



# SAFETY DATA SHEET

Based upon Regulation (EC) No 1907/2006, as amended by Regulation (EU) No 2015/830  
A safety data sheet is not required for this product under Article 31 of REACH. This SDS has been created on a voluntary basis.

## THIO-SUL<sup>®</sup>

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

#### 1.1. Product identifier

**Product name** : THIO-SUL<sup>®</sup>  
**Synonyms** : ammonium thiosulfate, solution; ammonium thiosulphate, solution; ATS, solution  
**Registration number REACH** : 01-2119537325-41-0003  
**Product type REACH** : Substance/mono-constituent

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

##### 1.2.1 Relevant identified uses

Fertiliser  
Photographic chemical

##### 1.2.2 Uses advised against

No uses advised against known

#### 1.3. Details of the supplier of the safety data sheet

##### Supplier of the safety data sheet

Tessenderlo Group NV  
Troonstraat 130  
B-1050 Brussel  
☎ +32 13 61 22 11  
☎ +32 13 67 37 49  
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

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

#### 2.2. Label elements

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

#### 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
ammonium thiosulfate 01-2119537325-41	7783-18-8 231-982-0	55%≤C≤65%			Mono-constituent

#### 3.2. Mixtures

Not applicable

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

##### General:

If you feel unwell, seek medical advice.

##### After inhalation:

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

## After skin contact:

Rinse with water. Soap may be used. Take victim to a doctor if irritation persists.

## After eye contact:

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

## After ingestion:

Rinse mouth with water. 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:

No effects known.

#### After skin contact:

ON CONTINUOUS EXPOSURE/CONTACT: Tingling/irritation of the skin.

#### After eye contact:

No effects known.

#### After ingestion:

Nausea. Vomiting. Diarrhoea.

### 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:

Adapt extinguishing media to the environment for surrounding fires.

#### 5.1.2 Unsuitable extinguishing media:

Not applicable.

### 5.2. Special hazards arising from the substance or mixture

On burning: release of toxic and corrosive gases/vapours (nitrous vapours, sulphur oxides). On heating: release of toxic and corrosive gases/vapours (ammonia, 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. Reactivity hazard: compressed air/oxygen apparatus. Reactivity hazard: gas-tight suit. Heat/fire exposure: compressed air/oxygen apparatus.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

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. Reactivity hazard: compressed air/oxygen apparatus. Reactivity hazard: gas-tight suit.

#### 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. Take account of toxic/corrosive precipitation water.

### 6.3. Methods and material for containment and cleaning up

Take up liquid spill into absorbent material, e.g.: sand/earth. Scoop absorbed substance into closing containers. Clean contaminated surfaces with an excess 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

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:

Storage temperature: 15 °C - 49 °C. Keep container in a well-ventilated place. Store at ambient temperature. Keep out of direct sunlight. Meet the legal requirements.

#### 7.2.2 Keep away from:

Heat sources, oxidizing agents, (strong) bases, (strong) acids, metals.

#### 7.2.3 Suitable packaging material:

No data available

#### 7.2.4 Non suitable packaging material:

Copper, zinc, bronze.

### 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.

##### 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
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

###### ammonium thiosulfate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	350 mg/m <sup>3</sup>	

##### DNEL/DMEL - General population

###### ammonium thiosulfate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	104 mg/m <sup>3</sup>	
	Long-term systemic effects oral	13 mg/kg bw/day	

##### PNEC

###### ammonium thiosulfate

Compartments	Value	Remark
Fresh water	0.78 mg/l	
Marine water	0.078 mg/l	
STP	100.1 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

Keep away from naked flames/heat. 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:

Respiratory protection not required in normal conditions.

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## b) Hand protection:

Gloves.

- materials (good resistance)

Neoprene.

## c) Eye protection:

Not required for normal conditions of use.

## 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	Liquid
Odour	Ammonia odour
Odour threshold	No data available
Colour	Colourless to yellow
Particle size	Not applicable (liquid)
Explosion limits	Not applicable
Flammability	Non-flammable
Log Kow	Not applicable (mixture)
Dynamic viscosity	0.0047 mPa.s ; 25 °C
Kinematic viscosity	No data available
Melting point	No data available
Boiling point	98.9 °C - 104.4 °C
Evaporation rate	No data available
Relative vapour density	No data available
Vapour pressure	24 hPa ; 21.1 °C
Solubility	Water ; soluble
Relative density	1.32 - 1.35
Decomposition temperature	No data available
Auto-ignition temperature	Not applicable
Flash point	Not applicable
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
pH	7.0 - 8.0

### 9.2. Other information

Minimum ignition energy	Not applicable
SADT	Not applicable
Solidification (freezing) point	-1.1 °C - 15.6 °C
Absolute density	1320 kg/m <sup>3</sup> - 1350 kg/m <sup>3</sup>

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No reactions to be expected under normal conditions of use.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

Reacts with (strong) oxidizers.

### 10.4. Conditions to avoid

#### Precautionary measures

Keep away from naked flames/heat.

### 10.5. Incompatible materials

Oxidizing agents, (strong) bases, (strong) acids, metals.

### 10.6. Hazardous decomposition products

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Reacts with (some) bases: release of toxic and corrosive gases/vapours (ammonia, sulphur oxides). Reacts with (some) acids: release of toxic and corrosive gases/vapours (sulphur oxides). On heating: release of toxic and corrosive gases/vapours (ammonia, sulphur oxides). On burning: release of toxic and corrosive gases/vapours (nitrous vapours, sulphur oxides).

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### 11.1.1 Test results

##### Acute toxicity

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No (test) data available

Judgement is based on the relevant ingredients

###### ammonium thiosulfate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 425	> 2000 mg/kg bw		Rat (female)	Read-across	
Dermal	LD50	Equivalent to OECD 402	> 2000 mg/kg bw	24 h	Rabbit (male/female)	Read-across	
Inhalation (dust)	LC50	Equivalent to OECD 403	> 5.5 mg/l air	4 h	Rat (male/female)	Read-across	

##### Conclusion

Not classified for acute toxicity

##### Corrosion/irritation

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No (test) data available

Judgement is based on the relevant ingredients

###### ammonium thiosulfate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	Equivalent to OECD 405		24; 48; 72 hours	Rabbit	Experimental value	
Skin	Not irritating	Equivalent to OECD 404	4 h	24; 48; 72 hours	Rabbit	Read-across	

##### Conclusion

Not classified as irritating to the skin

Not classified as irritating to the eyes

Not classified as irritating to the respiratory system

##### Respiratory or skin sensitisation

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No (test) data available

Judgement is based on the relevant ingredients

###### ammonium thiosulfate

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

##### Conclusion

Not classified as sensitizing for inhalation

Not classified as sensitizing for skin

##### Specific target organ toxicity

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No (test) data available

Judgement is based on the relevant ingredients

###### ammonium thiosulfate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (repeated exposure)	NOAEL	Other	108 mg/kg bw/day		No effect	104 week(s)	Rat (male/female)	Read-across
Oral (repeated exposure)	NOAEL	Other	> 955 mg/kg bw/day		No adverse systemic effects	104 week(s)	Rat (male/female)	Read-across

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## Conclusion

Not classified for subchronic toxicity

## **Mutagenicity (in vitro)**

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No (test) data available

#### ammonium thiosulfate

Result	Method	Test substrate	Effect	Value determination
Negative with metabolic activation, negative without metabolic activation	OECD 471	Bacteria (S.typhimurium)	No effect	Experimental value
Negative with metabolic activation, negative without metabolic activation	OECD 476	Mouse (lymphoma L5178Y cells)	No effect	Experimental value
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 473	Chinese hamster ovary (CHO)	No effect	Experimental value

## **Mutagenicity (in vivo)**

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No (test) data available

Judgement is based on the relevant ingredients

## Conclusion

Not classified for mutagenic or genotoxic toxicity

## **Carcinogenicity**

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No (test) data available

Judgement is based on the relevant ingredients

#### ammonium thiosulfate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Oral (drinking water)	NOAEL	Carcinogenic toxicity study	> 2500 mg/kg bw/day	24 month(s)	Mouse (male/female)	No effect		Read-across

## Conclusion

Not classified for carcinogenicity

## **Reproductive toxicity**

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No (test) data available

Judgement is based on the relevant ingredients

#### ammonium thiosulfate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity	NOAEL	Equivalent to OECD 414	> 400 mg/kg bw/day	10 day(s)	Rat	No effect		Read-across
Maternal toxicity	NOAEL	Equivalent to OECD 414	> 400 mg/kg bw/day	10 day(s)	Rat	No effect		Read-across
Effects on fertility	NOAEL	3 generation study	> 955 mg/kg bw/day	104 week(s)	Rat (male/female)	No effect		Read-across

## Conclusion

Not classified for reprotoxic or developmental toxicity

## **Toxicity other effects**

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No (test) data available

## **Chronic effects from short and long-term exposure**

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No effects known.

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## SECTION 12: Ecological information

### 12.1. Toxicity

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	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50		770 mg/l	96 h	Salmo gairdneri	Static system		Literature study
Acute toxicity crustacea	LC50		77 mg/l	96 h	Mysidacea	Static system		Literature study
Toxicity aquatic micro-organisms	EC50		3000 mg/l		Bacteria			Literature study; Fermentation tube

Judgement of the mixture is based on the relevant ingredients

ammonium thiosulfate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	ASTM	510 mg/l	96 h	Lepomis macrochirus	Static system	Fresh water	Experimental value; Nominal concentration
Acute toxicity crustacea	EC50	Other	230 mg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value; Nominal concentration
Toxicity algae and other aquatic plants	EC50	OECD 201	> 100 mg/l	72 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Experimental value; GLP
Toxicity aquatic micro-organisms	NOEC	OECD 209	≥ 1000 mg/l	3 h	Activated sludge			Experimental value; GLP

#### 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

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Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable (mixture)			

ammonium thiosulfate

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

#### Conclusion

Does not contain bioaccumulative component(s)

### 12.4. Mobility in soil

No (test) data on mobility of the components available

### 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

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

None of the known components is 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

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Hazardous waste according to Directive 2008/98/EC.

Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).

02 01 08\* (wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing: agrochemical waste containing hazardous substances).

09 01 04\* (wastes from the photographic industry: fixer solutions). Depending on branch of industry and production process, also other waste codes may be applicable.

## 13.1.2 Disposal methods

Immobilize the toxic or harmful components. 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 into drains or 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
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#### 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
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#### 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	Not applicable, based on available data
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## SECTION 15: Regulatory information

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

#### European legislation:

European drinking water standards (Directive 98/83/EC)

#### ammonium thiosulfate

Parameter	Parametric value	Note	Reference
Ammonium	0,5 mg/l		Listed in Annex I, Part C, of Directive 98/83/EC on the quality of water intended for human consumption.
Sulphate	250 mg/l		Listed in Annex I, Part C, of Directive 98/83/EC on the quality of water intended for human consumption.

#### National legislation The Netherlands

Waterbezwaarlijkheid	B (5)
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#### National legislation Germany

WGK	1; Classification water polluting based on the components in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 4)
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### 15.2. Chemical safety assessment

A chemical safety assessment has been performed.

## SECTION 16: Other information

(*)	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

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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.