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**FERRIC SULPHATE**  
**10.5%-12.0%**

**SDS234W**

## 1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

<b>1.1 IDENTIFICATION OF THE SUBSTANCE OR PREPARATION</b>	Ferric Sulfate Solution (10.5% - 12% w/w Fe); Iron (III) Sulfate Liquid conforms to BS EN 890:2012
Identification on the label / trade name	Ferric Sulfate
<b>1.2 USE OF THE SUBSTANCE / PREPARATION</b>	Used for the treatment of water intended for human consumption
Uses advised against	Any other use
<b>1.3 COMPANY/UNDERTAKING IDENTIFICATION</b>	Clinty Chemicals Ltd 215 Doury Road Ballymena Co. Antrim Northern Ireland BT43 6SS
E-mail	info@clintychemicals.co.uk
<b>1.4 EMERGENCY TELEPHONE</b>	028 2564 1618

## 2. HAZARDS IDENTIFICATION

### 2.1 CLASSIFICATION

#### 2.1.1 Classification according to Directive 67/548/EEC or 1999/45 as amended

Classification	Category	Risk Phrases
C Corrosive	-	R34 Causes burns
X <sub>n</sub> Harmful	-	R22 Harmful if swallowed

#### 2.1.2 Classification according to Regulation (EC) No 1272/2008 as amended

Classification	Category	Hazard Statement
<b>Physical Hazard</b> Corrosive to metals	Category 1	H290 May be corrosive to metals
<b>Health Hazard</b> Eye Effects	Category 1	H318 Causes serious eye damage
<b>Health Hazard</b> Skin Irritant	Category 2	H315 Causes skin irritation
<b>Health Hazard</b> Acute Toxicity	Category 4	H302 Harmful if swallowed



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## 2.2 LABEL ELEMENTS

### 2.1.1 Labelling according to Regulation (EC) No 1272/2008 as amended

#### Contains

Di-iron tris(Sulfate)

#### Hazard Pictograms



#### Signal Word

Danger

#### 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 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

P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.  
P302 + P352 IF ON SKIN: Wash with plenty of soap and water  
P332 + P313 If skin irritation occurs: Get medical advice / attention.  
P390 Absorb spillage to prevent material damage

##### Storage

P406 Store in corrosive resistant container with a resistant inner liner

##### Disposal

P501 Dispose of contents/container in accordance with local regulation

#### Hazardous Components

10028-22-5 Diiron tris(Sulfate)

#### Further information

The product is classified and labeled in accordance with EC directives or respective national laws



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#### Other hazards

Potential environmental effects; May lower the pH of water and thus be harmful to aquatic organisms

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

#### 3.1 PREPARATION / MIXTURE RELATED INFORMATION

##### Description

Ferric Sulfate Solution  
(10.5% - 12% w/w Fe)

##### Hazardous Ingredients

Chemical Name	EC No / REACH Registration Number	CAS No	Amount (%)	Classification according to Regulation (EC) No 1272/2008 – CLP		Classification according to 67/548/EEC or 1999/45/EC
				Hazard Class / Hazard Category	Hazard Symbol	
Diiron tris(Sulfate) $Fe_2(SO_4)_3 \cdot nH_2O$	233-072-9 / 01-2119513202-59	10028-22-5	40 - 50	Acute Tox. Category 4, H302 Eye Dam. Category 1, H318 Skin Irrit. Category 2, H315		X <sub>n</sub> R22 X <sub>i</sub> R38 R41
Iron (II) Sulfate	231-753-5 / 01-2119513203-57	7720-78-7	0.1 – 1.5	Acute Tox. Category 4, H302 Eye Irrit. Category 2, H319 Skin Irrit. Category 2, H315		X <sub>n</sub> R22 X <sub>i</sub> R36/38
Manganese Sulfate	232-089-9	7785-87-7	<=0.25	STOT RE Category 2, H373 Aquatic Chronic Category 2, H411		X <sub>n</sub> R48/20/22 N R51 R53

##### Composition comments

The full text for all R- and H-phrases is displayed in section 16

### 4. FIRST AID MEASURES

#### 4.1 GENERAL INFORMATION

P308/P313 If exposed or concerned: get medical advice/attention  
- No hazards which require special first aid measures

#### 4.2 DESCRIPTION OF FIRST AID MEASURES

##### IN CASE OF INHALATION

P304 IF INHALED: Move to fresh air  
- Call a physician if symptoms develop or persist

##### IN CASE OF SKIN CONTACT



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- P361 Remove/Take off immediately all contaminated clothing.  
 P302 + IF ON SKIN: Wash with plenty of soap and water.  
 P352  
 P333 + If skin irritation or rash occurs: Get medical advice/attention.  
 P313

#### IN CASE OF EYE CONTACT

- P305 + IF IN EYES: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if  
 P351 + present and easy to do. Continue rinsing.  
 P338  
 - If possible use lukewarm water. Consult a physician. Do not rub the eyes as this can cause  
 mechanical irritation. Continue rinsing eyes during transport to hospital

#### IN CASE OF INGESTION

- P301 + IF SWALLOWED: rinse mouth with water. Do NOT induce vomiting.  
 P330 +  
 P331  
 - Drink 1 or 2 glasses of milk  
 - Call a physician if symptoms develop or persist

- 4.3 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED** Corrosive effects, Causes burns
- 4.4 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED** Rinse with plenty of water

## 5. FIRE FIGHTING MEASURES

- 5.1 SUITABLE EXTINGUISHING MEDIA** Not combustible. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- 5.2 EXTINGUISHING MEDIA WHICH MUST NOT BE USED FOR SAFETY REASONS** None known
- 5.3 SPECIAL EXPOSURE HAZARDS ARISING FROM THE SUBSTANCE OR PREPARATION ITSELF, COMBUSTION PRODUCTS, RESULTING GASES** Heating above the decomposition temperature (>315 °C) will release toxic gases - sulphur oxides (SO<sub>x</sub>)
- 5.4 SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS** Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

## 6. ACCIDENTAL RELEASE MEASURES



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## 6.1 PERSONAL PRECAUTIONS

P280 Wear suitable protective gloves/protective clothing/eye protection/face protection  
P308/P313 If exposed or concerned: get medical advice/attention

## 6.2 ENVIRONMENTAL PRECAUTIONS

Protect drains from potential spills to minimize contamination. Do not wash product into drainage system. Contact the appropriate authorities in all cases where the consequences cannot be quickly and effectively controlled.

When diluted below a mass fraction of 1% hydrolysis and hydroxide formation occurs

## 6.3 METHODS FOR CLEANING UP

In case of spill, stop the source of the leak or release  
Contain and recover spilled material using sand or other suitable inert absorbent material. Sweep up and place in a disposable container. Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up. Must be disposed of in accordance with local and national regulations

Scrub contaminated area with water, using a stiff broom. Prevent contamination of groundwater or surface water.

It is advised that stocks of suitable absorbent material should be held in quantities sufficient to deal with any spillage which may be reasonably anticipated.

## 7. HANDLING & STORAGE

### 7.1 HANDLING

#### 7.1.1 Safe handling: Protective measures

Avoid contact with eyes. If splashing is likely to occur wear a full face visor or chemical goggles as appropriate. If skin contact is likely, wear impervious protective clothing and gloves. High standards of personal hygiene and plant cleanliness must be maintained. Wash hands thoroughly after use, and always wash hands before eating, drinking and smoking and before and after using the toilet. Change heavily contaminated clothing as soon as reasonably practicable and launder before re-use. Wash any contaminated underlying skin with soap and water.

Emergency eye wash fountains and emergency showers should be available in the immediate vicinity

#### 7.1.2 Safe handling: Technical measures

Danger for slipping. The work place and work methods shall be organized in such a way that direct contact with the product is prevented or minimized. For personal protection see section 8.

#### 7.1.3 Safe handling: Measures to protect the environment

The design, construction and maintenance of bulk storage and handling facilities are covered by codes of the practice published by the Health and Safety Executive and the Environment Agency.



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#### 7.1.4 Safe handling: Precautions against fire and explosion

Not combustible. No specific precautions

#### 7.2 STORAGE

P102 Keep out of reach of children  
P233 Keep container tightly closed  
P234 Keep only in original container

##### 7.2.1 Technical measures and storage conditions

Avoid freezing. Keep away from incompatible materials.

##### 7.2.2 Packaging materials

Suitable material: Stainless steel (316 and 440), rubber and most plastic containers and tanks

##### 7.3.3 Requirements for storage rooms and vessels

The design, construction and maintenance of bulk storage and handling facilities are covered by codes of the practice published by the Health and Safety Executive and the Environment Agency.

##### 7.3.4 Materials to avoid

Avoid contact with non-acid proof metals (for example aluminium, copper and iron), bases and oxidizing agents

##### 7.3.5 Other data

Storage period 12 months

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### 8.1 CONTROL PARAMETERS Occupational Exposure Limits Ireland United Kingdom

Component	CAS No	Type	Value	Form
Diiron tris (Sulfate)	10028-22-5	STEL TWA	2 mg.m <sup>-3</sup> 1 mg.m <sup>-3</sup>	Calculated as Fe
Iron (II) Sulfate	7720-78-7	STEL	2 mg.m <sup>-3</sup>	Calculated as Fe
Manganese Sulfate	7785-87-7	TWA	0.5 mg.m <sup>-3</sup>	Calculated as Mn

**Derived No-Effect Level (DNEL)**



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Component	CAS No	Type	Route	Value	Form
Diiron tris (Sulfate)	10028-22-5	Industry	Dermal	2.0 mg.kg <sup>-1</sup> bw/day Read-across (Analogy), CAS-No., 10025-77-1	Long term systemic effects
		Industry	Inhalation	0.57 mg.kg <sup>-1</sup> bw/day as Fe 7.2 mg.m <sup>-3</sup> Read-across (Analogy), CAS-No., 10025-77-1	Long term systemic effects
		Industry	Inhalation	2.01 mg.m <sup>-3</sup> as Fe 7.2 mg.m <sup>-3</sup> Read-across (Analogy), CAS-No., 10025-77-1	Acute effects, systemic effects
		Industry	Dermal	2.01 mg.m <sup>-3</sup> as Fe 2.0 mg.kg <sup>-1</sup> bw/day Read-across (Analogy), CAS-No., 10025-77-1	Acute effects, systemic effects



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Iron (II) Sulfate	7720-78-7	Industry	Dermal	1.6 mg.kg <sup>-1</sup> bw/day Read-across (Analogy), CAS-No., 10025-77-1	Long term systemic effects
		Industry	Inhalation	0.57 mg.kg <sup>-1</sup> bw/day as Fe 5.5 mg.m <sup>-3</sup> Read-across (Analogy), CAS-No., 10025-77-1	Long term systemic effects
		Industry	Inhalation	2.01 mg.m <sup>-3</sup> as Fe 5.5 mg.m <sup>-3</sup> Read-across (Analogy), CAS-No., 10025-77-1	Acute effects, systemic effects
		Industry	Dermal	2.01 mg.m <sup>-3</sup> as Fe 1.6 mg.kg <sup>-1</sup> bw/day Read-across (Analogy), CAS-No., 10025-77-1	Acute effects, systemic effects

**Predicted No-Effect Concentration (PNEC)**

Component	CAS No	Type	Route	Value	Form
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Diiron tris (Sulfate)	10028-22-5	Not applicable	Sewage Treatment Plant	500 mg.l <sup>-1</sup>	Calculated as Fe
Iron (II) Sulfate	7720-78-7	Not applicable	Sewage Treatment Plant	500 mg.l <sup>-1</sup>	Calculated as Fe

## 8.2 EXPOSURE CONTROLS

### 8.2.1 Occupational exposure 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. Good general ventilation should be sufficient to control airborne levels. Local exhaust is suggested for use, where possible, in enclosed or confined spaces. Ventilation should effectively remove and prevent build-up of any aerosols or mists generated from the handling of the product

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

#### 8.2.1 Instructional measures to prevent exposure

Where there is potential for exposure: provide specific activity training to operators to minimise exposure

#### 8.2.3 Organisational measures to prevent exposure

Regularly inspect, test and maintain all control measures.

#### 8.2.4 Technical measures to prevent exposure

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Clear up spills immediately and dispose of wastes safely. Wash thoroughly after handling

## 8.3 PERSONAL PROTECTION EQUIPMENT

Respiratory protection

Respiratory protection is not required under normal handling conditions. If aerosols or mist are formed, use half mask with dust filter P2

Hand protection

Compatible chemical resistant gloves, preferably gauntlet type (PVC or neoprene) (EN374)



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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. Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough. Break through time: > 480 min

Eye protection

Tightly fitting safety goggles or face-shield (EN166)

Eye wash fountain is recommended

Body protection:

Wear chemical resistant overalls / suit and rubber boots

## 9. PHYSICAL & CHEMICAL PROPERTIES

Parameter	Units	Value	Comment
<b>Appearance/Physical State</b>		Liquid	Aqueous solution of low volatility
<b>Appearance/Colour</b>		Red / Dark brown	
<b>Odour</b>		Not significant	
<b>pH</b>		1.0	Acidic
<b>Crystallisation point</b>	°C	- 15	
<b>Boiling point</b>	°C	> 100	
<b>Density (at 15°C)</b>	g/cm <sup>3</sup>	1.480 – 1.540	
<b>Vapour pressure</b>	kPa	Not applicable	In accordance with column 2 of REACH Annex VII, the study does not need to be conducted
<b>Viscosity at 40°C</b>	mPa.s	5 - 130	
<b>Partition coefficient</b>		Not applicable	Inorganic compound
<b>Water solubility</b>		Completely soluble	Miscible
<b>Flash point</b>	°C	Not applicable	In accordance with column 2 of REACH Annex VII, the study does not need to be conducted; inorganic compound.
<b>Auto flammability</b>	°C	Non flammable	Substance is non-flammable
<b>Flammability</b>	%	Non flammable	Substance is non-flammable



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<b>Explosiveness</b>		Not applicable
<b>Oxidising properties</b>		Not oxidising
<b>Thermal Decomposition</b>	°C	315

## 10. STABILITY & REACTIVITY

### 10.1 REACTIVITY

Corrosive to metals

### 10.2 CHEMICAL STABILITY

Stable under normal conditions

### 10.3 CONDITIONS TO AVOID

Avoid temperatures below crystallization range.  
Avoid storage at high temperatures

### 10.4 MATERIALS TO AVOID

Avoid contact with metals (except Stainless Steel 316 and 440)

Avoid contact with oxidising agents especially hypochlorites and chlorites

Reacts violently with strong alkaline substances. This product may react with reducing agents. Do not mix with other chemicals

### 10.5 HAZARDOUS DECOMPOSITION PRODUCTS

When boiled to dryness or heated above 315°C, toxic and corrosive fumes of sulphur dioxide and trioxide are liberated

## 11. TOXICOLOGICAL INFORMATION

### 11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

**RTECS NUMBER** NO8520000 (Iron (III) Sulfate)

Overdose of iron compounds may have a corrosive effect on the gastrointestinal mucosa and be followed by necrosis, perforation, and stricture formation. Several hours may elapse before symptoms that can include epigastria pain, diarrhoea, vomiting, nausea, and hematemesis occur. After apparent recovery a person may experience metabolic acidosis, convulsions, and coma hours or days later. Further complications may develop leading to acute liver necrosis that can result in death due to hepatic coma

#### ACUTE TOXICITY

##### ORAL

#### Diiron tris(Sulfate)

LD<sub>50</sub> / Oral / Rat 788 mg.kg<sup>-1</sup>  
Read-across (Analogy), CAS-No 7758-94-3  
220 mg.kg<sup>-1</sup> Calculated as Fe



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**DERMAL**

LD<sub>50</sub> / Dermal / Rat > 3,154 mg.kg<sup>-1</sup>  
Read-across (Analogy), CAS-No 7758-94-3  
> 881 mg.kg<sup>-1</sup> Calculated as Fe

**INHALATION**

No data available, not applicable

**IRRITATION AND CORROSION**

**Diiron tris(Sulfate)**

**EYE IRRITATION**

Eyes: May cause burns  
Eyes: rabbit/OECD Test Guideline 405: Causes serious eye damage  
Remarks: Read-across (Analogy) CAS No 7758-94-3 dry substance

**SKIN IRRITATION**

Skin: May cause burns  
Skin: rabbit/OECD Test Guideline 404: No skin irritation  
Moistened solid is expected to be irritant as a consequence of low pH

**SKIN SENSITISATION**

Not sensitizing  
According to experience sensitization is not expected

**LONG TERM TOXICITY**

**Diiron tris(Sulfate)**

**REPEATED DOSE TOXICITY**

Oral/rat/males:  
NOAEL: 277 mg.kg<sup>-1</sup>  
Read-across (Analogy)

Oral/rat/females:  
NOAEL: 314 mg.kg<sup>-1</sup>  
Read-across (Analogy)

**CARCINOGENICITY**

Oral/rat/2 years:  
Information given is based on data obtained from similar substances.  
Not believed to be a carcinogen

**MUTAGENICITY**

No information available

**REPRODUCTIVE TOXICITY**

/rat/Reproductive effects:  
NOAEL: > 500 mg.kg<sup>-1</sup>  
NOAEL F1:  
Read-across (Analogy)

/rat/Developmental toxicity test: NOAEL: > 1.000 mg.kg<sup>-1</sup>NOAEL F1:  
Read-across (Analogy) In animal studies, did not interfere with reproduction



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#### TERATOGENICITY

Oral/rat:  
NOAEL: > 1.000 mg.kg<sup>-1</sup>  
Did not show teratogenic effects in animal experiments. Information given is based on data obtained from similar substances

#### HUMAN EXPERIENCE

Inhalation: May cause irritation of the mucous membranes

Skin contact: May cause skin irritation. May cause burns

Eye contact: May cause eye irritation. May cause burns

## 12. ECOLOGICAL INFORMATION

### 12.1 BASIS FOR ASSESSMENT

The data is based on the toxicological properties of individual components of the product

### 12.2 MOBILITY

Water solubility: Completely soluble ( 20 °C)

### 12.3 PERSISTENCE / DEGRADABILITY

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

When diluted below a mass fraction of 1% hydrolysis and hydroxide formation occurs.

### 12.4 BIOACCUMULATION

The product is not expected to bioaccumulate.

Partition coefficient: n-octanol/water: Not applicable, inorganic compound, In accordance with column 2 of REACH Annex VII, the study does not need to be conducted.

### 12.5 ECOTOXICITY

#### Diiron tris(Sulfate):

LC50/96 h/Oncorhynchus mykiss (rainbow trout): > 100 mg.l<sup>-1</sup>

NOEC/90 d/Oncorhynchus kisutch (Coho salmon): > 1 mg.l<sup>-1</sup>

EC50/48 h/Daphnia: 82.8 mg.l<sup>-1</sup>

NOEC/21 d/Daphnia magna (Water flea): > 1 mg.l<sup>-1</sup>

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

### 12.6 OTHER ADVERSE EFFECTS

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



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### 13. DISPOSAL CONSIDERATIONS

#### 13.1 APPROPRIATE DISPOSAL

Classified as hazardous waste.

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Must be disposed of in accordance with local and national regulations.

Thoroughly cleaned packaging material may be recycled.

#### 13.2 CONTAMINATED PACKAGING

Packages that cannot be cleaned must be disposed of the same way as the unused product. Must be disposed of in accordance with local and national regulations.

### 14. TRANSPORT INFORMATION

**UN No** 3264

#### 14.1 LAND TRANSPORT (ADR/RID)

**UN Proper Shipping Name (PSN)** Corrosive liquid, acidic, inorganic, NOS (Iron (III) Sulfate)  
**Class** 8  
**Packing Group** III  
**Risk Code** 80  
**Labels** 8

#### 14.2 SEA TRANSPORT (IMDG-Code)

**UN Proper Shipping Name (PSN)** Corrosive liquid, acidic, inorganic, NOS (Iron (III) Sulfate)  
**Class** 8  
**Packing Group** III  
**Labels** 8  
**Environmentally Hazardous** Not a Marine Pollutant

#### 14.3 AIR TRANSPORT (ICAO-IATA/DGR)

**UN Proper Shipping Name (PSN)** Corrosive liquid, acidic, inorganic, NOS (Iron (III) Sulfate)  
**Class** 8  
**Packing Group** III  
**Labels** 8

### 15. REGULATORY INFORMATION

#### 15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE



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**Other regulations**

No restrictions identified other than those already covered in regulations

**15.2 EU REGULATIONS CHEMICAL SAFETY ASSESSMENT**

Use for the treatment of water intended for human consumption

**16. OTHER INFORMATION**

**16.1 RELEVANT R- AND H- PHRASES IN SECTION 3 (NUMBER AND FULL TEXT):**

R22	Harmful if swallowed
R36/38	Irritating to eyes and skin
R38	Irritating to skin
R41	Risk of serious damage to eyes
R48/20/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed
R51	Toxic to aquatic organisms
R53	May cause long-term adverse effects in the aquatic environment
H302	Harmful if swallowed
H315	Causes skin irritation
H318	Causes serious eye damage
H319	Causes serious eye irritation
H373	May cause damage to organs through prolonged or repeated exposure
H411	Toxic to aquatic life with long lasting effects