

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**Product information****Product name****KEMIRA FERIX-3** Chemical name: Diiron tris(sulphate)**Recommended use of the chemical and restrictions on use****Use of the Substance/Mixture**

Water treatment chemical.

Recommended restrictions on use

There are no uses advised against.

Supplier's details

Kemira Water Solutions, Inc.
1000 Parkwood Circle, Suite 500
30339 Atlanta USA
Telephone+18635335990, Telefax. +18635337077

HEAD OFFICE
Kemira Oyj
P.O. Box 330
00101 HELSINKI
FINLAND
Telephone +358108611 Telefax +358108621124

Emergency number

CHEMTREC: 1-800-424-9300
CANUTEC: 1-613-996-6666

2. HAZARDS IDENTIFICATION**Classification of the substance or mixture**

Corrosive to metals; Category 1; May be corrosive to metals.;
Acute toxicity (Oral); Category 4; Harmful if swallowed.;
Skin irritation; Category 2; Causes skin irritation.;
Serious eye damage; Category 1; Causes serious eye damage.;

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GHS-Labeling

Hazard pictograms



Signal word

: Danger

Hazard statements

: **Hazard statements:**
H290 May be corrosive to metals.
H302 Harmful if swallowed.
H315 Causes skin irritation.
H318 Causes serious eye damage.

Precautionary statements

: **Prevention:**
P234 Keep only in original container.
P264 Wash face, hands and any exposed skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
P330 Rinse mouth.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/ physician.
P390 Absorb spillage to prevent material damage.
Storage:
P405 Store locked up.

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P406

Store in corrosive resistant container with a resistant inner liner.

Disposal:

P501

Dispose of contents/container as special waste in compliance with local and national regulations.

Hazardous components which must be listed on the label:

- 10028-22-5 Diiron tris(sulphate)
- 7720-78-7 Iron (II) sulphate
- 7664-93-9 Sulfuric acid
- 7785-87-7 Manganese sulphate

Other hazards which do not result in classification

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances /Mixtures

Chemical nature granules

Hazardous components

Chemical Name	CAS-No.	Concentration[%]
Diiron tris(sulphate)	10028-22-5	60 - 80 %
Iron (II) sulphate	7720-78-7	1 - 10 %
Sulfuric acid	7664-93-9	1 - 5 %
Manganese sulphate	7785-87-7	1 - 5 %

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Further information

This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

This product contains WHMIS regulated (hazardous) components.

4. FIRST AID MEASURES

Description of first aid measures

Inhalation

If breathing is difficult, remove to fresh air and provide oxygen. If not breathing, give artificial respiration. Seek medical attention if cough or other symptoms develop.

Skin contact

Wash off with soap and plenty of water. Get medical attention if irritation develops and persists.

Eye contact

Flush eyes with water at least 15 minutes. Get medical attention if eye irritation develops or persists.

Ingestion

Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Obtain medical attention. Drink 1 or 2 glasses of water.

Most important symptoms and effects, both acute and delayed

5. FIREFIGHTING MEASURES

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special hazards arising from the substance or mixture

The product itself does not burn.

Special protective actions for fire-fighters

Wear self-contained breathing apparatus and protective suit. Use NIOSH/MSHA approved respiratory protection.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

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Wear personal protective equipment.

Environmental precautions

Prevent product from entering the environment.

Methods and materials for containment and cleaning up

Sweep up and shovel into suitable containers for disposal. Must be disposed of in accordance with local and national regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with eyes. Wash contact areas after handling.

Conditions for safe storage, including any incompatibilities

Keep at temperatures between 10 - 30 °C.

Materials for packaging

Suitable material: plastic (PE, PP, PVC), fiberglass-reinforced polyester, epoxy-coated concrete, titanium, acidproof or rubber-coated steel.

Suitable material: plastic (PE, PP, PVC), rubber-coated steel, stainless steel (AISI 304)

Materials to avoid:

Iron, Copper, aluminium, Acids, Bases

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Form of exposure	Control parameters	Update	Basis
Sulphuric acid	7664-93-9	TWA	Thoracic fraction	0.2 mg/m ³	2007-01-01	ACGIH
		TWA		1 mg/m ³	2005-09-01	NIOSH REL
Diiron tris(sulphate)	10028-22-5			1 mg/m ³		
				1 mg/m ³		
		TWA		0.1 mg/m ³		

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Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice.

Wash hands before eating, drinking, or smoking.

Individual protection measures, such as personal protective equipment

Respiratory protection

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

Hand protection

Glove material: Rubber or plastic gloves, Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Wear protective gloves.

Skin and body protection

Wear protective clothing if necessary.

Eye protection

Tightly fitting safety goggles or safety glasses with side-shields.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	solid, granules
Colour	yellowbrown
Odour	not significant
Freezing point :	No data available
Flash point	Not applicable, inorganic compound

Flammability (solid, gas)	Does not sustain combustion.
Explosive properties:	
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Density	1.20 - 1.40 g/cm ³
Solubility(ies):	
Water solubility	soluble
Partition coefficient: n-octanol/water	Not applicable, inorganic compound

10. STABILITY AND REACTIVITY

Reactivity

Chemical stability

Possibility of hazardous reactions

Hazardous reactions: Hazardous polymerisation does not occur.

Conditions to avoid

Conditions to avoid: Avoid extreme temperatures.

Incompatible materials

Materials to avoid: Iron
Copper
aluminium
Acids
Bases

Hazardous decomposition products

Hazardous decomposition products: Thermal decomposition products:
Sulphur oxides (SO_x)

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute oral toxicity Conclusion: Harmful if swallowed.

Acute oral toxicity
Diiron tris(sulphate):

 /OECD Test Guideline 423Remarks: Calculated as Fe
 /Rat/220 mg/kg/LD50

Iron (II) sulphate:

 /OECD Test Guideline 423Remarks: Calculated as Fe
 /Rat/220 mg/kg/LD50

Sulfuric acid:

/Rat/2,140 mg/kg/LD50

Acute inhalation toxicity
Diiron tris(sulphate):

LC50

Remarks: No data available, Not applicable

Iron (II) sulphate:

LC50

Remarks: No data available, Not applicable

Sulfuric acid:

LC50/Rat/4 h/0.375 mg/l

Remarks: aerosol

Conclusion: Although the LC50 values from the various inhalation toxicity studies performed with sulphuric acid theoretically trigger classification for Acute inhalation toxicity, classification is not proposed. The effects of sulphuric acid following inhalation are entirely due to local irritation of the respiratory tract: there is no evidence for the systemic toxicity of sulphuric acid in any study, as effects are limited to the site of contact. Classification for acute inhalation toxicity is not considered to be appropriate.

Acute dermal toxicity
Diiron tris(sulphate):

LD50/Rat/>

/3,154 mg/kg/OECD Test Guideline 402

Remarks: Read-across (Analogy), CAS-No., 7758-94-3

Diiron tris(sulphate):

LD50/Rat/>

/881 mg/kg/OECD Test Guideline 402

Remarks: Calculated as Fe

Iron (II) sulphate:

LD50/Rat/>

/2,369 mg/kg/OECD Test Guideline 402

Remarks: Read-across (Analogy), CAS-No., 7758-94-3

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	<p>Iron (II) sulphate: LD50/Rat/> /881 mg/kg/OECD Test Guideline 402 Remarks: Calculated as Fe</p>
Skin corrosion/irritation	Remarks: Causes skin irritation.
Skin corrosion/irritation	<p>Diiron tris(sulphate): Rabbit Result: No skin irritation /OECD Test Guideline 404 Conclusion: Moistened solid is expected to be irritant as a consequence of low pH.</p> <p>Iron (II) sulphate: Rabbit Result: irritating /OECD Test Guideline 404/4 h/500 mg</p> <p>Sulfuric acid: Result: Corrosive</p> <p>Conclusion: Causes severe burns.</p>
Serious eye damage/eye irritation	Remarks: Causes serious eye damage.
Serious eye damage/eye irritation	<p>Diiron tris(sulphate): Rabbit Result: Causes serious eye damage. /OECD Test Guideline 405 Remarks: Read-across (Analogy), 7758-94-3, dry substance</p> <p>Iron (II) sulphate: Rabbit Result: slight irritation /OECD Test Guideline 405 Remarks: 25%, Aqueous solution</p> <p>Iron (II) sulphate: Rabbit Result: Corrosive /OECD Test Guideline 405 Remarks: Read-across (Analogy), CAS-No., 7758-94-3</p>

	<p>Sulfuric acid:</p> <p>Result: Corrosive</p> <p>Conclusion: Risk of serious damage to eyes.</p>
Respiratory or skin sensitisation	
Skin sensitisation	<p>Diiron tris(sulphate):</p> <p>Conclusion: According to experience sensitization is not expected.</p> <p>Iron (II) sulphate:</p> <p>Conclusion: According to experience sensitization is not expected.</p> <p>Sulfuric acid:</p> <p>Conclusion: Not sensitizing.</p>
Germ cell mutagenicity	
Genotoxicity in vitro	<p>Iron (II) sulphate: AMES test/Mutagenicity (Salmonella typhimurium - reverse mutation assay)/with and without Result: negative OECD Test Guideline 471 Remarks: Read-across (Analogy), CAS-No., 7758-94-3</p>
Genotoxicity in vivo	<p>Diiron tris(sulphate):</p> <p>Result: negative</p>
Carcinogenicity	
Carcinogenicity	<p>Diiron tris(sulphate): /Rat/Oral/2 years Remarks:Information given is based on data obtained from similar substances. Not believed to be a carcinogen. Long-term test</p> <p>Iron (II) sulphate:</p> <p>Not believed to be a carcinogen.</p>
Reproductive toxicity	
Toxicity for reproduction	<p>Diiron tris(sulphate): Reproductive effects/Rat/>/500 mg/kg Remarks: Read-across (Analogy)</p>

Teratogenicity

Diiron tris(sulphate):

Developmental toxicity test/Rat/>1,000 mg/kg

Remarks: Read-across (Analogy)

Conclusion: In animal studies, did not interfere with reproduction.

Iron (II) sulphate:

Reproductive effects/>1,000 mg/kg/>1,000 mg/kg/OECD

Test Guideline 422

Remarks: bw/day

Sulfuric acid:

Developmental toxicity test/Rabbit/0.020 mg/l

Conclusion: Did not show teratogenic effects in animal experiments.

Diiron tris(sulphate):

Rat/Oral/>1,000 mg/kg

Conclusion: Did not show teratogenic effects in animal experiments., Information given is based on data obtained from similar substances.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic toxicity

Diiron tris(sulphate):

LC50/96 h/Oncorhynchus mykiss (rainbow trout): > 100 mg/l

NOEC/90 d/Oncorhynchus kisutch (Coho salmon): > 1 mg/l

EC50/48 h/Daphnia (water flea): 82.8 mg/l

NOEC/21 d/Daphnia magna (Water flea): > 1 mg/l

The compound is considered to have no long term effects in aquatic systems due to the rapid formation of insoluble hydroxides.

Iron (II) sulphate:

LC50/96 h/Oncorhynchus mykiss (rainbow trout)/OECD Test Guideline 203: 82.4 mg/l

NOEC/90 d/Oncorhynchus kisutch (Coho salmon): > 1 mg/l

EC50/48 h/Invertebrates./OECD Test Guideline 202: 16 - 110 mg/l

NOEC/21 d/Daphnia magna (Water flea)/OECD Test Guideline 202: > 1 mg/l

The compound is considered to have no long term effects in aquatic systems due to the rapid formation of insoluble hydroxides.

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Sulfuric acid:LC50/96 h/Lepomis macrochirus (bluegill sunfish)/static test: 16 - 28 mg/l
fresh waterEC50/48 h/Daphnia magna (Water flea)/static test/OECD Test Guideline 202: > 100 mg/l
fresh water

EC50/72 h/Desmodesmus subspicatus (green algae)/static test/OECD Test Guideline 201: > 100 mg/l

Remarks: May be harmful to aquatic organisms because of the low pH value.

Toxicity to other organisms

No data is available on the product itself.

Iron (II) sulphate:

Remarks: No data available

Sulfuric acid:

NOEC/37 d/active sludge/static test: 26 g/l fresh water

NOEC/30 d/active sludge/static test: > 30 g/l fresh water

Persistence and degradability

Chemical degradation:

Remarks: When reacting with water precipitates of iron hydroxides are formed., This mainly occurs at pH above 5.

Biological degradability:**Diiron tris(sulphate):**

The methods for determining the biological degradability are not applicable to inorganic substances.

Iron (II) sulphate:

The methods for determining the biological degradability are not applicable to inorganic substances.

Sulfuric acid:

The methods for determining biodegradability are not applicable to inorganic substances.

Bioaccumulative potential

Partition coefficient: n-octanol/water: Not applicable, inorganic compound

Diiron tris(sulphate):

Does not bioaccumulate.

Partition coefficient: n-octanol/water: Not applicable, inorganic compound

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Iron (II) sulphate:

The product is not expected to bioaccumulate.
 Partition coefficient: n-octanol/water: Not applicable, inorganic compound

Sulfuric acid:

Does not bioaccumulate.

Mobility in soil

Water solubility: soluble

Other adverse effects

May lower the pH of water and thus be harmful to aquatic organisms.

13. DISPOSAL CONSIDERATIONS

Product	Classified as hazardous waste. Must be disposed of in accordance with local and national regulations. Thoroughly cleaned packaging material may be recycled.
Contaminated packaging	Classified as hazardous waste. Must be disposed of in accordance with local and national regulations.

14. TRANSPORT INFORMATION

Land transport

DOT:

Description of the goods: UN3077, Environmentally hazardous substance, solid n.o.s. (Ferric sulfate

Proper shipping name)

Class: 9

Packaging group: III

DOT-Labels 9

Reportable quantity Ferric sulfate

Sea transport

Not classified as dangerous in the meaning of transport regulations.

Air transport

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Not classified as dangerous in the meaning of transport regulations.

Special precautions for user

This product is regulated as a hazardous material according to the Department of Transportation only in bulk quantities (greater than 1363 lbs per package).

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Title III Section 311 Categories

Immediate (Acute) Health Effects: Yes;
Delayed (Chronic) Health Effects: No;
Fire Hazard: No;
Sudden Release Of Pressure Hazard: No;
Reactivity Hazard: No;

SARA 313 - Specific Toxic Chemical Listings

None Present ()

CERCLA Hazardous substance (Reportable Quantities)

Diiron tris(sulphate) (10028-22-5)
1,000 lb

California Proposition 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
None Present ()

Other regulations : No restrictions identified other than those already covered in regulations.

Notification status

:
: All components of this product are included in the United States TSCA Chemical Inventory or are not required to be listed on the United States TSCA Chemical Inventory.
: All components of this product are included in the Canada Domestic Substance List (DSL) or are not required to be listed

on the Canada Domestic Substance List (DSL).
: All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.

16. OTHER INFORMATION**HMIS Rating**

Health: 3
Flammability: 0
Reactivity: 1

NFPA Rating

Health: 3
Fire: 0
Reactivity: 0

Training advice

Read the safety data sheet before using the product.

Further information

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.

This MSDS is prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by Kemira.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

Additions, Deletions, Revisions

Relevant changes have been marked with vertical lines.