PLANT BIOTECHNOLOGIES
INNOVATING FOR A SUSTAINABLE FUTURE

HELLER MEDIUM
SAFETY DATA SHEET

According to Regulation (EC) No. 1907/2006
GENERIC EU SDS - NO COUNTRY SPECIFIC OEL DATA
Date of Issue: 23-04-2026
Revision Number: A/0

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product Identifier	:	Heller Medium
Product Number	:	H501
CAS Number	:	Not available
REACH Registration Number	:	A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration, or the registration is envisaged for a later registration deadline.

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

Identified Uses	:	For research use only - restricted to professional users.
Uses Advised Against	:	Not for human or animal use

1.3 Details of the supplier of the safety data sheet

Company	:	Plant Biotechnologies Seinhuiswachter 17-19 3034 KH Rotterdam The Netherlands
Phone Number	:	+31 10323 2002
E-mail Address	:	info.eu@toku-e.com
Safety Data Sheet Issued by	:	Plant Biotechnologies

1.4 Emergency telephone number

Emergency Phone Number (Internat.)	:	+1 (352) 353-3500 (INFOTRAC, 24-Hour Number)
Emergency Phone Number (US Only)	:	1 (800) 535-5053 (INFOTRAC, 24-Hour Number)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008
Serious eye damage/eye irritation (Category 2), H319
Reproductive toxicity (Category 1B), H360

For the full text of the H-Statements mentioned in this section, see Section 16.

2.2 Label elements

Labelling according to Regulation (EC) No. 1272/2008

Hazard Pictogram(s):

Signal Word: Danger

Hazard Statement(s)

H319	Causes serious eye irritation
H360	May damage fertility or the unborn child

Precautionary Statement(s)

P264	Wash hands/skin thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+ P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	IF eye irritation persists: Get medical advice/attention.
P201	Obtain special instructions before use
P202	Do not handle until all safety precautions have been read and
P308+P313	IF exposed or concerned: Get medical advice/attention.
P405	Store locked up.
P501	Dispose of contents/container in accordance with governmental

Supplemental Hazard Information

No data available

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Component	CAS no	
Boric acid	10043-35-3	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

The substance/mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Synonym(s)	:	Not available
Formula	:	Not available
Molecular weight	:	Not available

Hazardous ingredients according to Regulation (EC) No. 1272/2008

Component	Classification	Concentration
Potassium chloride		
CAS Number [7447-40-7] EC Number [231-211-8] REACH Number [01-2119539416-36]	/	41,11 %
Sodium nitrate		
CAS Number [7631-99-4] EC Number [231-554-3]	Ox. Sol. 3, H272 Eye Irrit. 2, H319	36,05 %
Potassium dihydrogenorthophosphate		
CAS Number [7778-77-0] EC Number [231-913-4] REACH Number [01-2119490224-41]	/	7,53 %
Magnesium sulphate		
CAS Number [7487-88-9] EC Number [231-298-2]	/	7,39 %
Sodium chloride		
CAS Number [7647-14-5] EC Number [231-598-3]	/	3,51 %
Calcium chloride		
CAS Number [10043-52-4] EC Number [233-140-8] REACH Number [01-2119494219-28]	Eye Irrit. 2, H319	3,44 %
Potassium nitrate		
CAS Number [7757-79-1] EC Number [231-818-8] REACH Number [01-2119488224-35]	Ox. Sol. 3, H272	0,47 %
Boric acid (substance listed on REACH Candidate List)		
CAS Number [10043-35-3] EC Number [233-139-2] REACH Number [01-2119486683-25]	Repr. 1B, H360FD	0,38 %

Zinc sulphate heptahydrate		
CAS Number [7446-20-0] EC Number [616-097-3] REACH Number [01-2119474684-27]	Acute Tox. 4 (Oral), H302 Eye Dam. 1, H318 Aquatic Acute 1, H400 Aquatic Chronic 1, H410	0,061 %
Ferric (III) chloride hexahydrate		
CAS Number [10025-77-1] EC Number [600-047-2] REACH Number [01-2119497998-05]	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Dam. 1, H318	0,061 %
Manganese sulphate monohydrate		
CAS Number [10034-96-5] EC Number [600-072-9] REACH Number [01-2119456624-35]	STOT RE 2, H373 Aquatic Chronic 2, H411	0,0049 %
Aluminium chloride hexahydrate		
CAS Number [7784-13-6] EC Number [616-520-1]	Skin Corr. 1B, H314 Eye Dam. 1, H318	0,0033 %
Copper sulphate		
CAS Number [7758-98-7] EC Number [231-847-6]	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Aquatic Acute 1, H400 Aquatic Chronic 1, H410	0,0012 %
Nickel dichloride		
CAS Number [7718-54-9] EC Number [231-743-0]	Carc. 1A, H350i Muta. 2, H341 Repr. 1B, H360D Acute Tox. 3 (Inhalation), H331 Acute Tox. 3 (Oral), H301 STOT RE 1, H372 Skin Irrit. 2, H315 Resp. Sens. 1, H334 Skin Sens. 1, H317 Aquatic Acute 1, H400 Aquatic Chronic 1, H410	0,0010 %
Potassium iodide		
CAS Number [7681-11-0] EC Number [231-659-4]	STOT RE 1, H372	0,0006 %

For the full text of the H-Statements mentioned in this section, see Section 16.

SECTION 4: FIRST-AID MEASURES

4.1 Description of first-aid measures

General information

Consult a doctor/physician if exposed - additional medical care may be required. Show this safety data sheet to the medical provider.

If inhaled

If inhaled, move to fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash skin thoroughly with soap and water. Remove any contaminated clothing. Consult a physician.

In case of eye contact

Flush eye with water. After initial flush, remove any contact lenses and continue flushing for at least 15 minutes.

If swallowed

Rinse mouth with water. Immediately call a doctor, physician, or poison control center. Never give anything by mouth to an unconscious person.

Self-protection of the first aider

Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent the spread of contamination.

4.2 Most important symptoms/effects, acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media

No data available

5.2 Special hazards arising from the substance or mixture

Hazardous Combustion Products

Carbon and nitrogen oxides, sulfur oxides, phosphorus oxides, metal oxides and metal-containing fumes

5.3 Advice for firefighters

Wear self-contained breathing apparatus if necessary.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Consult the safety measures listed in Section 7 and 8. Use personal protective equipment. Avoid breathing dust, vapors, mist or gas. Avoid direct contact with spilled substances. Ensure adequate ventilation.
Avoid dust formation.

For personal protection see Section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel.
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

Refer to section 8 for exposure control and personal protection. Refer to section 13 for disposal information.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.
Avoid contact with skin and eyes.
For precautionary statements see section 2.2

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Protect from humidity.
Recommended storage temperature: Room temperature
Hygroscopic.

Incompatibilities:
Strong oxidizing agents

7.3 Specific end use(s)

Refer to section 1.2

SECTION 8: EXPOSURE CONTROLS/ PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters:
No OEL data available

8.2 Exposure controls

Appropriate engineering controls:
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling this product.

Personal Protective Equipment (PPE):

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate, use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal techniques to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the selected EN 374 derived from it.

Eye/Face protection

Wear eye protection. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Body protection

Wear protective clothing. The type of protective equipment must be selected according to the concentration of the dangerous substance at the specific work place.

Environmental exposure controls

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	:	White to slightly white powder
Odor	:	No data available
Odor Threshold	:	No data available
pH	:	No data available
Melting Point/Freezing Point	:	No data available
Initial Boiling Point and 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
Vapor Pressure	:	No data available
Vapor Density	:	No data available
Relative Density	:	No data available
Solubility(ies)	:	Soluble in water
Partition Coefficient: n-octanol/water	:	No data available
Auto-Ignition Temperature	:	No data available
Decomposition Temperature	:	No data available
Viscosity	:	No data available
Explosive Properties	:	No data available
Oxidizing Properties	:	No data available

9.2 Other information
No additional information relevant to safe use of the substance.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Exposure to moisture

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
No data available

See Section 5 for hazardous combustion products.

SECTION 11. TOXICOLOGICAL INFORMATION

The toxicological properties of this mixture have not been fully investigated. The information provided is based on data available for the active compounds.

11.1 Information on toxicological effects
Acute Toxicity

Potassium chloride	Oral LD_{50}	Rat	2600 mg/kg
Sodium nitrate	Oral LD_{50}	Rat	3430 mg/kg
	Dermal LD_{50}	Rat	> 5000 mg/kg
	Inhalation LC_{50}	Rat	> 5 mg/l
Potassium dihydrogenphosphate	Oral LD_{50}	Rat	> 2000 mg/kg
	Dermal LD_{50}	Rat	> 2000 mg/kg
	Inhalation LC_{50}	Rat	> 0,83 mg/l
Magnesium sulphate	Oral LD_{50}	Rat	> 2000 mg/kg
	Dermal LD_{50}	Rat	> 2000 mg/kg
Sodium chloride	Oral LD_{50}	Rat	3000 mg/kg
	Oral LD_{50}	Mouse	4000 mg/kg
	Dermal LD_{50}	Rabbit	> 10000 mg/kg
	Inhalation LC_{50}	Rat	> 42 g/m^3
Calcium chloride	Oral LD_{50}	Rat	2120 mg/kg
	Dermal LD_{50}	Rabbit	> 5000 mg/kg
Potassium nitrate	Oral LD_{50}	Rat	> 2000 mg/kg
	Dermal LD_{50}	Rat	> 5000 mg/kg
	Inhalation LC_{50}	Rat	> 0,527 mg/l/4h

Boric acid	:	Oral LD_{50}	:	Rat	:	> 2600 mg/kg
		Oral LD_{50}	:	Mouse	:	3450 mg/kg
		Dermal LD_{50}	:	Rabbit		> 2000 mg/kg
		Inhalation LC_{50}	:	Rat	:	2,12 mg/l
Zinc sulphate heptahydrate	:	Oral LD_{50}	:	Rat	:	1260 mg/kg
Ferric (III) chloride hexahydrate	:	Oral LD_{50}	:	Rat	:	316 mg/kg
		Dermal LD_{50}	:	Rat	:	> 2000 mg/kg
		Inhalation LC_{50}	:	Rat	:	> 2000 mg/kg
Manganese sulphate monohydrate	:	Oral LD_{50}	:	Rat	:	2150 mg/kg
		Oral LD_{50}	:	Mouse	:	2330 mg/kg
		Inhalation LC_{50}	:	Rat	:	> 4,45 mg/l
Aluminium chloride hexahydrate	:	Oral LD_{50}	:	Rabbit	:	3311 mg/kg
Copper sulphate	:	Oral LD_{50}	:	Rat	:	481 mg/kg
		Dermal LD_{50}	:	Rat	:	> 2000 mg/kg
Nickel dichloride	:	Oral LD_{50}	:	Rat	:	500 mg/kg
Potassium iodide	:	Dermal LD_{50}	:	Rat	:	> 2000 mg/kg

Skin Corrosion/Irritation
Not classified

Serious Eye Damage/ Eye Irritation
Causes serious eye irritation

Respiratory or Skin Sensitization
Not classified

Germ Cell Mutagenicity
Not classified

Carcinogenicity
No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by the International Agency for Research on Cancer Monograph.

Reproductive Toxicity
May damage fertility or the unborn child

Specific Target Organ Toxicity: Single Exposure
Not classified

Specific Target Organ Toxicity: Repeated Exposure
Not classified

Aspiration Hazard
Not classified

Additional Information
RTECS: Not available
Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Potassium chloride	LC50	Fish	920 mg/l - Gambusia affinis
	EC50	Crustacea	825 mg/l 48h - Daphnia magna
	EC50	Algae	2500 mg/l 72 h - Desmodesmus subspicatus
Sodium nitrate	LC50	Fish	1354 mg/l Test organisms
	EC50	Crustacea	3581 mg/l
Potassium dihydrogenphosphate	LC50	Fish	> 100 mg/l - Oncorhynchus mykiss
	EC50	Crustacea	> 100 mg/l 48h - Daphnia magna
	EC50	Algae	> 100 mg/l 72 h - Desmodesmus subspicatus
Magnesium sulphate	LC 50	Fish	680 mg/l - Pimephales promelas
Potassium nitrate	LC50	Fish	> 98,9 mg/l - Oncorhynchus mykiss
	EC50	Crustacea	490 mg/l 48 h - Daphnia magna
Boric acid	LC 50	Fish	79,7 mg/l - Pimephales promelas
	LC 50	Fish	74 mg/l - Limanda limanda
	EC50	Crustacea	133 mg/l
	EC50	Algae	66 mg/l 72 h - Phaeodactylum tricornutum
	EC50	Algae	54 mg/l 72 h - Phaeodactylum tricornutum
	NOEC Chronic	Fish	6,4 mg/l - Danio rerio - Duration: 34 d
Zinc sulphate heptahydrate	EC50	Crustacea	12 mg/l
	EC50	Algae	0,05 – 65 mg/l 72 h Source: GESTIS
Ferric (III) chloride hexahydrate	LC50	Fish	> 100 mg/l - Danio rerio
	EC50	Crustacea	9,6 mg/l Daphnia magna
Manganese sulphate monohydrate	LC 50	Fish	30,6 mg/l - Pimephales promelas
	EC50	Crustacea	8,3 mg/l
	EC50	Algae	61 mg/l 72 h - Desmodesmus subspicatus

Aluminium chloride hexahydrate	:	LC 50	: Fish	: 27,1 mg/l
		EC50	: Crustacea	: 27,3 mg/l - Daphnia Magna
Potassium iodide	:	LC50	: Fish	: > 100 mg/l - Danio rerio
		EC50	: Crustacea	: > 100 mg/l - Daphnia magna
		EC50	: Algae	: 2900 mg/l 72 h
		NOEC Chronic		: 29,87 mg/l - Daphnia magna Duration: 21 d
		NOEC Chronic	: Fish	: 66,356 mg/l Duration: 28 d
Calcium chloride	:	LC50	: Fish	: 4630 mg/l - Pimephales promelas
		LOEC Chronic		: 240 mg/l - Daphnia magna Duration: 21 d
		NOEC Chronic		: 481 mg/l - Daphnia magna Duration: 21 d
		NOEC Chronic	: Fish	: 230 mg/l - Oncorhynchus mykiss
Sodium chloride	:	LC50	: Fish	: 7650 mg/l - Pimephales promelas
		EC50	: Crustacea	: 1000 mg/l 48h - Daphnia magna
		LOEC Chronic		: 441 mg/l - Daphnia pulex Duration: 21 d
		NOEC Chronic		: 314 mg/l - Daphnia pulex Duration: 21 d

12.2 Persistence and degradability

Aluminium chloride hexahydrate : Persistence and degradability : Product is biodegradable

12.3 Bioaccumulative potential

Ferric (III) chloride hexahydrate
Partition coefficient n-octanol/water (Log Pow) : - 4 (24 °C)
Boric acid
Partition coefficient n-octanol/water (Log Pow) : 0,18
Calcium chloride
Partition coefficient n-octanol/water (Log Pow) : 0,0500006
Sodium chloride
Partition coefficient n-octanol/water (Log Pow) : - 3
Sodium nitrate
Bioconcentration factor (BCF REACH) : 120
Partition coefficient n-octanol/water (Log Pow) : - 3,8

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Component	CAS no	
Boric acid	10043-35-3	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6 Other adverse effects

No data available

In the absence of complete ecological information, treat product as environmentally
Use proper storage, handling, and disposal to prevent unintentional release into the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable products to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Avoid disposal of material in drains or sewers.
Waste material must be disposed of in accordance with the Directive on Waste 2008/98/EC as well as other national and local regulations.

Contaminated Packaging

Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

		ADR/RID	IMDG	IATA
14.1	**UN Number**	-	-	-
14.2	**UN Proper Shipping Name**	Not Dangerous Goods	Not Dangerous Goods	Not Dangerous Goods
14.3	**Transport Hazard Class(es)**	-	-	-
14.4	**Packing Group**	-	-	-
14.5	**Environmental Hazards**	No	Marine Pollutant: No	No

14.6 Special precautions for user

Further Information

No data available

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

SECTION 15: REGULATORY INFORMATION

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

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006 and Annex II No. 2020/878

Authorizations and/or restrictions on use

Restricted to professional users.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3

H272	May intensify fire; oxidiser
H301	Toxic if swallowed
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H331	Toxic if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H341	Suspected of causing genetic defects
H350i	May cause cancer by inhalation
H360D	May damage the unborn child
H360FD	May damage fertility. May damage the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects

Abbreviations and acronyms

ADR/RID: European Agreements Concerning the International Carriage of Dangerous Goods by Road (ADR) and Rail (RID)
CAS No: Chemical Abstracts Service number
EC: European Commission
EC No: European Commission number
EHS: Environmentally Hazardous Substance
EU: European Union
H-Statement: Hazard Statement
IARC: International Agency for Research on Cancer
IATA: International Air Transport Association
IBC: International Bulk Chemical
IMDG: International Maritime Dangerous Goods Code
LC50: Lethal concentration, 50%
LD50: Median Lethal dose
MARPOL 73/78: International Convention for the Prevention of Pollution from Ships
NIOSH: National Institute for Occupation Safety and Health

OEL: Occupational Exposure Limit
PBT: Persistent, Bioaccumulative and Toxic
REACH: Registration, Evaluation, Authorisation and restrictions of Chemicals
RTECS: Registry of Toxic Effects of Chemical Substances
SDS: Safety Data Sheet
UN: United Nations
vPvB: Very Persistent and Very Bioaccumulative

Further information
Revision Date: 23-04-2026

The above information is based upon the present state of our knowledge and is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information is believed to be correct but does not purport to be all inclusive. It does not represent any guarantees of the properties of the product. TOKU-E Company shall not be held liable for damage or injury resulting from contact, handling, or storage of the above product.