Japan Institute for the Control of Aging (JaICA)

MATERIAL SAFETY DATA SHEET

Date printed: April 17, 2014

Date updated:

SECTION 1: PRODUCT AND DATA SHEET

Product Name:	MC reagent Iron assay kit (Ferrozine method)
Product code:	CFE-005
Manufacture:	Japan Institute for the Control of Aging (JaICA), Nikken SEIL Co., Ltd.
Address:	710-1 Haruoka, Fukuroi, Shizuoka 437-0125, Japan
Emergency Phone:	+81-538-49-0125
Phone:	+81-538-49-0125
FAX:	+81-538-49-1267

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	Concentration	MW	Formula
R-A: Sodium Acetate	127-09-3	< 1 wt%	82,03	$C_2H_3NaO_2$
Guanidine Hydrochloride	50-01-1	< 30 wt%	95.53	$HN=C(NH_2)_2HCl$
Octylphenoxypolyethoxyethanol Nonionic Surfactant	9002-93-1	< 1 wt%	-	$(C_2H_4O)nC_{14}H_{22}O$
L-Ascorbic Acid	50-81-7	< 0.5 wt%	198.11	$C_6H_7NaO_6$
R-R: 3-(2-Pyridyl)-5,6-bis(4-sulfophenyl)-1,2,4-triazine Disodium Salt Hydrate	28048-33-1	< 0.5wt%	514.4	$C_{20}H_{12}N_4Na_2O_6S_2$ xH_2O
Sodium Dodecyl Sulfate	151-21-3	< 0.5wt%	208.3	$C_{12}H_{25}NaO_4S$
MES monohydrate	145224-94-8	< 0.5wt%	213,25	$C_6H_{13}NO_4S \cdot H_2O$
STD: Nitric acid	7697-37-2	< 0.1 wt%	63.01	HNO_3

SECTION 3: HAZARDS IDENTIFICATION

Component	Identification and Emergency Overview
Sodium Acetate	Classification of the substance Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008. Label elements The product does not need to be labelled in accordance with EC directives or respective national laws. Other hazards: none
Guanidine Hydrochloride	Classification of the substance Acute toxicity, Oral (Category 4) Skin irritation (Category 2) Eye irritation (Category 2) Classification according to EU Directives 67/548/EEC oR-A999/45/EC Harmful if swallowed. Irritating to eyes and skin.  WARNING Hazard statement(s):H302 Harmful if swallowed / H315 Causes skin irritation. H319 Causes serious eye irritation. Precautionary statement(s) P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Supplemental Hazard Statements: none R-phrase(s): R22 Harmful if swallowed. / R36/38 Irritating to eyes and skin. S-phrase(s): S22 Do not breathe dust. Other hazards: None
Octylphenoxypolyethoxyethanol Nonionic Surfactant	EMERGENCY OVERVIEW: Harmful by inhalation, in contact with skin and if swallowed. Category of Danger: Harmful , Lachrymator Principle routes of exposure: Skin Inhalation: Harmful by inhalation. Ingestion: Harmful if swallowed. Skin contact: Harmful in contact with skin. Eye contact: Risk of serious damage to eyes Vapors extremely irritating to eyes an respiratory tract ANSI Classification Irritant - eye, skin, respiratory, Irritant - eye, severe Statements of hazard HARMFUL IF SWALLOWED. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR INHALED. CAUSES EYE IRRITATION. Statement of Spill or Leak - ANSI Label Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment. Statement of First Aid If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Call a physician. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. In case of contact, flush eyes with running water for at least 15 minutes. Consult a physician for irritation or any other symptom.

	Precautions - ANSI Label Do not taste or swallow. Wash thoroughly after handling. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Avoid breathing vapors. Avoid prolonged or repeated contact with the skin, eyes or respiratory tract. Wash thoroughly after exposure.
L-Ascorbic Acid	Classification of the substance Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008. Label elements The product does not need to be labelled in accordance with EC directives or respective national laws. Other hazards - none
3-(2-Pyridyl)-5,6-bis(4-sulfophenyl)-1,2,4-triazine Disodium Salt Hydrate	HAZARDS IDENTIFICATION PHYSICAL HAZARDS Not classified HEALTH HAZARDS Skin corrosion/irritation Category 2 Serious eye damage/eye irritation Category 2A ENVIRONMENTAL HAZARDS Not classified  WARNING Hazard statement: Causes skin irritation. Causes serious eye irritation Precautionary statements [Prevention] Wash hands thoroughly after handling. Wear protective gloves/eye protection/face protection. [Response] IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses,if present and easy to do. Continue rinsing.If eye irritation persists: Get medical advice/attention. IF ON SKIN: Gently wash with plenty of soap and water.If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.
Sodium Dodecyl Sulfate	Classification of the substance Flammable solids (Category 1) Acute toxicity, Oral (Category 4) Acute toxicity, Dermal (Category 3) Skin irritation (Category 2) Serious eye damage (Category 1) Specific target organ toxicity - single exposure (Category 3) Classification according to EU Directives 67/548/EEC or 1999/45/EC Highly flammable. Harmful in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin.  Danger Hazard statement(s): H228 Flammable solid. / H302 Harmful if swallowed. H311 Toxic in contact with skin. / H315 Causes skin irritation. H318 Causes serious eye damage. / H335 May cause respiratory irritation. P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P261 Avoid breathing dust. P280 Wear protective gloves/ eye protection/ face protection. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P312 Call a POISON CENTER or doctor/ physician if you feel unwell. Supplemental Hazard Statements: none Other hazards - none
MES monohydrate	Classification of the substance Skin irritation (Category 2) Eye irritation (Category 2) Specific target organ toxicity - single exposure (Category 3) Classification according to EU Directives 67/548/EEC oR-A999/45/EC Irritating to eyes, respiratory system and skin.

	 Warning Hazard statement(s):H315 Causes skin irritation/H319 Causes serious eye irritation. H335 May cause respiratory irritation. Precautionary statement(s) P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Supplemental Hazard Statements none R-phrase(s): R36/37/38 Irritating to eyes, respiratory system and skin. S-phrase(s): S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. / S36 Wear suitable protective clothing. Other hazards - none
Nitric acid	GHS CLASSIFICATION : Skin corrosion/irritation: Category 2 Eye damage/Eye irritation: Category 2  WARNING HAZARD STATEMENTS :H315 Causes skin irritation H319 Causes serious eye irritation PRECAUTIONARY STATEMENTS : P280 Wear protective gloves/protective clothing/eye protection/face protection. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. EU CLASSIFICATION: according to Directive 67/548/EEC SYMBOL : Xi R-phrase : R36/38 Irritating to eyes and skin. S-phrase : S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

SECTION 4: FIRST AND MEASURE

Description of first aid measures

- General information — No special measures required.
- After inhalation Supply fresh air; — Consult doctor in case of complaints.
- After skin contact — Generally the product does not irritate the skin.
- After eye contact — Rinse opened eye for several minutes under running water.
- After swallowing — If symptoms persist consult doctor.
- Information for doctor
- Most important symptoms and effects, both acute and delayed No further relevant information available.
- Indication of any immediate — Medical attention and special treatment needed

No further relevant information available.

SECTION 5: FIRE-FIGHTING MEASURES

- Extinguishing media
- Suitable extinguishing agents: CO_2, powder or water spray. Fight larger fires with water spray or alcohol

resistant foam.
· Special hazards arising from the substance or mixture No further relevant information available.
· Advice for firefighters
· Protective equipment: No special measures required.

SECTION 6: ACCIDENTIAL RELEASE MEASURES

· Personal precautions, protective equipment and emergency procedures Not required.
· Environmental precautions: Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
· Methods and material for containment and cleaning up: Absorb with liquid-binding material.
· Reference to other sections See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: HANDLING AND STORAGE

Handling
· Precautions for safe handling: Keep container tightly sealed.
· Information about fire - and explosion protection: No special measures required.
Conditions for safe storage, including any incompatibilities
· Storage: Store in at 4 °C.
· Requirements to be met by storerooms and receptacles: No special requirements.
· Information about storage in one common storage facility: Not required.
· Further information about storage conditions: KOH is air sensitive, strongly hygroscopic.
· Specific end use(s) No further relevant information available.

SECTION 8: EXPOSURE CONTROL/PERSONAL PROTECTION

Hygienic measures
Follow the usual precautionary measures for handling chemicals. Wear suitable protective equipment and clothing.
Keep away from food and beverages.
Remove all soiled and contaminated clothing immediately.
Avoid contact with skin and eyes.
Wash hands thoroughly after handling.
Personal protective equipment
Use suitable respirator when high concentration are present. Wear lab coat, gloves and splash goggles.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

· Information on basic physical and chemical properties
· General Information
· Appearance: Form: liquid
Colour: Different according to colouring
· Odour: Odourless
· Odour threshold: Not determined.
· pH-value: Not determined.
· Change in condition Melting point/Melting range: undetermined
Boiling point/Boiling range: undetermined
· Flash point: Not applicable
· Flammability (solid, gaseous) Not applicable.
· Ignition temperature:Decomposition temperature: Not determined.
· Self-igniting: Product is not selfigniting.

· Danger of explosion:		Product does not present an explosion hazard.
· Explosion limits:	Lower:	Not determined.
	Upper:	Not determined.
· Vapour pressure:		Not determined.
· Density:		Not determined
· Relative density		Not determined.
· Vapour density		Not determined.
· Evaporation rate		Not determined.
· Solubility in / Miscibility with Water:		Fully miscible
· Partition coefficient (n-octanol/water):		Not determined.
· Viscosity:	dynamic:	Not determined.
	kinematic:	Not determined.
· Solvent content:	Organic solvents:	0,0 %
	Solids content:	1,0 %
· Other information		No further relevant information available.

SECTION 10: STABILITY AND REACTIVITY

· Reactivity	
· Chemical stability	
· Thermal decomposition / conditions to be avoided:	No decomposition if used according to specifications.
· Possibility of hazardous reactions	No dangerous reactions known
· Conditions to avoid	No further relevant information available.
· Incompatible materials:	No further relevant information available.
· Hazardous decomposition products:	No dangerous decomposition products known

SECTION 11: TOXICOLOGICAL INFORMATION

Sodium Acetate

Information on toxicological effects

Acute toxicity	LD50 Oral - rat -	3.530 mg/kg
	LC50 Inhalation - rat - 1 h -	> 30.000 mg/m3
	LD50 Dermal - rabbit -	> 10.000 mg/kg
Skin corrosion/irritation	Skin - rabbit -	Mild skin irritation - 24 h
Serious eye damage/eye irritation	Eyes - rabbit -	Mild 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 asprobable, possible or confirmed human carcinogen by IARC.	
Reproductive toxicity		No data available
Specific target organ toxicity - single exposure		No data available
Specific target organ toxicity - repeated exposure		No data available
Aspiration hazard		No data available
Potential health effects	Inhalation: May be harmful if inhaled. May cause respiratory tract irritation. Ingestion: May be harmful if swallowed. Skin: May be harmful if absorbed through skin. May cause skin irritation. Eyes: Causes eye irritation.	

Signs and Symptoms of Exposure

Abdominal pain, Nausea, Vomiting

Additional Information

RTECS: AJ4300010

Guanidine Hydrochloride

Information on toxicological effects

Acute toxicity	No data available
Skin corrosion/irritation	No data available
Serious eye damage/eye irritation	No data available
Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity IARC:	3 - Group 3: Not classifiable as to its carcinogenicity to humans (1-Ethenyl-2-pyrrolidinone homopolymer)
IARC:	3 - Group 3: Not classifiable as to its carcinogenicity to humans(Kieselguhr)
Reproductive toxicity	No data available
Specific target organ toxicity - single exposure	No data available
Specific target organ toxicity - repeated exposure	No data available
Aspiration hazard	No data available
Potential health effects	Inhalation: May be harmful if inhaled. Causes respiratory tract irritation. Ingestion: Harmful if swallowed. Skin: May be harmful if absorbed through skin. Causes skin irritation. Eyes: Causes serious eye irritation.

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information

RTECS: Not available

Octylphenoxypolyethoxyethanol Nonionic Surfactant

Acute toxicity	Oral LD50 Rat : 1800 mg/kg
Chronic toxicity: Chronic exposure may cause nausea and vomiting, higher exposure causes unconsciousness.	
Local effects: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.	
Specific effects: May include moderate to severe erythema (redness) and moderate edema (raised skin), nausea, vomiting, headache.	
Primary irritation:	No data is available
Carcinogenic effects:	No data is available
Mutagenic effects:	No data is available
Reproductive toxicity:	No data is available

L-Ascorbic Acid

Information on toxicological effects

Acute toxicity	LD50 Oral - rat - 11.900 mg/kg
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Lacrimation. Behavioral:Somnolence (general depressed activity). Diarrhoea	
Skin corrosion/irritation	No data available
Serious eye damage/eye irritation	No data available
Respiratory or skin sensitization	No data available

Germ cell mutagenicity

Genotoxicity in vitro - mouse - Liver

Genotoxicity in vivo - mouse - Intraperitoneal

Micronucleus test 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.
Reproductive toxicity	No data available
Specific target organ toxicity - single exposure	No data available
Specific target organ toxicity - repeated exposure	No data available
Aspiration hazard	No data available

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure

Chronic ingestion of large doses may cause gastrointestinal disturbances including nausea and diarrhea,

urinary effects involving urine acidification, oxalate and uric crystallizaton in the bladder and kidney, and decreased reaction times and psychomotor coordination.
Additional Information
RTECS: CI7650000

3-(2-Pyridyl)-5,6-bis(4-sulfophenyl)-1,2,4-triazine Disodium Salt Hydrate

Acute Toxicity:			No data available
Skin corrosion/irritation:			No data available
Serious eye damage/irritation:			No data available
Germ cell mutagenicity: No data available			
Carcinogenicity:	IARC		No data available
	NTP		No data available
Reproductive toxicity:			No data available

RTECS Number: DB7345000

Sodium Dodecyl Sulfate

Acute Toxicity:	ihl-rat	LC50:	>3900 mg/m3/1H
	ipr-rat	LD50:	210 mg/kg
	orl-rat	LD50:	1288 mg/kg
	skn-rbt	LDLo:	10 g/kg
Skin corrosion/irritation:	skn-rbt		250 mg/24H MOD
	skn-hmn		0.1 %/24H MOD
Serious eyedamage/irritation:	eye-rbt		100 mg/24H MOD
Germ cell mutagenicity:	dni-hmn-lym		100 mg/L
	mmo-omi		200 mg/L (-S9)
	mmo-smc		3500 umol/L (-S9)
Carcinogenicity:	IARC		No data available
	NTP		No data available
Reproductive toxicity:			No data available

RTECS Number: WT1050000

MES monohydrate
Information on toxicological effects

Acute toxicity		No data available
Skin corrosion/irritation		No data available
Serious eye damage/eye irritation		No data available
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.
Reproductive toxicity		No data available
Specific target organ toxicity - single exposure		Inhalation - May cause respiratory irritation.
Specific target organ toxicity - repeated exposure		No data available
Aspiration hazard		No data available

Potential health effects	Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
	Ingestion	May be harmful if swallowed.
	Skin	May be harmful if absorbed through skin. Causes skin irritation.
	Eyes	Causes serious eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information	RTECS:	Not available

Nitric acid

Acute toxicity (oral/dermal/inhalation) :	LDLo(orl,human):	430 mg/kg (YAKUD5 22,651,1980)
	LC50(ihl,rat):	130mg/m3/4H(VCVN5* -,45,1993)

		TDLo(skin,rat): 150mL/kg(VCVN5* -,45,1993)
Toxicity data :		Harmful if inhaled and ingested.
Skin Corrosion/ irritation:		Causes skin irritation.
Eye Damage/Eye irritation:		Causes eye irritation.
Respiratory Or Skin sensitization:		No data available
Germ cell mutagenicity:		No data available
Reproductive toxicity:		TDLo(orl,rat): 21150mg/kg(1-21 D preg)(ZHYGAM 29,667,1983)
		TDLo(orl,rat): 2345mg/kg(18 D preg)(ZHYGAM 29,667,1983)
Specific target organ toxicity - single exposure:		No data available
Specific target organ toxicity - repeated exposure:		No data available
Aspiration hazard:		No data available
Carcinogenicity:		No data available
Additional Information:	NTP :	Not listed
	IARC :	Not listed
	OSHA :	Not listed
	ACGIH :	Not listed

SECTION 12: ECOLOGICAL INFORMATION

Sodium Acetate

Toxicity	Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 13.330 mg/l - 120 h
		LC50 - Lepomis macrochirus (Bluegill) - 5.000 mg/l - 24 h
	Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - > 1.000 mg/l - 48 h

Persistence and degradability	Biodegradability Result	99 % - Readily biodegradable.

Octylphenoxypolyethoxyethanol Nonionic Surfactant
Aquatic toxicity: May cause long-term adverse effects in the aquatic environment.

Sodium Dodecyl Sulfate

Bioaccumulative potential(BCF):		71
Mobillity in soil	log Pow:	1.60
	Soil adsorption (Koc):	1.0×10^{4}
	Henry's Law constant(PaM3/mol):	1.9×10^{-2}

Ecotoxicity effects: No data available

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods
· Recommendation Dispose of waste according to applicable local, state, and federal regulations.
Uncleaned packaging:
· Recommendation: Dispose of packaging according to applicable local, state, and federal regulations.
· Recommended cleansing agents: Water, if necessary together with cleansing agents.

SECTION 14: TRANSPORT INFORMATION

· UN-Number	ADR, IMDG, IATA	Void
· UN proper shipping name	ADR, IMDG, IATA	Void
· Transport hazard class(es)	ADR, IMDG, IATA	Class Void
· Packing group	ADR, IMDG, IATA	Void
· Environmental hazards:	Marine pollutant:	No
· Special precautions for user		Not applicable.
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code		Not applicable

SECTION 15: REGULATORY INFORMATION

· Safety, health and environmental regulations/legislation specific for the substance or mixture
· GHS label elements Void
· Hazard pictograms Void
· Signal word Void
· Hazard statements Void
· National regulations
· Waterhazard class: Water hazard class 2 (Self-assessment): hazardous for water.
· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: OTHER INFORMATION INCLUDING INFORMATION ON PREPARATION AND REVISION OF THE MSDS

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Relevant phrases
H271 May cause fire or explosion; strong oxidiser.
H300 Fatal if swallowed.
H302 Harmful if swallowed.
H310 Fatal in contact with skin.
H314 Causes severe skin burns and eye damage.
H330 Fatal if inhaled.
H332 Harmful if inhaled.
R19 May form explosive peroxides.
R20/22 Harmful by inhalation and if swallowed.
R23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
R34 Causes burns.
R8 Contact with combustible material may cause fire.

The above information is believed to be correct to be the best of our knowledge and information but does not purport to be all inclusive and shall be used only as a guide. This product is intended to be used by expert persons having chemical knowledge and skill, at their own discretion and risk and the manufacturer shall not be held liable for any damage resulting from handling or from contact with the above material.