010193

Guidelines for BA-BN BioDisc®
with Chemical Dosing

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ENCLOSED DOCUMENTS	
1011027	DTP Control Panel Wiring Diagram

Issue	Description	Date
06	ECN 1637	08/12/2022

HEALTH AND SAFETY

These warnings are provided in the interest of safety. You must read them carefully before installing or using the equipment.

It is important that this document is retained with the equipment for future reference. Should the equipment be transferred to a new owner, always ensure that all relevant documents are supplied in order that the new owner can be acquainted with the functioning of the equipment and the relevant warnings.

Installation should only be carried out by a suitably experienced contractor, following the Guide-Lines supplied with the equipment.

We recommend the use of a dust mask and gloves when cutting GRP components.

Electrical work should be carried out by a qualified electrician.

Sewage and sewage effluent can carry micro-organisms harmful to human health. Any person carrying out maintenance on the equipment should wear suitable protective clothing, including gloves. Good hygiene practice should also be observed.

Covers must be kept locked.

Observe all hazard labels and take appropriate action to avoid exposure to the risks indicated.

The correct ongoing maintenance is essential for the proper operation of the equipment. Kingspan offer a range of maintenance contracts, details on request.

Should you wish to inspect the operation of the equipment, please observe all necessary precautions, including those listed below, which apply to maintenance procedures.

BioDisc units contain rotating machinery and associated drive chains or belts.

Ensure that you are familiar with the safe working areas and accesses.

Ensure that the working area is adequately lit.

The power supply to the equipment must be isolated at the control panel(s) before lifting the covers. Where a specific maintenance procedure requires the equipment to be running with the covers off, all care must be taken to avoid contact with moving parts and electrical components or conductors. Drive guards must be replaced and secured if removed during maintenance.

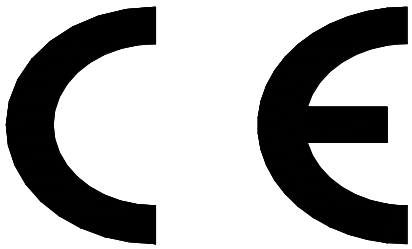
Once power has been isolated, the control panel must be kept locked shut to avoid accidental re-connection whilst work or inspection is being carried out.

Use only the designated access walkways. Do not walk on the cover or deep well safety mesh(es). Desludge port covers, where fitted, must be replaced if removed.

Take care to maintain correct posture, particularly when lifting. Use appropriate lifting equipment when necessary. Keep proper footing and balance at all times. Avoid any sharp edges.

Desludging should be carried out by a contractor holding the relevant permits to transport and dispose of sewage sludge. The contractor must refer to the desludge instructions in the Operating Manual, a copy of which is fastened under the covers.

Ensure that you have the appropriate COSH sheet and chemical handling information for the chemical selected for dosing. The chemicals used for control of phosphorus are dangerous and must be stored and handled safely. They are acidic and corrosive. See the Material Safety Data Sheet (MSDS) provided by the supplier for appropriate personal protective equipment.



Kingspan Water and Energy Ltd
College Road North
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United Kingdom

EN 12566-3+A2:2013	
Name of Product Type:	**BioDisc BA**
Material:	**GRP**
Treatment process:	**Rotating Biological Contactor (RBC) with chemical dosing equipment**
Testing authority:	**PIA GmbH, NB 1739**
Effectiveness of treatment:	
Treatment efficiency:	**COD: 95.9%**
(at tested organic daily load BOD_5 = 0.28 kg/d)	**BOD_5: 98.0%**
	N_{tot}: 63.9%
	NH_4-N: 84.8%
	P_{tot}: 95.4%
	SS: 95.6%
Nominal hydraulic flow (100%)	**0.9 m^3/d**
Number of desludging	**1**
Power consumption	**1.5 kWh/d**
Treatment capacity (nominal designation)	**6 PT**

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1.0 Chemical Dosing kit

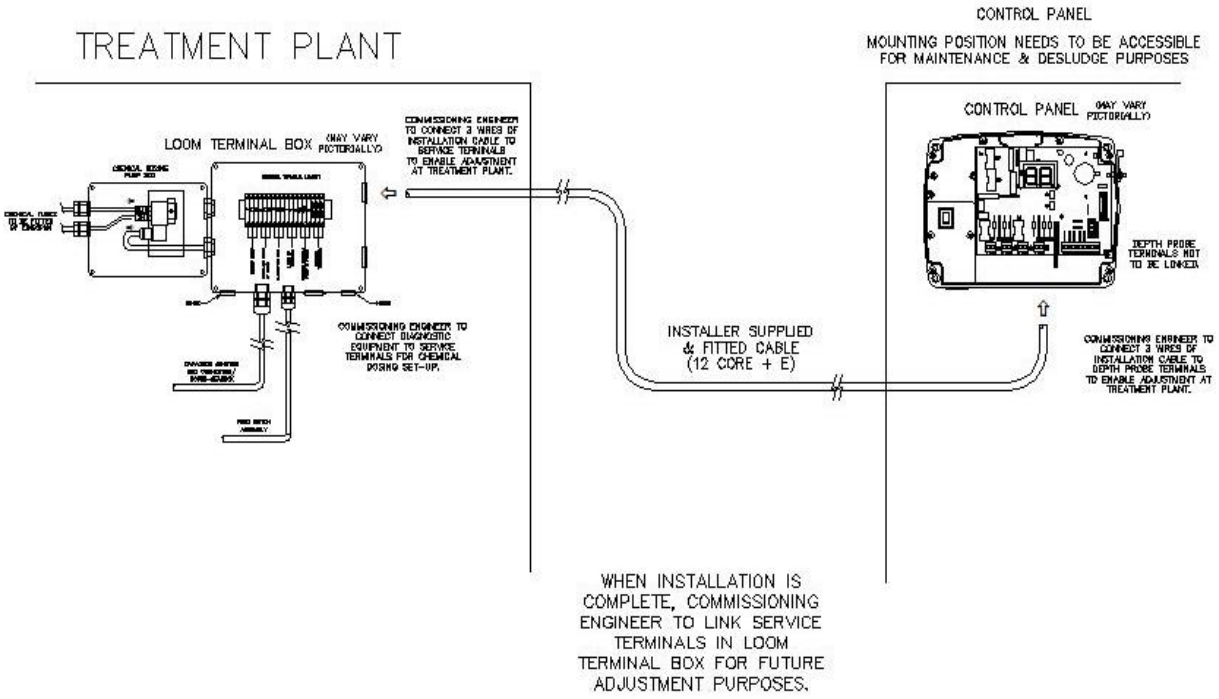
Please see the relevant BioDisc Installation and Operating manual, which indicates the flows permitted and expected daily volumes. These manuals should be followed however; **your unit has been modified to include chemical dosing equipment.**

In addition to the standard features described, your unit includes additional equipment and a special control panel.

Units are supplied with the additional equipment pre fitted. Your system and chemical dosing operations will be set up by the service engineer at installation due to variations of on-site conditions.

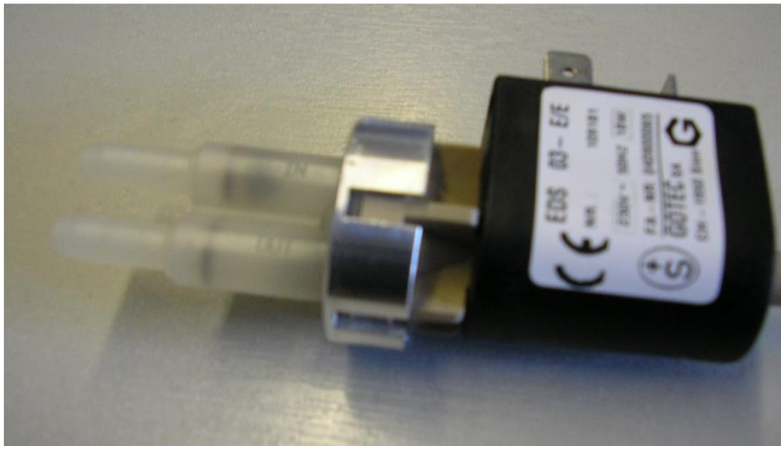
Wiring Loom

The wiring loom allows easy connection of the internal electrical components, i.e. chemical dosing pump, BioDisc motor, Loss of rotation sensor, sludge return pump (if included)



Chemical dosing pump

- The pump (shown below) is mounted on the wall of the tank within a chemical box or attached to the junction box. Its operation is controlled by the control panel.
- The duration of the dose and the interval of the dose can be altered using the control panel.
- Check that the chemical tubes are connected correctly to the pump inlet and outlet. (Labels are attached to the tubing externally and within the box, the white nipples are faintly embossed with in and out)
- Ensure that the pump and tube are primed with chemical and the line is bled of air.
- The discharge tube should be positioned /located at the pre drilled point at the end of the second biozone to allow the chemical to fall freely and to ensure that the chemical is delivered into the mixing zone. The discharge must be above the level of the stored chemical to prevent siphoning.



Gotec Pump

Flexible chemical Tubing

- Chemical inlet. Place the chemical draw pipe with weighted end into the chemical tank so that the chemical is drawn from above the base of the tank.
- Remove any excess tubing. The chemical tubes should be vertical and not be so long as to form unnecessary loops.

Chemical (Customer supply)

The recommended chemical is XL 60 obtainable from Kemira or Univar.
Other chemicals may be used but they must be checked for suitability. Please contact Kingspan

- **See enclosed chemical specification. Please ensure that you have the most up to date versions of the health and safety data sheets from the chemical supplier and observe all health and safety precautions.**
- The chemical container(s) should be placed inside the unit on the ledge adjacent to the chemical pump.
- Ensure that the chemical container is carefully located and secured into position.

Control panel

The control panel includes a micro-processor which is provided pre set to dose the estimated dose of chemical at the appropriate interval.

- The setting assumes that the influent Phosphate (P) is approx 8-12 mg/l and assumes that an outlet of 2 mg/l is required. These settings may be altered by the commissioning engineer if there are known different volumes or different incoming or effluent phosphate values.

- During commissioning, a check can be made of the sewage inlet P level and the pump setting adjusted if necessary. (Commissioning cost is additional)

See wiring diagram for connection details.

2.0 Process Description

The chemical dosing process is started when the sludge return pump is activated and operates for a predetermined time. Chemical is intermittently pumped into the dosing point. The chemical mixes with the dissolved phosphate and coagulates together to form settleable particles which settle in the final settlement zone.

Using a chemical increases the volume of sludge formed within the treatment unit when compared to a standard unit. The level of sludge produced also relates to loading and so an assessment of the sludge production should be made monthly bearing in mind that there is a need for increased emptying frequency when compared to the standard recommendations given in the manual.

Addition of the chemical is fundamental to the process and it is important to check the chemical usage and replace the drum. Should the chemical run out, there will be no phosphate removal.

The reduction of phosphate is required by the environmental regulator in order to protect the local environment. The addition of limiting nutrients such as phosphate can cause eutrophication in the receiving water.

3.0 Customer Information

A BA unit is normally supplied for use at 1 property with a maximum occupancy of 6 persons.
A BB, 2 properties with a maximum of 12 people.
A BC unit is normally supplied for use by multiple properties with a maximum occupancy of 18 persons. For applications of larger units consult Kingspan Sales.

Detergents and chemical products used within the properties should be selected with care so as to reduce the amount of added phosphates going into the treatment plant. It is possible to reduce the amount of phosphates entering the unit by up to 50%. The less phosphate entering the plant, the less chemical dose is required.

Each person / and visitor to the property contributes wastewater into the treatment plant and the volume treated by the unit will change on a daily and hourly basis. The volume treated is controlled by a flow device which transfers liquid over the baffle into a biozone.

Units which are over dosed with too much chemical tend to develop a creamy biomass, but this colour of biomass may also be the sign of excess fat or overloading, see trouble shooting notes in main manual.

The chemical dosing settings can be reviewed and, if necessary, adjusted at the next maintenance visit.

4.0 Chemical Consumption

The chemical dosing duration for units are set depending on their size.

The interval between the doses can be adjusted to suit the expected incoming phosphate load and the number of persons using the unit.

Low and average settings are given for each population load to assist the selection of the appropriate interval. These settings were calculated using averages obtained during performance testing, but higher use settings may be required to reflect high incoming phosphate levels or higher volume uses.

Initial Chemical dosing setting Single Control Panel for BA to BD.
BE and above require separate chemical dosing panel with timers.

	PE	Seconds	Minutes
		on	off
BA	6	3	25
BB	12	3	12
BC	18	4	12
BD	25	3	6
	PE	Seconds	Seconds
BE	35	7	593
BF	50	10	590
BG	70	13	587
BH	75	14	586
BJ	100	19	581
BK	125	23	577
BL	150	28	572
BM	225	5	7200
BN	300	5	7200

<u>No occupancy (i.e. periods > 3 days without residents)</u>

The BioDisc should be left on.
The recycle pump (if fitted) returns treated effluent so as to maintain the biomass on the discs.

If the period of absence is expected to be longer, then in order to save chemical and to protect the biomass, the chemical draw tube can be removed from the chemical drum. (it can be placed into a small container of water located on the biozone so that water is used in place of chemical.

On return, replace the draw tube in chemical drum and check that the chemical doses.

5.0 Installation of Chemical Dosing System for BA-BD Control Panel.

Upon installation, the multi-core cable between the control panel and the junction box in the unit, must link all relevant operating terminals. **Wiring Diagram 1011027**

Refer the DTP Control Panel Manual 1011026 for the setting up of Chemical Dosing Timetable.

Use the Guide in Section 4 to set the desired time on the Panel.

6.0 Maintenance

Excess solids are created by using the chemical. Units with chemical dosing systems will require desludging more often than standard units without the addition of chemical.

Regular replacement of the chemical containers is required, before the chemical runs out.
The chemical dosing lines should be checked each time the chemical container is replaced.
The dosing action should be checked when the container is replaced.

7.0 Chemical Information

The following information was provided by Univar

REVISION DATE: 13th May 2008

UNIVAR

SAFETY DATA SHEET
PAX XL.....

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

PRODUCT NAME	PAX XL.....
SYNONYMS, TRADE NAMES	60, , 18,
SUPPLIER	Univar 46 Peckover Street BRADFORD West Yorkshire BD1 5BD +44 1274 377000 +44 1274 377001 sds@univareurope.com
SDS No.	P161
Emergency Contact Number (Office Hours)	+441274 377070

2 HAZARDS IDENTIFICATION

Irritating to eyes and skin.

CLASSIFICATION Xi;R36/38.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Name	EC No.	CAS-No.	Content	Classification
Polyaluminiumhydroxide Chloride Silicate	215-477-2	1327-41-9	25-50%	Xi;R36/38.

The Full Text for all R-Phrases are Displayed in Section 16

4 FIRST-AID MEASURES

INHALATION

Remove victim immediately from source of exposure. Move into fresh air and keep at rest. Rinse nose and mouth with water. Get medical attention if any discomfort continues.

INGESTION

Rinse mouth thoroughly. Drink plenty of water. Do not give victim anything to drink if they are unconscious. Do not induce vomiting. Get medical attention if any discomfort continues.

SKIN CONTACT

Remove contaminated clothes and rinse skin thoroughly with water. Wash contaminated clothing before reuse. Get medical attention if any discomfort continues.

EYE CONTACT

Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyes wide apart.

5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

Use fire-extinguishing media appropriate for surrounding materials.

SPECIFIC HAZARDS

By heating and fire, toxic vapours/gases may be formed. Hydrogen chloride (HCl).

PROTECTIVE MEASURES IN FIRE

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

6 ACCIDENTAL RELEASE MEASURES

REVISION DATE: 13th May 2008

PAX XL.....

PERSONAL PRECAUTIONS

Wear protective clothing as described in Section 8 of this safety data sheet.

ENVIRONMENTAL PRECAUTIONS

Avoid discharge into drains, water courses or onto the ground.

SPILL CLEAN UP METHODS

Absorb in vermiculite, dry sand or earth and place into containers. Neutralise with alkaline material (Lime, crushed limestone, sodium bicarbonate or soda ash). Flush area with water.

7 HANDLING AND STORAGE

USAGE PRECAUTIONS

Provide good ventilation. Avoid contact with skin and eyes.

STORAGE PRECAUTIONS

Store in tightly closed original container in a dry, cool and well-ventilated place. Suitable containers: polyethylene, glass lined.

STORAGE CLASS

Corrosive storage.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

PROTECTIVE EQUIPMENT





RESPIRATORY EQUIPMENT

No specific recommendation made, but respiratory protection must be used if the general level exceeds the Recommended Workplace Exposure Limit.

HAND PROTECTION

PVC or rubber gloves are recommended.

EYE PROTECTION

Wear approved safety goggles.

OTHER PROTECTION

Wear rubber footwear. Wear rubber apron.

HYGIENE MEASURES

Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke.

9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Liquid		
COLOUR	Yellow		
ODOUR	Almost odourless		
SOLUBILITY	Miscible with water.		
BOILING POINT (°C)	100 - 200	RELATIVE DENSITY	1.30 - 1.33
BULK DENSITY	1280 - 1320 kg/m3	pH-VALUE, CONC. SOLUTION	2 conc.
DECOMPOSITION TEMPERATURE (°C)	200	PARTITION COEFFICIENT (N-Octanol/Water)	<3

10 STABILITY AND REACTIVITY

STABILITY

Stable under normal temperature conditions and recommended use.

MATERIALS TO AVOID

Chemically active metals. Inorganic cyanides. Strong alkalis.

REVISION DATE: 13th May 2008

PAX XL.....

HAZARDOUS DECOMPOSITION PRODUCTS

By heating, vapours/gases hazardous to health may be formed. Hydrogen chloride (HCl).

11 TOXICOLOGICAL INFORMATION

TOXIC DOSE 1 - LD 50 >2000 mg/kg (oral rat)

INHALATION

Vapour may irritate respiratory system or lungs.

INGESTION

May cause internal injury. Causes burns.

SKIN CONTACT

Causes burns.

EYE CONTACT

May cause chemical eye burns.

12 ECOLOGICAL INFORMATION

ECOTOXICITY

The product components are 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.

EC 50, 48 Hrs, DAPHNIA, mg/l 290

IC 50, 72 Hrs, ALGAE, mg/l 1.5 - 2

MOBILITY

The product is soluble in water.

BIOACCUMULATION

The product does not contain any substances expected to be bioaccumulating.

13 DISPOSAL CONSIDERATIONS

GENERAL INFORMATION

Waste to be treated as controlled waste. Disposal to licensed waste disposal site in accordance with local Waste Disposal Authority. Do not puncture or incinerate even when empty.

DISPOSAL METHODS

Dispose of waste and residues in accordance with local authority requirements.

14 TRANSPORT INFORMATION



UK ROAD CLASS	8		
PROPER SHIPPING NAME	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.(CONTAINS POLYALUMINIUMHYDROXIDE CHLORIDE SILICATE)		
UN NO. ROAD	3264	UK ROAD PACK GR.	III
ADR CLASS NO.	8	ADR CLASS	Class 8: Corrosive substances.
ADR PACK GROUP	III	HAZARD No. (ADR)	80
ADR LABEL NO.	8	HAZCHEM CODE	2X
CEFIC TEC(R) NO.	80GC1-II+III	RID CLASS NO.	8
RID PACK GROUP	III	UN NO. SEA	3264
IMDG CLASS	8	IMDG PACK GR.	III
EMS	F-A, S-B	MARINE POLLUTANT	No.

REVISION DATE: 13th May 2008

PAX XL.....

UN NO. AIR	3264	AIR CLASS	8
AIR PACK GR.	III		

15 REGULATORY INFORMATION

LABELLING



Irritant

RISK PHRASES

R36/38	Irritating to eyes and skin.

SAFETY PHRASES

S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37	Wear suitable gloves.
S24/25	Avoid contact with skin and eyes.
S60	This material and its container must be disposed of as hazardous waste.

STATUTORY INSTRUMENTS

Chemicals (Hazard Information and Packaging) Regulations. Control of Substances Hazardous to Health.

APPROVED CODE OF PRACTICE

Safety Data Sheets for Substances and Preparations.

GUIDANCE NOTES

Workplace Exposure Limits EH40. CHIP for everyone HSG(108).

16 OTHER INFORMATION

ISSUED BY

Univar Ltd

REVISION DATE	13th May 2008
REV. NO./REPL. SDS GENERATED	04
SDS NO.	P161

SAFETY DATA SHEET STATUS

Approved.

DATE	21st February 2008
SIGNATURE	Jitendra Panchal

RISK PHRASES IN FULL

R36/38	Irritating to eyes and skin.

SAFETY DATA SHEET

FERRIC SULPHATE 40%

Compilation date: 08/09/2011

Revision date: 03/08/2016

Revision No: 3

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: FERRIC SULPHATE 40%

REACH registered number(s): 01-2119513202-59-XXXX

CAS number: 10028-22-5

EINECS number: 233-072-9

Synonyms: IRON (III) SULPHATE 40%

DIIRON TRIS(SULPHATE) 40%

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of substance / mixture: Water and effluent treatment.

1.3. Details of the supplier of the safety data sheet

Company name: Tan International Ltd

Tayview Industrial Estate

Perth

PH2 8DG

UK

Tel: +44 (0)1738 632 909

Fax: +44 (0)1738 632 901

Email: qa@taninternational.com

1.4. Emergency telephone number

Emergency tel: +44 (0)1270 502 891

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CLP: Met. Corr. 1: H290; Acute Tox. 4: H302; Eye Dam. 1: H318; Skin Irrit. 2: H315

Most important adverse effects: May be corrosive to metals. Harmful if swallowed. Causes skin irritation. Causes serious eye damage.

2.2. Label elements

Label elements:

Hazard statements: * H290: May be corrosive to metals.

H302: Harmful if swallowed.

H315: Causes skin irritation.

H318: Causes serious eye damage.

Signal words: Danger

[cont...]

Hazard pictograms: GHS05: Corrosion
GHS07: Exclamation mark



Precautionary statements: P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301+312: IF SWALLOWED: Call a POISON CENTER/doctor/ if you feel unwell.
P303+361+353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P363: Wash contaminated clothing before reuse.
P501: Dispose of contents/container to an authorised waste contractor.

2.3. Other hazards

PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.2. Mixtures

Hazardous ingredients:

FERRIC SULPHATE AQUEOUS SOLUTION - REACH registered number(s): 01-2119513202-59

EINECS	CAS	PBT / WEL	CLP Classification	Percent
233-072-9	10028-22-5	-	Met. Corr. 1: H290; Acute Tox. 4: H302; Skin Irrit. 2: H315; Eye Dam. 1: H318	35-75%

SULPHURIC ACID - REACH registered number(s): 01-2119458838-20-XXXX

231-639-5	7664-93-9	-	Skin Corr. 1A: H314	<1%

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: * Remove all contaminated clothes and footwear immediately unless stuck to skin. Drench the affected skin with running water for 10 minutes or longer if substance is still on skin. If irritation persists, seek medical advice/ attention. Launder contaminated clothing thoroughly before re-use.

Eye contact: Seek immediate medical attention. Rinse immediately with plenty of water. Remove any contact lenses and keep eye-lids wide apart. Continue rinsing for at least 10 minutes or until trained medical assistance arrives.

Ingestion: Seek immediate medical attention. Never give anything by mouth to an unconscious person. Do not induce vomiting. Wash out mouth with water. Give plenty of water to drink.

Inhalation: Move to fresh air in case of accidental inhalation of vapours. Rinse nose and mouth with water. Seek medical attention if any discomfort persists.

[cont...]

SAFETY DATA SHEET

FERRIC SULPHATE 40%

4.2. Most important symptoms and effects, both acute and delayed

Skin contact: * There may be irritation and redness at the site of contact.

Eye contact: There may be irritation and pain. Corneal burns may occur. May cause permanent damage.

Ingestion: * Corrosive burns may appear around the lips. May cause burns to the digestive system. Ingesting large quantities may cause damage to liver and kidneys. May prove fatal if ingested in large quantities.

Inhalation: There may be irritation to the respiratory system.

Delayed / immediate effects: * Immediate effects can be expected after short-term exposure. Prolonged and repeated exposure can cause sensitisation/dermatitis and/ or other skin damage. Not expected to cause cancer. Not expected to be a reproductive toxicant. Not expected to be a mutagenic toxicant.

4.3. Indication of any immediate medical attention and special treatment needed

Immediate / special treatment: Show this safety data sheet to the doctor in attendance. Eye bathing equipment should be available on the premises. A decontamination shower should be available on the premises.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Suitable extinguishing media for the surrounding fire should be used. Use water spray to cool containers.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: * Non-flammable. Corrosive. Reacts with many metals to form the flammable gas hydrogen. In combustion emits toxic fumes of sulphur oxides.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to section 8 of SDS for personal protection details. Mark out the contaminated area with signs and prevent access to unauthorised personnel. Turn leaking containers leak-side up to prevent the escape of liquid. Provide adequate ventilation. Avoid contact with eyes and skin.

6.2. Environmental precautions

Environmental precautions: Do not discharge into drains or rivers. Contain the spillage using bunding. Spillages or uncontrolled discharges into watercourses must be immediately alerted to the appropriate environmental agency.

[cont...]

6.3. Methods and material for containment and cleaning up

Clean-up procedures: * If permitted, small volumes may be neutralised with soda ash solution and washed to sewer with copious amounts of water. OR - Absorb into dry earth or sand. Transfer to a closable, labelled salvage container for disposal by an appropriate method. For larger spills, use a suction pump to transfer the spilled material to a salvage container. Wash the spillage site with large amounts of water.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: * Ensure there is sufficient ventilation of the area. Avoid the formation or spread of mists in the air. Do not wear contact lens when handling this material. Avoid contact with eyes and skin. Use normal safe handling techniques.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep container tightly closed. Separate from incompatible material - see Section 10.

Suitable packaging: It is recommended that this product is only kept in its original packaging. Use non-metallic containers.

7.3. Specific end use(s)

Specific end use(s): Water and effluent treatment.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Workplace exposure limits: **Respirable dust**

State	8 hour TWA	15 min. STEL	8 hour TWA	15 min. STEL
UK	1mg/m3	2mg/m3	-	-

Hazardous ingredients:

FERRIC SULPHATE AQUEOUS SOLUTION

Workplace exposure limits: **Respirable dust**

State	8 hour TWA	15 min. STEL	8 hour TWA	15 min. STEL
UK	1mg/m3	2mg/m3	-	-

[cont...]

SULPHURIC ACID...100%

UK	1 mg/m3	-	-	-

DNEL/PNEC Values

FERRIC SULPHATE 40%

Type	Exposure	Value	Population	Effect
DNEL	Dermal (long term)	2mg/kg/day	Workers	Systemic
DNEL	Inhalation (long term)	7.2mg/m3	Workers	Systemic
PNEC	Sewage Treatment Plant	500mg/l	-	-

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area. Ensure eyewash stations and safety showers are provided in the storage and working areas.

Respiratory protection: Respiratory protective device is not required in normal working conditions but may be required in areas of poor ventilation. Gas/vapour filter, type E: sulphur dioxide and other acid gases (EN141).

Hand protection: * Gloves (acid resistant). The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material. Recommended types include:- PVC gloves. Neoprene gloves.

Eye protection: Tightly fitting safety goggles. Face-shield. Ensure eye bath is to hand.

Skin protection: Acid-resistant protective clothing. Boots. Ensure safety shower is to hand.

Environmental: Storage should be placed inside a fully bunded area of sufficient size to contain the volume plus 10%.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Liquid

Colour: Orange-brown

Odour: Not significant.

Oxidising: Non-oxidising (by EC criteria)

Solubility in water: Miscible in all proportions

Boiling point/range°C: 100 - 105 **Flammability limits %: lower:** Not applicable.

upper: Not applicable. **Flash point°C:** Not applicable.

Autoflammability°C: Not applicable. **pH:** <1

9.2. Other information

Other information: Decomposition Temperature 315C

Section 10: Stability and reactivity

[cont...]

SAFETY DATA SHEET

FERRIC SULPHATE 40%

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions. Decomposition may occur on exposure to conditions or materials listed below. Reacts with many metals which may cause the flammable gas Hydrogen to be released.

10.4. Conditions to avoid

Conditions to avoid: Heat.

10.5. Incompatible materials

Materials to avoid: * Bases. Metals. Oxidising agents. Hypochlorites.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes of sulphur oxides.

Section 11: Toxicological information

11.1. Information on toxicological effects

*** Toxicity values:**

Route	Species	Test	Value	Units
ORAL	RAT	LD50	>500	mg/kg
DERMAL	RAT	LD50	>800	mg/kg

Hazardous ingredients:

SULPHURIC ACID...100%

ORL	RAT	LD50	2140	mg/kg

Relevant hazards for substance:

Hazard	Route	Basis
Acute toxicity (ac. tox. 4)	ING	Hazardous: calculated
Skin corrosion/irritation	DRM	Hazardous: calculated
Serious eye damage/irritation	OPT	Hazardous: calculated

Symptoms / routes of exposure

Skin contact: * There may be irritation and redness at the site of contact.

Eye contact: There may be irritation and pain. Corneal burns may occur. May cause permanent damage.

Ingestion: * Corrosive burns may appear around the lips. May cause burns to the digestive system.

[cont...]

Ingesting large quantities may cause damage to liver and kidneys. May prove fatal if ingested in large quantities.

Inhalation: There may be irritation to the respiratory system.

Delayed / immediate effects: * Immediate effects can be expected after short-term exposure. Prolonged and repeated exposure can cause sensitisation/dermatitis and/ or other skin damage. Not expected to cause cancer. Not expected to be a reproductive toxicant. Not expected to be a mutagenic toxicant.

Other information: Symptoms from inhaling combustion fumes may not be readily apparent. Keep under medical supervision for at least 24 hours.

Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values:

Species	Test	Value	Units
RAINBOW TROUT (Oncorhynchus mykiss)	96H LC50	>100	mg/l
Daphnia magna	48H EC50	80	mg/l

12.2. Persistence and degradability

Persistence and degradability: The methods for determining biological degradability are not applicable to inorganic substances. This product is a flocculating agent. It should react with suspended material in an aquatic system and be neutralised.

12.3. Bioaccumulative potential

Bioaccumulative potential: * The methods for determining bioaccumulative potential are not applicable to inorganic substances.

12.4. Mobility in soil

Mobility: Soluble in water.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: * The low pH may have a temporary adverse effect on the aquatic environment. This product is not expected to have a long term adverse effect on the aquatic environment.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Dispose of waste and residues in accordance with local and national requirements. Transfer to a suitable container and arrange for collection by specialised disposal company.

Disposal of packaging: Dispose of packaging in accordance with local and national requirements. Dispose of in a regulated landfill site or other method for hazardous or toxic wastes.

[cont...]

SAFETY DATA SHEET

FERRIC SULPHATE 40%

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

14.1. UN number

UN number: * UN1760

14.2. UN proper shipping name

Shipping name: CORROSIVE LIQUID, N.O.S. (Ferric Sulphate)

14.3. Transport hazard class(es)

Transport class: 8

14.4. Packing group

Packing group: III

14.5. Environmental hazards

Environmentally hazardous: No **Marine pollutant:** No

14.6. Special precautions for user

Special precautions: No special precautions.

Tunnel code: E

Transport category: 3

Section 15: Regulatory information

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

Specific regulations: Not applicable.

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has been carried out for the substance or the mixture by the supplier.

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 453/2010.

* indicates text in the SDS which has changed since the last revision.

Phrases used in s.2 and s.3: H290: May be corrosive to metals.

H302: Harmful if swallowed.

H314: Causes severe skin burns and eye damage.

H315: Causes skin irritation.

H318: Causes serious eye damage.

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive

[cont...]

and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

[final page]