SAFETY DATA SHEET

Based upon Regulation (EC) No 1907/2006, as amended by Regulation (EU) No 2015/830

potassium sulfate, soluble grade

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

1.1. Product identifier

Product name	: potassium sulfate, soluble grade
Registration number REACH	: 01-2119489441-34-0000
Product type REACH	: Substance/mono-constituent
CAS number	: 7778-80-5
EC number	: 231-915-5
Molecular mass	: 174.26 g/mol
Formula	: K2SO4

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

1.2.1 Relevant identified uses

Fertiliser: EC FERTILISER

1.2.2 Uses advised against

No uses advised against

1.3. Details of the supplier of the safety data sheet

Supplier of the safety data sheet

TESSENDERLO CHEMIE N.V.
Troonstraat 130
B-1050 Brussel
☎ +32 13 61 22 11
🖷 +32 13 67 37 49

Manufacturer of the product

Tessenderlo Chemie N.V. (TCH)
Bergstraat 32
B-3945 Ham
☎ +32 13 61 12 11
🖷 +32 13 61 12 32
sds.responsible@tessenderlo.com

1.4. Emergency telephone number

24h/24h (Telephone advice: English, French, German, Dutch):

+32 14 58 45 45 (BIG)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Class	Category	Hazard statements
Eye Dam.	category 1	H318: Causes serious eye damage.

2.2. Label elements

Contains: potassium hydrogensulphate.

Signal word	Danger
H-statements	
H318	Causes serious eye damage.
P-statements	
P280	Wear eye protection/face protection.
P310	Immediately call a POISON CENTER or doctor/physician.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.3. Other hazards

No other hazards known

SECTION 3: Composition/information on ingredients

3.1. Substances

Name REACH Registration No	CAS No EC No	Conc. (C)	Classification according to CLP	Note	Remark
potassium sulfate	7778-80-5 231-915-5	C>85%			Constituent
potassium hydrogensulphate	7646-93-7 231-594-1	C<15%	Skin Corr. 1B; H314 STOT SE 3; H335	(1)	Impurity

(1) For H-statements in full: see heading 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

General:

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

After inhalation:

Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

After skin contact:

Wash with water and soap. Take victim to a doctor if irritation persists.

After eye contact:

Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist.

After ingestion:

Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Victim is fully conscious: immediately induce vomiting. Consult a doctor/medical service if you feel unwell.

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

4.2.1 Acute symptoms

After inhalation:

AFTER INHALATION OF DUST: Coughing.

After skin contact:

Not irritating.

After eye contact:

Corrosion of the eye tissue. Redness of the eye tissue. Inflammation/damage of the eye tissue.

After ingestion:

AFTER INGESTION OF HIGH QUANTITIES: Gastrointestinal complaints. Nausea. Diarrhoea. Irritation of the gastric/intestinal mucosa. Decreased renal function. Disturbances of heart rate.

4.2.2 Delayed symptoms

No effects known.

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

If applicable and available it will be listed below.

SECTION 5: Firefighting measures

5.1. Extinguishing media

5.1.1 Suitable extinguishing media:

Small fire: Quick-acting ABC powder extinguisher, Class A foam extinguisher, Water (quick-acting extinguisher, reel).

Major fire: Water, Class A foam.

5.1.2 Unsuitable extinguishing media:

Small fire: Quick-acting BC powder extinguisher, Quick-acting CO2 extinguisher.

5.2. Special hazards arising from the substance or mixture

On burning: release of toxic and corrosive gases/vapours (sulphur oxides).

5.3. Advice for firefighters

5.3.1 Instructions:

Dilute toxic gases with water spray.

5.3.2 Special protective equipment for fire-fighters:

Gloves. Safety glasses. Protective clothing. Dust cloud production: compressed air/oxygen apparatus. Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Prevent dust cloud formation, e.g. by wetting. No naked flames.

6.1.1 Protective equipment for non-emergency personnel

See heading 8.2

6.1.2 Protective equipment for emergency responders

Gloves. Safety glasses. Protective clothing. Dust cloud production: compressed air/oxygen apparatus.

Suitable protective clothing

See heading 8.2

6.2. Environmental precautions

Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Knock down/dilute dust cloud with water spray.

6.3. Methods and material for containment and cleaning up

Prevent dust cloud formation. Scoop solid spill into closing containers. Wash down leftovers with plenty of water. Wash clothing and equipment after handling.

6.4. Reference to other sections

See heading 13.

SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

7.1. Precautions for safe handling

Avoid raising dust. Keep away from naked flames/heat. Observe normal hygiene standards. Keep container tightly closed.

7.2. Conditions for safe storage, including any incompatibilities

7.2.1 Safe storage requirements:

Store in a dry area. Store at room temperature. Keep container in a well-ventilated place. Meet the legal requirements.

7.2.2 Keep away from:

Heat sources.

7.2.3 Suitable packaging material:

Wood, glass.

7.2.4 Non suitable packaging material:

Aluminium, metal.

7.3. Specific end use(s)

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 Occupational exposure

a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

Belgium

Particules non classifiées autrement (fraction alvéolaire)	Time-weighted average exposure limit 8 h	3 mg/m³
Particules non classifiées autrement (fraction inhalable)	Time-weighted average exposure limit 8 h	10 mg/m³

France

Poussières réputées sans effet spécifique, fraction	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	5 mg/m³
Poussières réputées sans effet spécifique	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	10 mg/m³

Germany

Allgemeiner Staubgrenzwert: Alveolengängige Fraktion	Time-weighted average exposure limit 8 h (TRGS 900)	1.25 mg/m³

UK

Inhalable dust	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	10 mg/m³
Respirable dust	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	4 mg/m³

b) National biological limit values

If limit values are applicable and available these will be listed below.

8.1.2 Sampling methods

Product name	Test	Number
Potassium	OSHA	ID 121
Sulfites, & Sulfates	NIOSH	6004

8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

8.1.4 DNEL/PNEC values

DNEL/DMEL - Workers

potassium sulfate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects dermal	21.3 mg/kg bw/day	
	Long-term systemic effects inhalation	37.6 mg/m³	

DNEL/DMEL - General population

potassium sulfate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects oral	12.8 mg/kg bw/day	
	Long-term systemic effects dermal	12.8 mg/kg bw/day	
	Long-term systemic effects inhalation	11.1 mg/m³	

PNEC

potassium sulfate

Compartments	Value	Remark
Fresh water	0.68 mg/l	
Marine water	0.068 mg/l	
Aqua (intermittent releases)	6.8 mg/l	
STP	10 mg/l	

8.1.5 Control banding

If applicable and available it will be listed below.

8.2. Exposure controls

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

8.2.1 Appropriate engineering controls

Avoid raising dust. Keep away from naked flames/heat. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

8.2.2 Individual protection measures, such as personal protective equipment

Observe normal hygiene standards. Keep container tightly closed. Do not eat, drink or smoke during work.

a) Respiratory protection:

Dust production: dust mask with filter type P1.

b) Hand protection:

Gloves.

- materials (good resistance)

Rubber.

c) Eye protection:

Safety glasses. In case of dust production: protective goggles.

d) Skin protection:

Protective clothing.

8.2.3 Environmental exposure controls:

See headings 6.2, 6.3 and 13

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical form	Crystalline solid
	Powder
	Grains

Odour	Odourless
Odour threshold	Not applicable
Colour	Colourless to white
Particle size	No data available
Explosion limits	Not applicable
Flammability	Non-flammable
Log Kow	No data available
Dynamic viscosity	No data available
Kinematic viscosity	No data available
Melting point	1067 °C
Boiling point	1689 °C
Flash point	Not applicable
Evaporation rate	No data available
Relative vapour density	No data available
Vapour pressure	Not applicable
Solubility	Water ; 120 g/l ; 25 °C
Relative density	2.66
Decomposition temperature	No data available
Auto-ignition temperature	Not applicable
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
pH	3 - 6 ; 1 °C

9.2. Other information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Substance has acid reaction.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

Avoid raising dust. Keep away from naked flames/heat.

10.5. Incompatible materials

No data available.

10.6. Hazardous decomposition products

On burning: release of toxic and corrosive gases/vapours (sulphur oxides).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

11.1.1 Test results

Acute toxicity

potassium sulfate, soluble grade

No (test)data available

potassium sulfate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 425	> 2000 mg/kg bw		Rat (male/female)	Read-across	
Dermal	LD50	OECD 402	> 2000 mg/kg bw		Rat (male/female)	Experimental value	
Inhalation	LC50		> 1.2 mg/l	4 h	Rat	Read-across	

potassium hydrogensulphate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50		2340 mg/kg		Rat		

Conclusion

Not classified for acute toxicity

Corrosion/irritation

potassium sulfate, soluble grade

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Serious eye damage	OECD 437		4 hours		Experimental value	
Dermal	Not irritating	OECD 431		15 minutes		Experimental value	

potassium sulfate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405		24; 48; 72 hours	Rabbit	Experimental value	

Conclusion

Causes serious eye damage.

Not classified as irritating to the skin

Respiratory or skin sensitisation

potassium sulfate, soluble grade

No (test)data available

potassium sulfate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Dermal	Not sensitizing	OECD 429			Mouse (female)	Read-across	

Conclusion

Not classified as sensitizing for skin

Specific target organ toxicity

potassium sulfate, soluble grade

No (test)data available

potassium sulfate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral	NOAEL	OECD 422	≥ 1500 mg/kg bw/day		No adverse systemic effects	28 day(s)	Rat (male/female)	Experimental value
Oral	NOAEL	OECD 453	256 mg/kg bw/day		No adverse systemic effects	52 week(s)	Rat (male)	Read-across
Oral	NOAEL	OECD 453	284 mg/kg bw/day		No adverse systemic effects	52 week(s)	Rat (female)	Read-across

Conclusion

Not classified for subchronic toxicity

Mutagenicity (in vitro)

potassium sulfate, soluble grade

No (test)data available

potassium sulfate

Result	Method	Test substrate	Effect	Value determination
Negative	OECD 473	Chinese hamster ovary (CHO)		Experimental value
Negative	OECD 476	Mouse (lymphoma L5178Y cells)		Read-across
Negative	OECD 471	Bacteria (S.typhimurium)		Experimental value
Negative	OECD 471	Escherichia coli		Experimental value

Mutagenicity (in vivo)

potassium sulfate, soluble grade

No (test)data available

Conclusion

Not classified for mutagenic or genotoxic toxicity

Carcinogenicity

potassium sulfate, soluble grade

No (test)data available

potassium sulfate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Oral		Equivalent to OECD 453		104 week(s)	Rat (male/female)	No adverse systemic effects		Read-across

Conclusion

Not classified for carcinogenicity

Reproductive toxicity

potassium sulfate, soluble grade

No (test)data available

potassium sulfate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity	NOAEL	OECD 422	≥ 1500 mg/kg bw/day	28 day(s)	Rat (male)	No adverse systemic effects		Experimental value
	NOAEL	OECD 422	≥ 1500 mg/kg bw/day	53 day(s)	Rat (female)	No adverse systemic effects		Experimental value
Effects on fertility	NOAEL	OECD 422	≥ 1500 mg/kg bw/day	28 day(s)	Rat (male/female)	No adverse systemic effects		Experimental value

Conclusion

Not classified for reprotoxic or developmental toxicity

Toxicity other effects

potassium sulfate, soluble grade

No (test)data available

SECTION 12: Ecological information

12.1. Toxicity

potassium sulfate, soluble grade

No (test)data available

potassium sulfate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	EPA 600/4-90/027	680 mg/l	96 h	Pimephales promelas	Static system	Fresh water	Experimental value
Acute toxicity crustacea	LC50	EPA 600/4-90/027	720 mg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value
Toxicity algae and other aquatic plants	EC50	Other	2700 mg/l	18 day(s)	Chlorella vulgaris	Static system	Fresh water	Read-across
Toxicity aquatic micro-organisms	EC50		> 100 mg/l		Activated sludge			Weight of evidence
	NOEC		100 mg/l		Activated sludge			Weight of evidence

potassium hydrogensulphate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50		3500 mg/l		Leuciscus idus			

Conclusion

Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008

12.2. Persistence and degradability

Biodegradability: not applicable

12.3. Bioaccumulative potential

potassium sulfate, soluble grade

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

Conclusion

No test data of component(s) available

12.4. Mobility in soil

Low potential for adsorption in soil

12.5. Results of PBT and vPvB assessment

The criteria of PBT and vPvB as listed in Annex XIII of Regulation (EC) No 1907/2006 do not apply to inorganic substances.

12.6. Other adverse effects

potassium sulfate, soluble grade

Fluorinated greenhouse gases (Regulation (EU) No 517/2014)

Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014)

Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009)

SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

13.1. Waste treatment methods

13.1.1 Provisions relating to waste

European Union

Hazardous waste according to Directive 2008/98/EC.
Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).
16 05 07* (gases in pressure containers and discarded chemicals: discarded inorganic chemicals consisting of or containing hazardous substances).
Depending on branch of industry and production process, also other waste codes may be applicable.

13.1.2 Disposal methods

Recycle/reuse. Precipitate/make insoluble. Remove to an authorized dump (Class I). Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Do not discharge unmonitored into the environment.

13.1.3 Packaging/Container

European Union

Waste material code packaging (Directive 2008/98/EC).
15 01 10* (packaging containing residues of or contaminated by dangerous substances).

SECTION 14: Transport information

Road (ADR), Rail (RID), Inland waterways (ADN), Sea (IMDG/IMSBC), Air (ICAO-TI/IATA-DGR)

14.1. UN number

Transport	Not subject

14.2. UN proper shipping name

14.3. Transport hazard class(es)

Hazard identification number	
Class	
Classification code	

14.4. Packing group

Packing group	
Labels	

14.5. Environmental hazards

Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	
Limited quantities	

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Annex II of MARPOL 73/78	

SECTION 15: Regulatory information

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

European legislation:

VOC content Directive 2010/75/EU

VOC content	Remark
	Not applicable (inorganic)

National legislation The Netherlands

Waterbezwaarlijkheid	B (5)

National legislation Germany

WGK	1; Classification water polluting in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 2)

15.2. Chemical safety assessment

A chemical safety assessment has been performed.

SECTION 16: Other information

Full text of any H-statements referred to under headings 2 and 3:

H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.

(*)	INTERNAL CLASSIFICATION BY BIG
CLP (EU-GHS)	Classification, labelling and packaging (Globally Harmonised System in Europe)
DMEL	Derived Minimal Effect Level
DNEL	Derived No Effect Level
EC50	Effect Concentration 50 %
ErC50	EC50 in terms of reduction of growth rate
LC50	Lethal Concentration 50 %
LD50	Lethal Dose 50 %
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent, Bioaccumulative & Toxic
PNEC	Predicted No Effect Concentration
STP	Sludge Treatment Process
vPvB	very Persistent & very Bioaccumulative

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Old versions must be destroyed. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided and cannot be held liable for any changes by third parties. This safety data sheet is only to be used within the European Union, Switzerland, Iceland, Norway and Liechtenstein. Any use outside of this area is at your own risk. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement or when this is failing the general conditions of BIG. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult the mentioned agreement/conditions for details.