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

1.1 Product identifier

Trade name or designation of the mixture	RegenOx® Part B
Registration number(s)	01-2119448725-31-0076

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

Identified uses	Soil and Groundwater Remediation.
Uses advised against	None known

1.3 Details of the supplier of the safety data sheet

Company name	Regenesis Ltd.
Address	Cambridge House Henry Street Bath, Somerset BA1 1BT United Kingdom
Telephone number	+44 (0) 1225 618161
E-mail address	CustomerService@regenesis.com

1.4 Emergency telephone number

General in EU	112 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
CHEMTREC	For Dangerous Goods Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC 24/7 at:
International	(+)1-703-527-3887
USA, Canada, Mexico	(+)1-800-424-9300

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies

2.1.1 Classification according to Regulation (EC) No 1272/2008 (CLP)

Skin Sens. 1 (H317)

2.2 Label elements

Hazard pictogram(s):

Signal Word	Warning	
Hazard Statement(s)	H317	May cause an allergic skin reaction

Precautionary Statement(s)	P261	Avoid breathing mist or vapours
	P272	Contaminated work clothing should not be allowed out of the workplace
	P280	Wear protective gloves
	P302 + P352	IF ON SKIN: Wash with plenty of water
	P333	If skin irritation or rash occurs: get medical advice/attention
	P362 + P364	Take off contaminated clothing and wash it before reuse

2.3 Other hazards

The mixture does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Substance Name	EC No.	CAS No.	% w/w	REACH Registration No.	Index No.	Classification
Silicic acid, sodium salt	215-687-4	1344-09-8	25-40	01-2119448725-31-0076	N/A	Not classified as hazardous
Silicon dioxide (amorphous silica gel)	231-545-4	7631-86-9	<10	N/A	N/A	Not classified as hazardous
Iron sulphate	231-753-5	7720-78-7	2-5	N/A	026-003-01-4	Met. Corr. 1: H290 Acute Tox. 4: H302 Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317

The full text for all H-statements is displayed in Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes	Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.
Following inhalation	Remove person to fresh air and keep at rest in a position comfortable for breathing.
Following skin contact	IF ON SKIN: wash with plenty of water. If skin irritation occurs: get medical advice/attention.
Following eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Following ingestion	Rinse mouth. Call a POISON CENTRE or doctor if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

May cause an allergic skin reaction.

4.3 Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2)
Unsuitable extinguishing media	None known.

5.2 Special hazards arising from the substance or mixture

During fire, gases hazardous to health may be formed. Combustion products may include: silicon oxides, metal oxides, sulfur oxides.

5.3 Advice for firefighters

Special protective equipment for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Special firefighting procedures	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazard or other involved materials

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep away from clothing and other combustible materials. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained.
For emergency responders	Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.

6.2 Environmental precautions

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

6.3 Methods and material for containment and cleaning up

Large Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Shovel the material into waste container. Minimise dust generation and accumulation. Prevent product from entering drains. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.

6.4 Reference to other sections

For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Avoid breathing mist or vapours. Wear protective gloves. Observe good industrial hygiene practices.

7.2 Conditions for safe storage, including any incompatibilities

Store in original tightly closed container. Store in a cool, dry, well-ventilated place. Maintain storage temperatures between 50°F to 140°F (10°C to 60°C). Store away from incompatible materials (see section 10 of the SDS). Recommended storage containers: steel or plastic. Do not use containers made of aluminum, fiberglass, copper, brass, zinc or galvanized containers.

7.3 Specific end use(s)

Soil and Groundwater Remediation

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values

Substance	Silicic acid, sodium salt
CAS No.	1310-73-2
No exposure limits noted	

Substance	Silica, amorphous			
CAS No.	7631-86-9, 112926-00-8			
Country	Limit Value – Eight hours		Limit Value – Short term	
	ppm	mg/m^3	ppm	mg/m^3
Austria	-	4 inhalable aerosol	-	-
Belgium	-	10	-	-
Denmark	-	2 inhalable aerosol	-	4 inhalable aerosol
Finland	-	5	-	-
Germany (AGS)	-	4 inhalable aerosol	-	-
Germany (DFG)	-	4 inhalable aerosol	-	-
Ireland	-	6 inhalable fraction 2.4 respirable fraction	-	-
Latvia	-	1	-	-
Switzerland	-	4 inhalable aerosol	-	-
United Kingdom	-	6 inhalable aerosol 2.4 inhalable aerosol	-	

Substance	Iron salts (as Fe)			
CAS No.	N/A			
Country	Limit Value – Eight hours		Limit Value – Short term	
	ppm	mg/m^3	ppm	mg/m^3
Belgium	-	1	-	-
Denmark	-	1	-	2
Hungary	-	6 respirable aerosol	-	-
Ireland	-	1	-	2 (1)
Spain	-	1	-	-
United Kingdom	-	1	-	2
	Remarks			
Ireland	(1) 15 minute reference period			

Recommended monitoring procedures: Follow standard monitoring procedures

Derived no effect levels (DNELs):

Silicic acid, sodium salt

Exposure Route	Exposure Patterns	DNEL (workers)
Inhalation	Long term systemic	5.61 mg/m^3
	Short term systemic	As no short term systemic toxicity hazard has been identified, there is no requirement to derive short term systemic DNEL
	Long term local	As no local toxicity hazard has been identified, there is no requirement to derive local DNELs
	Short term local	
Dermal	Long term systemic	1.59 mg/kg bw/day
	Short term systemic	As no short term systemic toxicity

		hazard has been identified, there is no requirement to derive short term systemic DNEL
	Long term local	As no local toxicity hazard has been identified, there is no requirement to derive local DNELs
	Short term local	

Exposure Route	Exposure Patterns	DNEL (general population)
Inhalation	Long term systemic	1.03 mg/m^3
	Short term systemic	295 mg/m^3
	Long term local	1.03 mg/m^3
	Short term local	295 mg/m^3
Dermal	Long term systemic	9.1 mg/kg bw/day
	Short term systemic	200 mg/kg bw/day
	Long term local	0.051 mg/cm^3
	Short term local	1.124 mg/cm^3
Oral	Long term systemic	9.1 mg/kg bw/day
	Short term systemic	30 mg/kg bw/day

Silicon dioxide

Exposure Route	Exposure Patterns	DNEL (workers)
Inhalation	Long term systemic	4 mg/m^3
	Short term systemic	No data available
	Long term local	No data available
	Short term local	
Dermal	Long term systemic	No data available
	Short term systemic	
	Long term local	
	Short term local	

Exposure Route	Exposure Patterns	DNEL (general population)
Inhalation	Long term systemic	No data available
	Short term systemic	
	Long term local	
	Short term local	
Dermal	Long term systemic	
	Short term systemic	
	Long term local	
	Short term local	
Oral	Long term systemic	
	Short term systemic	

Iron sulphate

Exposure Route	Exposure Patterns	DNEL (workers)
Inhalation	Long term systemic	As no long term systemic toxicity hazard has been identified, there is no requirement to derive long term systemic DNEL
	Short term systemic	A low short term systemic toxicity hazard has been identified, but no threshold derived so it is not possible to derive a short term systemic DNEL
	Long term local	As no long term systemic toxicity hazard has been identified, there is no requirement to derive long term systemic DNEL
	Short term local	A low short term systemic toxicity hazard has been identified, but no

		threshold derived so it is not possible to derive a short term systemic DNEL
Dermal	Long term systemic	2.8 mg/kg bw/day
	Short term systemic	As no short term systemic toxicity hazard has been identified, there is no requirement to derive a short term systemic DNEL
	Long term local	A low local toxicity hazard has been identified, but no threshold derived so it is not possible to derive a local DNEL
	Short term local	

Exposure Route	Exposure Patterns	DNEL (general population)
Inhalation	Long term systemic	As no long term systemic toxicity hazard has been identified, there is no requirement to derive long term systemic DNEL
	Short term systemic	A low short term systemic toxicity hazard has been identified, but no threshold derived so it is not possible to derive a short term systemic DNEL
	Long term local	As no long term systemic toxicity hazard has been identified, there is no requirement to derive long term systemic DNEL
	Short term local	A low short term systemic toxicity hazard has been identified, but no threshold derived so it is not possible to derive a short term systemic DNEL
Dermal	Long term systemic	1.4 mg/kg bw/day
	Short term systemic	As no short term systemic toxicity hazard has been identified, there is no requirement to derive a short term systemic DNEL
	Long term local	A low local toxicity hazard has been identified, but no threshold derived so it is not possible to derive a local DNEL
	Short term local	
Oral	Long term systemic	0.28 mg/kg bw/day

Predicted no effect concentrations (PNECs):

Silicic acid, sodium salt

PNEC	Value
Aqua (freshwater)	7.5 mg/L
Aqua (marine water)	1 mg/L
STP	348 mg/L
Sediment (freshwater)	No hazard identified
Sediment (marine water)	No hazard identified
Soil	No hazard identified
Secondary poisoning	No potential for bioaccumulation

Iron sulphate

PNEC	Value
No hazard identified	

8.2 Exposure controls

8.2.1 Appropriate engineering 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. Eye wash facilities and emergency shower must be available when handling this product.

8.2.2 Individual protection measures, such as personal protective equipment

General information	Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.
Eye/face protection	To avoid contact with eyes, wear chemical goggles or shielded safety glasses
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves
Other	Wear appropriate chemical resistant clothing
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Recommended use: Wear a CEN approved respirator, with appropriate cartridge or canister, suitable for airborne concentration levels present.
Thermal	Wear appropriate thermal protective clothing, when necessary.
Hygiene measures	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants..

8.2.3 Environmental exposure controls

Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	
Physical state	Liquid
Form	Liquid
Colour	Green to dark blue
Odour	Odourless
Odour threshold	No data available
pH	11 (10% solution/water)
Melting point/freezing point	No data available
Initial boiling point and boiling range	No data available
Flash point	No data available
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapour pressure	No data available
Vapour density	No data available
Relative density	1.2 – 1.4
Solubility(ies)	Miscible
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	< 10,000cP
Viscosity	No data available
Explosive properties	No data available
Oxidising properties	No data available

SECTION 10: Stability and reactivity

10.1 Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
10.2 Chemical stability	Material is stable under normal conditions
10.3 Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use
10.4 Conditions to avoid	Contact with incompatible materials
10.5 Incompatible materials	Hydrogen fluoride. Fluorine. Oxygen difluoride. Chlorine trifluoride. Strong acids. Strong bases. Oxidizers. Aluminum metal. Copper. Brass. Zinc. Galvanized metals.
10.6 Hazardous decomposition products	Thermal decomposition or combustion may produce: silicon oxides, metal oxides, sulfur oxides

SECTION 11: Toxicological information

11.1 Information on toxicological effects

RegenOx® Part B

No data available on product itself. Classification determined based on toxicological data available on constituent substances.

Silicic acid, sodium salt

Acute toxicity	Species	Test Results	Method
Oral LD50	Rat	LD50 3,400 mg/kg bw and LD50 5,150 mg/kg bw	equivalent/similar to OECD 401
Inhalation LC50	Rat	LC50 > 2.06 mg/L air	EPA OPPTS 870.1300
Dermal LD50	Rat	LD50 > 5,000 mg/kg bw	EPA OPPTS 870.1200
Skin corrosion/irritation	Rabbit	Irritating to skin	OECD 404
Serious eye damage/irritation	Rabbit	Causes serious eye damage	No guideline followed; published data (based on a weight of evidence approach)
Respiratory or skin sensitisation	Mouse	Not sensitising	OECD 429
Germ cell mutagenicity	Not considered to be mutagenic (OECD 471, OECD 473, OECD 476)		
Carcinogenicity	Not considered to be carcinogenic. No reliable data available.		
Reproductive toxicity	Rat	NOAEL > 159 mg/kg bw/day (nominal)	No guideline followed
STOT-single exposure	Rat	May cause respiratory irritation	EPA OPPTS 870.1300
STOT-repeated exposure	Rat	Not considered to cause specific target organic toxicity by repeated exposure	equivalent/similar to OECD 407
Aspiration hazard	Not considered to cause an aspiration hazard		

Silicon dioxide

Acute toxicity	Species	Test Results	Method
Oral LD50	Rat	LD50 >5,000 mg/kg bw	OECD 401
Inhalation LC50	Rat	LC50 > 0.14 mg/L air	OECD 403
Dermal LD50	Rabbit	LD50 > 5,000 mg/kg bw	equivalent/similar to OECD 402
Skin corrosion/irritation	Rabbit	Not irritating to skin	OECD 404

Serious eye damage/irritation	Rabbit	Not irritating to eyes	OECD 405
Respiratory or skin sensitisation	Not considered to be sensitising. No reliable data available.		
Germ cell mutagenicity	Not considered to be mutagenic (OECD 471, OECD 473, OECD 476)		
Carcinogenicity	Not considered to be carcinogenic. No reliable data available.		
Reproductive toxicity	Rat	NOAEL 497 mg/kg bw/day (nominal)	No guideline followed
STOT-single exposure	Not considered to cause specific target organ toxicity by single exposure		
STOT-repeated exposure	Rat	NOAEL ca. 4,000 ≤ 4,500 mg/kg bw/day	equivalent/similar to OECD 408
Aspiration hazard	Not considered to cause an aspiration hazard		

Iron sulphate

Acute toxicity	Species	Test Results	Method
Oral LD50	Rat; mouse	LD50 ≥300 ≤2,000 mg/kg bw	OECD 423; no guideline followed (based on a read-across category approach)
Inhalation LC50	No reliable data available		
Dermal LD50	Rat	LD50 > 2,000 mg/kg bw	OECD 402 (based on a read-across category approach)
Skin corrosion/irritation	Rabbit	Irritating to skin	OECD 404
Serious eye damage/irritation	Rabbit	Irritating to eyes	OECD 405 (based on a read-across category approach)
Respiratory or skin sensitisation	Mouse	Not sensitising	OECD 429
Germ cell mutagenicity	Multiple strains dependent on method	Not considered to be mutagenic	OECD 471; OECD draft guideline 487; equivalent/similar to OECD 476 (based on a read-across category approach)
Carcinogenicity	Rat	Not considered to be carcinogenic	equivalent/similar to OECD 451 (based on a read-across category approach)
Reproductive toxicity	Rat	NOAEL 1000 mg/kg b/day	OECD 422 (based on a read-across category approach)
STOT-single exposure		Not considered to cause specific target organ toxicity after single exposure	
STOT-repeated exposure	Rat	Not considered to cause specific target organ toxicity after repeated exposure	OECD 422; equivalent/similar to OECD 408 (based on a read-across category approach)
Aspiration hazard	Not aspiration hazard identified		

SECTION 12: Ecological information

12.1 Toxicity

RegenOx® Part B

The product is 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. No data available on product itself. Classification determined based on ecotoxicological data available on constituent substances.

Silicic acid, sodium salt

Ecotoxicological endpoint	Value	Species, Method
Acute (short term toxicity):		
Fish	LC50 (96h) 260 – 310 mg/L	Oncorhynchus mykiss; no guideline followed
	LC50 (96h) 1,108 mg/L	Danio rerio; OECD 203
Crustacea	EC50 (48h) 1,700 mg/L	Daphnia magna; EU Method C.2
Algae/aquatic plants	EC50 (72h, biomass) 207 mg/L	Desmodesmus subspicatus; DIN 38412,
	EC50 (72h, growth rate) > 345.4 mg/L	Teil 9 (Algal growth inhibition test), German National Guideline; equivalent/similar to OECD 201
Activated sludge respiration	EC0 (18h) >3,480 mg/L	growth inhibition test; Umweltbundesamt, Berlin: Bewertung wassergefaehrdender Stoffe. Erarbeitet von der ad-hoc-Arbeitsgruppe 1 "Bewertung wassergefaehrdender Stoffe"
Chronic (long-term toxicity):		
Fish	No reliable data available	
Crustacea	No reliable data available	

Silicon dioxide

Ecotoxicological endpoint	Value	Species, Method
Acute (short term toxicity):		
Fish	LL0 (96h) 10,000 mg/L	Danio rerio, OECD 203
Crustacea	EL50 (24h) >1,000 mg/L	Daphnia magna, OECD 202
Algae/aquatic plants	NOELR (72h) 10,000 mg/L	Desmodesmus subspicatus, OECD 201 (based on a read across category approach)
Activated sludge respiration	No reliable data available	
Chronic (long-term toxicity):		
Fish	No data available	
Crustacea	No data available	

Iron sulphate

Ecotoxicological endpoint	Value	Species, Method
Acute (short term toxicity):		
Fish	No data available	
Crustacea	No data available	
Algae/aquatic plants	No data available	
Activated sludge respiration	No reliable data available	
Chronic (long-term toxicity):		
Fish	No data available	
Crustacea	No data available	

12.2 Persistence and biodegradability

No data is available on the degradability of this product. All constituent substances are inorganic and so biodegradation studies are not applicable.

12.3 Bioaccumulative potential

No data is available on the bioaccumulative potential of this product.

Silicic acid, sodium salt, silicon dioxide and iron sulphate are also determined to have a low potential for bioaccumulation

12.4 Mobility in soil

No data available of the mobility of this product.

12.5 Results of PBT and vPvB assessment

The constituent substances, and therefore the mixture, are not considered to be PBT or vPvB.

12.6 Other adverse effects

None known

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Residual waste	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.
EU waste code	The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Disposal methods/information	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Special precautions	Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN Number	Not regulated as dangerous goods	Not regulated as dangerous goods	Not regulated as dangerous goods	Not regulated as dangerous goods
14.2 UN proper shipping name				
14.3 Transport hazard class(es) Class Subsidiary risk Label(s) Hazard No. Tunnel restriction code				
14.4 Packing group				
14.5 Environmental hazards				

14.6 Special precautions for user

Read safety instructions, SDS and emergency procedures before handling.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and IBC Code

No information available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
None identified

15.2 Chemical safety assessment
A chemical safety assessment has been performed for silicic acid, sodium salt. As the form of silicic acid, sodium salt in this product has been identified as not being classified as hazardous it is not relevant to append exposure scenarios to this document.

SECTION 16: Regulatory information

This SDS supersedes the SDS dated 26 January 2018

The following amendments have been made:

- SDS has been fully revised in accordance with Regulation (EU) No 453/2010 and Regulation (EC) No. 1272/2008 (EU CLP) and in accordance with new information on the constituent substances registered under Regulation (EC) 1907/2006 (EU REACH)

List of abbreviations:

ADN: European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: European Agreement Concerning the International Carriage of Dangerous Goods by Road.
CAS: Chemical Abstract Service.
CEN: European Committee for Standardization (Comité Européen de Normalisation).
DNEL: Derived No-Effect Level. ECHA: European Chemical Agency.
IATA: International Air Transport Association. IBC: Intermediate Bulk Container. IMDG: International Maritime Dangerous Goods
MARPOL: International Convention for the Prevention of Pollution from Ships. PBT: Persistent, bioaccumulative, toxic.
PNEC: Predicted No-Effect Concentration.
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail. vPvB: very Persistent, very Bioaccumulative.

References:
ECHA registered substances database, accessed July 2018
https://echa.europa.eu/registration-dossier/-/registered-dossier/16162
https://echa.europa.eu/registration-dossier/-/registered-dossier/15556
https://echa.europa.eu/registration-dossier/-/registered-dossier/15513

Information on evaluation method leading to the classification of mixture
The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.

Full text of any H-statements not written out in full under Sections 2 to 15:

H290 May be corrosive to metals
H302 Harmful if swallowed
H315 Causes skin irritation
H317 May cause an allergic skin reaction
H319 Causes serious eye irritation

Training information
Follow training instructions when handling this material.

Disclaimer:
Regenesis cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.