304 °C
Flash Point (°C):	No data available	No data available
Ignition Temperature (°C):	No data available	No data available
Density:	No data available	2.800 g/cm3

SECTION 10: STABILITY AND REACTIVITY

Property	Guanidine hydrochloride	Ferric Chloride
Chemical stability:	Stable under recommended storage conditions	
Conditions to avoid:	No data available	No data available
Materials to avoid:	Strong oxidizing agents, Strong acids, Hydrogen fluoride	Strong oxidizing agents, Potassium, Alkali metals, Bases, Exothermic in contact with water, Forms shock-sensitive mixtures with certain other materials
Hazardous decomposition products:	Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NOx), Hydrogen chloride gas, Sodium oxides	No data available

SECTION 11: TOXICOLOGICAL INFORMATION

Guanidine hydrochloride:
Acute oral toxicity: LD50: > 475 mg/kg - Rat - (RTECS)
inhalation: No data available
Acute dermal toxicity: LD50: < 2000 mg/kg - Rabbit - (RTECS)
Skin corrosion/irritation: no data available
Serious eye damage/eye irritation: no data available
Respiratory or skin sensitization: no data available
Germ cell mutagenicity: Rat - Embryo - Morphological transformation; Hamster - Lungs - Sister chromatid exchange
Carcinogenicity: Suspected human carcinogens

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available
Teratogenicity: no data available
Specific target organ toxicity – single exposure (GHS): no data available
Specific target organ toxicity – repeated exposure (GHS): May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard: no data available
Potential Health Effects
Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.
Skin: Harmful if absorbed through skin. Causes skin irritation.
Eyes: Causes eye irritation.
Ingestion: Harmful if swallowed.
Signs and Symptoms of Exposure: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Synergistic effects: no data available
Additional information: RTECS: NC3675000

Ferric Chloride:
Acute toxicity: LD50 Oral - Rat - 1300 mg/kg
inhalation: No data available
dermal: LD50 Dermal - Rabbit - > 2,000 mg/kg
Skin corrosion/irritation: RAbbit - irritation to skin
Serious eye damage/eye irritation: Rabbit - severe eye irritation
Respiratory or skin sensitization: no data available
Germ cell mutagenicity: no data available
Carcinogenicity:
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Reproductive toxicity: no data available
Teratogenicity: no data available
Specific target organ toxicity – single exposure (GHS): no data available
Specific target organ toxicity – repeated exposure (GHS): no data available
Aspiration hazard: no data available
Signs and Symptoms of Exposure: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Synergistic effects: no data available
Additional information: RTECS: LJ9100000

SECTION 12: ECOLOGICAL INFORMATION

Guanidine hydrochloride:
Persistence and degradability: no data available
Toxicity: fish: LC50 - Leuciscus idus (Golden orfe) - 1,759 mg/l
Bioaccumulative potential: no data available
Mobility in soil: no data available
PBT and vPvB assessment: no data available
Other adverse effects: Very toxic to aquatic life with long lasting effects.
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Ferric Chloride:
Persistence and degradability: no data available
Toxicity: fish: LC50 - Pimephales promelas (fathead minnow) - 21.84 mg/l - 96 h
daphnia: EC50 - Daphnia magna (Water flea) - 9.6 mg/l - 48 h
Bioaccumulative potential: no data available
Mobility in soil: no data available
PBT and vPvB assessment: no data available
Other adverse effects: Toxic to aquatic life. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal

SECTION 13: DISPOSAL CONSIDERATIONS

Product: Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solven and burn in a chemical incinerator equipped with an afterburner and scrubber.
Contaminated packaging: Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

Guanidine hydrochloride:

SDS DATE: May 29, 2023

DOT (US): Not dangerous goods.
IMDG: Not dangerous goods.
IATA: Not dangerous goods.

Ferric Chloride:
DOT (US): Not dangerous goods.
IMDG: Not dangerous goods.
IATA: Not dangerous goods.

SECTION 15: REGULATORY INFORMATION

OSHA Hazards: No known OSHA hazards
SARA 302 Components: SARA 302: No chemical in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components: SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title II, Section 313.
SARA 311/312 Hazards: Guanidine hydrochloride: Acute Health Hazard, Chronic Health Hazard
Massachusetts Right To Know Components: Iron trichloride: CAS-No. 7705-08-0 Revision Date 1993-04-24
Pennsylvania Right To Know Components: Guanidine hydrochloride CAS-No. 50-01-1
Iron trichloride: CAS-No. 7705-08-0 Revision Date 1993-04-24
New Jersey Right To Know Components: Guanidine hydrochloride CAS-No. 50-01-1
Iron trichloride: CAS-No. 7705-08-0 Revision Date 1993-04-24

California Prop. 65 WARNING: ⚠ This product can expose you to chemicals including Thiourea, which is known to the State of California to cause cancer. For more information go to **www.P65Warnings.ca.gov .**

EU regulations:

Component	Risk Phrases	Safety Phrases
Guanidine hydrochloride	R22,R36/38, R43, R50, R48/22	S22, S24, S37, S61
Ferric Chloride	R22, R34	S25, S36/37/39, S45

SECTION 16: OTHER INFORMATION

DISCLAIMER:
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. AkrivisBio, Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.