Murashige & Skoog Medium modification No.1B (Micro and 0.5 conc. Macro elements, incl. vitamins)

M0233

Safety Data Sheet

according to Regulation (EU) 2015/830
Reference number: M0233
Issue date: 25/07/2024 Revision date: 25/07/2024 Supersedes version of: 30/07/2018 Version: 3.0

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

1.1. Product identifier

Product form : Mixture
Trade name : Murashige & Skoog Medium modification No.1B (Micro and 0.5 conc. Macro elements, incl. vitamins)
Product code : M0233
Product group : Blend

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

1.2.1. Relevant identified uses

Main use category : Professional use
Industrial/Professional use spec : For professional use only. Duchefa Biochemie B.V. products are intended only for "in vitro laboratory" research purposes.

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Manufacturer
Duchefa Biochemie B.V.
A. Hofmanweg 71
2031 BH Haarlem
The Netherlands
T +31(0)23-5319093 - F +31(0)23-5318027
info@duchefa.nl

1.4. Emergency telephone number

Emergency number : Supplier contact information:
+31(0)23-5319093 (M-F 09:00-17:00)
+31(0)6-30008100 (outside office hours)

Country	Organisation/Company	Address	Emergency number	Comment
	World Health Organization world directory of poison centres	http://apps.who.int/poisoncentres/		Consult website for a local poison centre
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals-24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Serious eye damage/eye irritation, Category 2	H319
Hazardous to the aquatic environment – Chronic Hazard, Category 3	H412

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

Causes serious eye irritation. Harmful to aquatic life with long lasting effects.

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS07

Signal word (CLP) : Warning

Hazard statements (CLP) : H319 - Causes serious eye irritation.
H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements (CLP) : P280 - Wear eye protection.
P337+P313 - If eye irritation persists: Get medical advice/attention.

Extra phrases : Based on research by TNO in Rijswijk (The Netherlands), commissioned by Duchefa Biochemie B.V. in Haarlem, the medium has no oxidising or explosive properties. As such the substance is not classified as oxidizing (H272, GHS03).

2.3. Other hazards

Contains no PBT and/or vPvB substances ≥ 0.1% assessed in accordance with REACH Annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Potassium nitrate	CAS-No.: 7757-79-1 EC-No.: 231-818-8 REACH-no: 01-2119488224-35	41,5507	Ox. Sol. 2, H272
Ammonium nitrate	CAS-No.: 6484-52-2 EC-No.: 229-347-8 REACH-no: 01-2119490981-27-0012	36,0815	Ox. Sol. 3, H272 Eye Irrit. 2, H319

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Calcium chloride	CAS-No.: 10043-52-4 EC-No.: 233-140-8 EC Index-No.: 017-013-00-2 REACH-no: 01-2119494219-28	7,26	Eye Irrit. 2, H319
Myo-Inositol	CAS-No.: 87-89-8 EC-No.: 201-781-2	4,3735	Not classified
Magnesium sulphate anhydrous	CAS-No.: 7487-88-9 EC-No.: 231-298-2	3,8426	Not classified
Potassium dihydrogenphosphate	CAS-No.: 7778-77-0 EC-No.: 231-913-4 REACH-no: 01-2119490224-41	3,7175	Not classified
Ethylenediaminetetraacetate (EDTA) ferric sodium	CAS-No.: 15708-41-5 EC-No.: 239-802-2 REACH-no: 01-2119496228-27	1,6051	Not classified
Manganese sulphate monohydrate	CAS-No.: 10034-96-5 EC-No.: 232-089-9 EC Index-No.: 025-003-00-4 REACH-no: 01-2119456624-35	0,7391	Eye Dam. 1, H318 STOT RE 2, H373 Aquatic Chronic 2, H411
Zinc sulphate heptahydrate	CAS-No.: 7446-20-0 EC-No.: 231-793-3 EC Index-No.: 030-006-00-9 REACH-no: 01-2119474684-27	0,3761	Acute Tox. 4 (Oral), H302 Eye Dam. 1, H318 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Boric acid substance listed on REACH Candidate List	CAS-No.: 10043-35-3 EC-No.: 233-139-2 EC Index-No.: 005-007-00-2 REACH-no: 01-2119486683-25	0,2712	Repr. 1B, H360FD
Glycine	CAS-No.: 56-40-6 EC-No.: 200-272-2 REACH-no: 01-2119451452-45	0,0875	Not classified
Potassium iodide	CAS-No.: 7681-11-0 EC-No.: 231-659-4	0,0365	STOT RE 1, H372
Thiamine hydrochloride	CAS-No.: 67-03-8 EC-No.: 200-641-8 REACH-no: 01-2120773699-31-xxxx	0,0219	Eye Irrit. 2, H319

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Nicotinic Acid	CAS-No.: 59-67-6 EC-No.: 200-441-0 REACH-no: 01-2119968267-24	0,0219	Eye Irrit. 2, H319
Disodium molybdate	CAS-No.: 7631-95-0 EC-No.: 231-551-7 REACH-no: 01-2119489495-21	0,0094	Not classified
Pyridoxine hydrochloride	CAS-No.: 58-56-0 EC-No.: 200-386-2	0,0044	Eye Dam. 1, H318
copper sulphate	CAS-No.: 7758-98-7 EC-No.: 231-847-6 EC Index-No.: 029-004-00-0	0,0007	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Cobalt chloride anhydrous substance listed on REACH Candidate List (Cobalt dichloride)	CAS-No.: 7646-79-9 EC-No.: 231-589-4 EC Index-No.: 027-004-00-5 REACH-no: 01-2119517584-37	0,0006	Acute Tox. 4 (Oral), H302 Resp. Sens. 1, H334 Skin Sens. 1, H317 Muta. 2, H341 Carc. 1B, H350i Repr. 1B, H360F Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=10)

Specific concentration limits:		
Name	**Product identifier**	**Specific concentration limits**
Cobalt chloride anhydrous	CAS-No.: 7646-79-9 EC-No.: 231-589-4 EC Index-No.: 027-004-00-5 REACH-no: 01-2119517584-37	(0,01 ≤C ≤ 100) Carc. 1B, H350i

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.

First-aid measures after skin contact : Wash skin with plenty of water.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion : Call a poison center or a doctor if you feel unwell.

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

Symptoms/effects after eye contact : Eye irritation.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire : - POx. - COx. - NOx. - SOx.

5.3. Advice for firefighters

Firefighting instructions : Prevent fire fighting water from entering the environment.

Protection during firefighting : Wear proper protective equipment. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid raising powdered materials into airborne dust.

6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area. Wear suitable protective clothing. Avoid contact with skin and eyes.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Mechanically recover the product. Sweep up dry powder and dispose properly.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Avoid dust formation. Handle in accordance with good industrial hygiene and safety procedures. Avoid contact with skin and eyes. Wear personal protective equipment.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store at room temperature. Store in dry, well-ventilated area. Hygroscopic.

7.3. Specific end use(s)

For professional use only. Duchefa Biochemie B.V. products are intended only for "in vitro laboratory" research purposes.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

Potassium nitrate (7757-79-1)	
Bulgaria - Occupational Exposure Limits	
Local name	Калиев нитрат
OEL TWA	5 mg/m³
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 47 от 2021 г., в сила от 04.06.2021 г.)
Latvia - Occupational Exposure Limits	
Local name	Kālija nitrāts
OEL TWA	5 mg/m³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2011. gada 1. februārī noteikumiem Nr. 92)
Lithuania - Occupational Exposure Limits	
Local name	Kalio nitratas
IPRV (OEL TWA)	5 mg/m³
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)

Glycine (56-40-6)	
Latvia - Occupational Exposure Limits	
Local name	Glicīns (aminoetiķskābe)
OEL TWA	5 mg/m³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325

Calcium chloride (10043-52-4)	
Czech Republic - Occupational Exposure Limits	
Local name	Chlorid vápenatý
PEL (OEL TWA)	2 mg/m³
NPK-P (OEL C)	4 mg/m³
Remark	I - dráždí sliznice (oči, dýchací cesty) resp. kůži.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)
Latvia - Occupational Exposure Limits	
Local name	Kalcija hlorīds
OEL TWA	2 mg/m³

Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2011. gada 1. februārī noteikumiem Nr. 92)

Manganese sulphate monohydrate (10034-96-5)	
Finland - Occupational Exposure Limits	
Local name	Mangaani-(II)-sulfaatti, monohydraatti
HTP (OEL TWA) [1]	0,02 mg/m³ alveolijae
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)

Boric acid (10043-35-3)	
Austria - Occupational Exposure Limits	
Local name	Borsäure (Orthoborsäure)
Remark	Fortpflanzungsgefährdend: F, D
Regulatory reference	BGBl. II Nr. 156/2021
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Borsäure und Natriumborate
AGW (OEL TWA) [1]	0,5 mg/m³ (E)
Peak exposure limitation factor	2(I)
Remark	AGS - Ausschuss für Gefahrstoffe; Y - Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden; 10 - Der Arbeitsplatzgrenzwert bezieht sich auf den Elementgehalt des entsprechenden Metalls
Regulatory reference	TRGS900
Ireland - Occupational Exposure Limits	
Local name	Borate compounds inorganic: Boric acid
OEL TWA [1]	2 mg/m³
Remark	Repr.1B (Substances which are presumed human reproductive toxicants)
Regulatory reference	Chemical Agents Code of Practice 2021
Latvia - Occupational Exposure Limits	
Local name	Borskābe
OEL TWA	10 mg/m³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325
Lithuania - Occupational Exposure Limits	
Local name	Boro rūgštis
IPRV (OEL TWA)	10 mg/m³
Remark	R (reprodukcijai toksiškas poveikis)
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
Portugal - Occupational Exposure Limits	
Local name	Boratos, compostos inorgânicos

OEL TWA	2 mg/m³ I (Fraçao inalável)
OEL STEL	6 mg/m³ I (Fraçao inalável)
Remark	A4 (Agente não classificável como carcinogénico no Homem)
Regulatory reference	Norma Portuguesa NP 1796:2014
Slovenia - Occupational Exposure Limits	
Local name	borova kislina in natrijev borat
OEL TWA	0,5 mg/m³
OEL STEL	1 mg/m³
Remark	Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti)
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021
Spain - Occupational Exposure Limits	
Local name	Ácido bórico
VLA-ED (OEL TWA) [1]	2 mg/m³
VLA-EC (OEL STEL)	6 mg/m³
Remark	TR1B (Cuando las pruebas utilizadas para la clasificación procedan principalmente de datos en animales), s (Esta sustancia tiene prohibida total o parcialmente su comercialización y uso como fitosanitario y/o como biocida. Para una información detallada acerca de las prohibiciones consúltese: Base de datos de productos biocidas: http://www.msssi.gob.es/ciudadanos/productos.do?tipo=plaguicidas Base de datos de productos fitosanitarios http://www.magrama.gob.es/agricultura/pags/fitos/registro/fichas/pdf/Lista_sa.pdf), r (Esta sustancia tiene establecidas restricciones a la fabricación, la comercialización o el uso en los términos especificados en el "Reglamento (CE) nº 1907/2006 sobre Registro, Evaluación, Autorización y Restricción de sustancias y preparados químicos" (REACH) de 18 de diciembre de 2006 (DOUE L 369 de 30 de diciembre de 2006). Las restricciones de una sustancia pueden aplicarse a todos los usos o sólo a usos concretos. El anexo XVII del Reglamento REACH contiene la lista de todas las sustancias restringidas y especifica los usos que se han restringido).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
Switzerland - Occupational Exposure Limits	
Local name	Acide borique / Borsäure
MAK (OEL TWA) [1]	1,8 mg/m³ (i) / (e)
KZGW (OEL STEL)	1,8 mg/m³ (i) / (e)
Notation	$R1_B$, SS_B / $R1_B$, SS_B
Remark	NIOSH
Regulatory reference	www.suva.ch, 01.01.2024
USA - ACGIH - Occupational Exposure Limits	
Local name	Boric acid

ACGIH OEL TWA	2 mg/m³ (I - Inhalable particulate matter)
ACGIH OEL STEL	6 mg/m³ (I - Inhalable particulate matter)
Remark (ACGIH)	TLV® Basis: URT irr. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2024

Potassium iodide (7681-11-0)	
Bulgaria - Occupational Exposure Limits	
Local name	Калиев йодид
OEL TWA	5 mg/m³
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 47 от 2021 г., в сила от 04.06.2021 г.)

copper sulphate (7758-98-7)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Copper(II) sulfate
IOEL TWA	0,01 mg/m³ (respirable fraction)
Remark	(Year of adoption 2014)
Regulatory reference	SCOEL Recommendations
Finland - Occupational Exposure Limits	
Local name	Kupari-(II)-sulfaatti
HTP (OEL TWA) [1]	0,02 mg/m³ Cu, alveolijae
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

No additional information available

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:
Ensure good ventilation of the work station.

8.2.2. Personal protection equipment

Personal protective equipment symbol(s):

8.2.2.1. Eye and face protection

Eye protection			
Type	**Field of application**	**Characteristics**	**Standard**
Safety glasses	Dust		EN 166

8.2.2.2. Skin protection

Skin and body protection:
In case of possible repeated skin contact wear protective clothing

Hand protection					
Type	**Material**	**Permeation**	**Thickness (mm)**	**Penetration**	**Standard**
Gloves	Nitrile rubber (NBR)	6 (> 480 minutes)	0,11		EN ISO 374

8.2.2.3. Respiratory protection

Respiratory protection			
Device	**Filter type**	**Condition**	**Standard**
Dust mask	Type P1	Dust protection	EN 143

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:
Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Solid
Appearance	:	Powder.
Colour	:	White to slightly yellow.
Odour	:	Characteristic. Weak.
Odour threshold	:	No data available
pH	:	No data available
Relative evaporation rate (butylacetate=1)	:	No data available
Melting point	:	No data available
Freezing point	:	Not applicable
Boiling point	:	No data available
Flash point	:	Not applicable
Auto-ignition temperature	:	Not applicable
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	Non flammable.
Vapour pressure	:	No data available
Relative vapour density at 20°C	:	No data available
Relative density	:	No data available
Solubility	:	Readily soluble in water.
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Viscosity, kinematic	:	Not applicable

Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidising properties	:	No data available
Explosive limits	:	Not applicable

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions of storage, handling and use.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Moisture.

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

Thermal decomposition generates : - COx. - NOx. - SOx. - POx.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity (oral)	:	Not classified
Acute toxicity (dermal)	:	Not classified
Acute toxicity (inhalation)	:	Not classified

Potassium nitrate (7757-79-1)	
LD50 oral rat	> 2000 mg/kg OECD 425
LD50 oral	> 2000 mg/kg bodyweight Animal:
LD50 dermal rat	> 5000 mg/kg OECD 402
LC50 Inhalation - Rat	> 0,527 mg/l/4h OECD 403

Potassium dihydrogenphosphate (7778-77-0)	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Guideline: EPA OPPTS 870.1200 (Acute Dermal Toxicity), Guideline: EU Method B.3 (Acute Toxicity (Dermal))
LC50 Inhalation - Rat	> 0,83 mg/l air Animal: rat, Guideline: EPA OPP 81-3 (Acute inhalation toxicity), Guideline: other:, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity), Guideline: EU Method B.2 (Acute Toxicity (Inhalation)), Guideline: other:

Magnesium sulphate anhydrous (7487-88-9)	
LD50 oral rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 425 (Acute Oral Toxicity: Up-and-Down Procedure)
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Guideline: EU Method B.3 (Acute Toxicity (Dermal)), Guideline: EPA OPPTS 870.1200 (Acute Dermal Toxicity), Guideline: other:
Thiamine hydrochloride (67-03-8)	
LD50 oral rat	12340 mg/kg bodyweight Animal: rat, 95% CL: 10340 - 14340
LD50 oral	13347 mg/kg bodyweight Animal: mouse, 95% CL: 11527 - 15167
Pyridoxine hydrochloride (58-56-0)	
LD50 oral rat	> 6600 mg/kg
LD50 oral	> 6000 mg/kg LD50 oral mouse
Glycine (56-40-6)	
LD50 oral rat	7930 mg/kg
Myo-Inositol (87-89-8)	
LD50 oral rat	19483,68 mg/kg bodyweight Animal: rat
LD50 oral	> 10000 mg/kg (mouse)
Nicotinic Acid (59-67-6)	
LD50 oral rat	7000 mg/kg
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LC50 Inhalation - Rat	> 3,8 mg/l air Animal: rat, Guideline: OECD Guideline 436 (Acute Inhalation Toxicity: Acute Toxic Class Method)
Calcium chloride (10043-52-4)	
LD50 oral	2120 mg/kg bodyweight Animal: rat
LD50 dermal rabbit	> 5000 mg/kg bodyweight Animal: rabbit
Ammonium nitrate (6484-52-2)	
LD50 oral rat	> 2950 (≤) mg/kg
LD50 dermal rat	> 5000 mg/kg
LC50 Inhalation - Rat	> 88,8 mg/l
Zinc sulphate heptahydrate (7446-20-0)	
LD50 oral rat	1260 mg/kg Source: GESTIS
Cobalt chloride anhydrous (7646-79-9)	
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)

Ethylenediaminetetraacetate (EDTA) ferric sodium (15708-41-5)	
LD50 oral rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 423 (Acute Oral toxicity - Acute Toxic Class Method), Guideline: EU Method B.1 tris (Acute Oral Toxicity - Acute Toxic Class Method)
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Guideline: EU Method B.3 (Acute Toxicity (Dermal))
LC50 Inhalation - Rat	> 2,75 mg/l/4h Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity), Guideline: EU Method B.2 (Acute Toxicity (Inhalation))

Manganese sulphate monohydrate (10034-96-5)	
LD50 oral rat	2150 mg/kg
LD50 oral	2330 mg/kg (mouse)
LC50 Inhalation - Rat	> 4,45 mg/l air Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity), Guideline: EU Method B.2 (Acute Toxicity (Inhalation))

Boric acid (10043-35-3)	
LD50 oral rat	> 2600 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 401 (Acute Oral Toxicity), Guideline: EU Method B.1 (Acute Toxicity (Oral))
LD50 oral	3450 mg/kg (mouse)
LD50 dermal rabbit	> 2000 mg/kg bodyweight Animal: rabbit, Guideline: other:
LC50 Inhalation - Rat	> 2,12 mg/l air Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity), Guideline: other:

Potassium iodide (7681-11-0)	
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)

Disodium molybdate (7631-95-0)	
LD50 oral rat	2689 mg/kg Source: ECHA
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LC50 Inhalation - Rat (Dust/Mist)	> 5,05 mg/l Source: ECHA

copper sulphate (7758-98-7)	
LD50 oral rat	481 mg/kg
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Guideline: EU Method B.3 (Acute Toxicity (Dermal)), Guideline: EPA OTS 798.1100 (Acute Dermal Toxicity), Guideline: other:

Skin corrosion/irritation : Not classified

Potassium nitrate (7757-79-1)	
pH	0 (5 – 7,5) (50 g/l at 20 °C)

Potassium dihydrogenphosphate (7778-77-0)	
pH	≈ 4,4 (50 g/l, 20 °C)

Thiamine hydrochloride (67-03-8)	
pH	2,7 – 3,3
Pyridoxine hydrochloride (58-56-0)	
pH	2,4 – 3
Nicotinic Acid (59-67-6)	
pH	2,7 (18 g/l, 20 °C)
Calcium chloride (10043-52-4)	
pH	≥ 8 – ≤ 10
Ammonium nitrate (6484-52-2)	
pH	5 – 6,5
Zinc sulphate heptahydrate (7446-20-0)	
pH	4 – 6 (20°C)(50 g/l)
Ethylenediaminetetraacetate (EDTA) ferric sodium (15708-41-5)	
pH	4 – 5,5
Manganese sulphate monohydrate (10034-96-5)	
pH	3 – 4 (50 g/l, 20°C)
Boric acid (10043-35-3)	
pH	5,1
Potassium iodide (7681-11-0)	
pH	7 – 9 (50 g/l, 20 °C)

Serious eye damage/irritation : Causes serious eye irritation.

Potassium nitrate (7757-79-1)	
pH	0 (5 – 7,5) (50 g/l at 20 °C)
Potassium dihydrogenphosphate (7778-77-0)	
pH	≈ 4,4 (50 g/l, 20 °C)
Thiamine hydrochloride (67-03-8)	
pH	2,7 – 3,3
Pyridoxine hydrochloride (58-56-0)	
pH	2,4 – 3
Nicotinic Acid (59-67-6)	
pH	2,7 (18 g/l, 20 °C)
Calcium chloride (10043-52-4)	
pH	≥ 8 – ≤ 10
Ammonium nitrate (6484-52-2)	
pH	5 – 6,5

Zinc sulphate heptahydrate (7446-20-0)	
pH	4 – 6 (20°C)(50 g/l)

Ethylenediaminetetraacetate (EDTA) ferric sodium (15708-41-5)	
pH	4 – 5,5

Manganese sulphate monohydrate (10034-96-5)	
pH	3 – 4 (50 g/l, 20°C)

Boric acid (10043-35-3)	
pH	5,1

Potassium iodide (7681-11-0)	
pH	7 – 9 (50 g/l, 20 °C)

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Pyridoxine hydrochloride (58-56-0)	
LOAEL (animal/male, F0/P)	125 mg/kg bodyweight

Ethylenediaminetetraacetate (EDTA) ferric sodium (15708-41-5)	
NOAEL (animal/male, F0/P)	500 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)

Disodium molybdate (7631-95-0)	
LOAEL (animal/male, F0/P)	100 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 416 (Two-Generation Reproduction Toxicity Study)
NOAEL (animal/male, F0/P)	42,5 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 416 (Two-Generation Reproduction Toxicity Study)

STOT-single exposure : Not classified

Ammonium nitrate (6484-52-2)	
LOAEL (dermal, rat/rabbit)	≥ mg/kg bodyweight

STOT-repeated exposure : Not classified

Potassium nitrate (7757-79-1)	
NOAEL (oral, rat, 90 days)	≥ 1500 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)

Potassium dihydrogenphosphate (7778-77-0)	
NOAEL (oral, rat, 90 days)	1000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)

Thiamine hydrochloride (67-03-8)	
NOAEL (oral, rat, 90 days)	≥ 1000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test), Guideline: other:

Glycine (56-40-6)	
NOAEL (oral, rat, 90 days)	≥ 2000 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: other:

Nicotinic Acid (59-67-6)	
LOAEL (oral, rat, 90 days)	0 mg/kg bodyweight/day
NOAEL (oral, rat, 90 days)	50 mg/kg bodyweight Animal: rat, Guideline: EU Method B.7 (Repeated Dose (28 Days) Toxicity (Oral)), Guideline: OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity Study in Rodents)
NOAEL (subacute, oral, animal/male, 28 days)	50 mg/kg bodyweight
NOAEL (subacute, oral, animal/female, 28 days)	50 mg/kg bodyweight

Ammonium nitrate (6484-52-2)	
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	≥ 0,185 mg/l air Animal: rat, Animal sex: male
NOAEL (subchronic, oral, animal/male, 90 days)	256 mg/kg bodyweight Animal: , Animal sex: male
NOAEL (subchronic, oral, animal/female, 90 days)	284 mg/kg bodyweight Animal: , Animal sex: female

Cobalt chloride anhydrous (7646-79-9)	
LOAEC (inhalation, rat, dust/mist/fume, 90 days)	0,31 mg/l air Animal: rat
NOAEL (oral, rat, 90 days)	3 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)

Ethylenediaminetetraacetate (EDTA) ferric sodium (15708-41-5)	
NOAEL (oral, rat, 90 days)	> 84 mg/kg bodyweight/day Animal: rat, Animal sex: male, Guideline: OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity Study in Rodents), Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)

Manganese sulphate monohydrate (10034-96-5)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

Potassium iodide (7681-11-0)	
LOAEL (oral, rat, 90 days)	0,55 mg/kg bodyweight Animal: rat, Guideline: other:
STOT-repeated exposure	Causes damage to organs (thyroid gland) through prolonged or repeated exposure (oral).

Disodium molybdate (7631-95-0)	
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	> 0,1 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study)

Aspiration hazard : Not classified

Murashige & Skoog Medium modification No.1B (Micro and 0.5 conc. Macro elements, incl. vitamins)	
Viscosity, kinematic	Not applicable

Ethylenediaminetetraacetate (EDTA) ferric sodium (15708-41-5)	
Viscosity, kinematic	Not applicable

Boric acid (10043-35-3)	
Viscosity, kinematic	Not applicable

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Harmful to aquatic life with long lasting effects.
Hazardous to the aquatic environment, short–term (acute) : Not classified
Hazardous to the aquatic environment, long–term (chronic) : Harmful to aquatic life with long lasting effects.

Potassium nitrate (7757-79-1)	
LC50 - Fish [1]	> 98,9 mg/l Oncorhynchus mykiss (Rainbow trout)
EC50 - Crustacea [1]	490 mg/l EC50 48h - Daphnia magna [mg/l]

Potassium dihydrogenphosphate (7778-77-0)	
LC50 - Fish [1]	> 100 mg/l Oncorhynchus mykiss (Rainbow trout)
EC50 - Crustacea [1]	> 100 mg/l EC50 48h - Daphnia magna [mg/l]
EC50 72h - Algae [1]	> 100 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)

Magnesium sulphate anhydrous (7487-88-9)	
LC50 - Fish [1]	680 mg/l Test organisms (species): Pimephales promelas

Thiamine hydrochloride (67-03-8)	
LC50 - Fish [1]	> 100 mg/l Oncorhynchus mykiss (Rainbow trout)
EC50 - Crustacea [1]	> 100 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	> 100 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)

Pyridoxine hydrochloride (58-56-0)	
LC50 - Fish [1]	> 100 mg/l Oncorhynchus mykiss (Rainbow trout)
EC50 - Crustacea [1]	> 100 mg/l EC50 48h - Daphnia magna [mg/l]
EC50 72h - Algae [1]	72 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)

Glycine (56-40-6)	
LC50 - Fish [1]	> 5 mg/l
EC50 - Crustacea [1]	> 220 mg/l Test organisms (species): Daphnia magna

Glycine (56-40-6)	
EC50 72h - Algae [1]	> 1000 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum)

Myo-Inositol (87-89-8)	
LC50 - Fish [1]	5424,33 mg/l Test organisms (species): Pimephales promelas
EC50 72h - Algae [1]	> 36600 mg/l Test organisms (species): other:

Nicotinic Acid (59-67-6)	
LC50 - Fish [1]	520 mg/l Test organisms (species): Salmo trutta
EC50 - Crustacea [1]	77 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	89,933 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
EC50 72h - Algae [2]	105,666 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
EC50 96h - Algae [1]	67,956 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
EC50 96h - Algae [2]	114,786 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)

Calcium chloride (10043-52-4)	
LC50 - Fish [1]	4630 mg/l Test organisms (species): Pimephales promelas
LOEC (chronic)	240 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC (chronic)	481 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC chronic fish	230 mg/l Test organisms (species): Oncorhynchus mykiss (previous name: Salmo gairdneri) Duration: '25 d'

Ammonium nitrate (6484-52-2)	
LC50 - Fish [1]	447 mg/l Cyprinus carpio (Common carp)
EC50 - Crustacea [1]	490 mg/l EC50 48h - Daphnia magna [mg/l]
EC50 - Other aquatic organisms [1]	490 mg/l Test organisms (species):
ErC50 algae	> 1700 mg/l 10 days
NOEC (chronic)	555 mg/l 7 days, (Bullia digitalis)

Zinc sulphate heptahydrate (7446-20-0)	
EC50 - Crustacea [1]	12 mg/l
EC50 72h - Algae [1]	0,05 – 65 mg/l Source: GESTIS

Cobalt chloride anhydrous (7646-79-9)	
EC50 - Crustacea [1]	5,89 mg/l Test organisms (species): Daphnia magna

Ethylenediaminetetraacetate (EDTA) ferric sodium (15708-41-5)	
LC50 - Fish [1]	> 100 mg/l Oncorhynchus mykiss (Rainbow trout)
EC50 - Crustacea [1]	100,9 mg/l Daphnia Magna
EC50 72h - Algae [1]	69,9 mg/l Pseudokirchneriella subcapitata

Ethylenediaminetetraacetate (EDTA) ferric sodium (15708-41-5)	
LOEC (chronic)	50 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC (chronic)	25 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC chronic fish	≥ 25,7 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio) Duration: '35 d'

Manganese sulphate monohydrate (10034-96-5)	
LC50 - Fish [1]	30,6 mg/l (Pimephales promelas)
EC50 - Crustacea [1]	8,3 mg/l
EC50 72h - Algae [1]	61 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)

Boric acid (10043-35-3)	
LC50 - Fish [1]	79,7 mg/l Test organisms (species): Pimephales promelas
LC50 - Fish [2]	74 mg/l Test organisms (species): Limanda limanda
EC50 - Crustacea [1]	133 mg/l
EC50 72h - Algae [1]	66 mg/l Test organisms (species): Phaeodactylum tricornutum
EC50 72h - Algae [2]	54 mg/l Test organisms (species): Phaeodactylum tricornutum
NOEC chronic fish	6,4 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio) Duration: '34 d'

Potassium iodide (7681-11-0)	
LC50 - Fish [1]	> 100 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 - Crustacea [1]	100 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	2900 mg/l
NOEC (chronic)	29,87 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC chronic fish	66,356 mg/l Test organisms (species): other: Duration: '28 d'

12.2. Persistence and degradability

Thiamine hydrochloride (67-03-8)	
Persistence and degradability	Product is biodegradable.
Biodegradation	74 % (7d)

Pyridoxine hydrochloride (58-56-0)	
Biodegradation	94 % (28 d, OECD 301E)

Glycine (56-40-6)	
Persistence and degradability	Product is biodegradable.
BOD (% of ThOD)	57 % ThOD (5 days)

Nicotinic Acid (59-67-6)	
Persistence and degradability	Product is biodegradable.
BOD (% of ThOD)	100 % ThOD

Nicotinic Acid (59-67-6)	
Biodegradation	100 %

Ammonium nitrate (6484-52-2)	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Thiamine hydrochloride (67-03-8)	
Partition coefficient n-octanol/water (Log Pow)	< -3,04 22,5 °C

Pyridoxine hydrochloride (58-56-0)	
Partition coefficient n-octanol/water (Log Pow)	-0,7 20 °C , pH 7

Glycine (56-40-6)	
Partition coefficient n-octanol/water (Log Pow)	-2,3 at 20 °C
Bioaccumulative potential	No bioaccumulation.

Nicotinic Acid (59-67-6)	
Partition coefficient n-octanol/water (Log Pow)	-2,43 (25 °C, OECD Test 107)
Bioaccumulative potential	No bioaccumulation.

Calcium chloride (10043-52-4)	
Partition coefficient n-octanol/water (Log Pow)	0,0500006

Ammonium nitrate (6484-52-2)	
Bioaccumulative potential	Not established.

Boric acid (10043-35-3)	
Partition coefficient n-octanol/water (Log Pow)	0,18

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Component	
Cobalt chloride anhydrous (7646-79-9)	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
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

Additional information : Prevent entry to sewers and public waters. Avoid release to the environment

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose in a safe manner in accordance with local/national regulations. Avoid release to the environment. Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA

ADR	IMDG	IATA
14.1. UN number		
Not regulated	Not regulated	Not regulated
14.2. UN proper shipping name		
Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)		
Not regulated	Not regulated	Not regulated
14.4. Packing group		
Not regulated	Not regulated	Not regulated
14.5. Environmental hazards		
Not regulated	Not regulated	Not regulated
No supplementary information available		

14.6. Special precautions for user

Overland transport
Not regulated

Transport by sea
Not regulated

Air transport
Not regulated

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

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

Contains no substance(s) listed on REACH Annex XVII (Restriction Conditions)

REACH Annex XIV (Authorisation List)

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains substance(s) listed on the REACH Candidate List in concentrations ≥ 0.1 % or SCL: Cobalt dichloride (EC 231-589-4, CAS 7646-79-9), Boric acid (EC 233-139-2, CAS 10043-35-3)

PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Ozone Regulation (1005/2009)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 1005/2009 on substances that deplete the ozone layer)

Explosives Precursors Regulation (2019/1148)

Contains substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

ANNEX I RESTRICTED EXPLOSIVES PRECURSORS

List of substances which are not to be made available to, or introduced, possessed or used by, members of the general public, whether on their own or in mixtures or substances that include those substances, unless the concentration is equal to or lower than the limit values set out in column 2, and for which suspicious transactions and significant disappearances and thefts are to be reported within 24 hours.

Name	CAS-No.	Limit value	Upper limit value for licensing under Article 5(3)	Combined Nomenclature (CN) code for a separate chemically defined compound meeting the requirements of Note 1 to Chapter 28 or 29 of the CN, respectively	Combined Nomenclature code for mixture without constituents which would determine classification under another CN code
Ammonium nitrate	6484-52-2	45,7 % w/w	No licensing permitted	3102 30 10 (in aqueous solution); 3102 30 90 (other)	ex 3824 99 96

ANNEX II REPORTABLE EXPLOSIVES PRECURSORS

List of substances on their own or in mixtures or in substances for which suspicious transactions and significant disappearances and thefts are to be reported within 24 hours.

Name	CAS-No.	Combined Nomenclature code (CN)	Combined Nomenclature code for mixture without constituents which would determine classification under another CN code
Potassium nitrate	7757-79-1	2834 21 00	ex 3824 99 96

Please see https://home-affairs.ec.europa.eu/policies/internal-security/counter-terrorism-and-radicalisation/protection/legislation-chemicals-used-home-made-explosives_en

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.1.2. National regulations

Ensure all national/local regulations are observed.

France

Occupational diseases	
Code	Description
RG 70	Occupational diseases caused by cobalt and its compounds
RG 70 BIS	Respiratory disorders due to sintered or fused metal carbide dust containing cobalt
RG 70 TER	Primary broncho-pulmonary cancer caused by inhalation of cobalt dust associated with tungsten carbide prior to sintering

Germany

Water hazard class (WGK) : WGK 2, Significantly hazardous to water (Classification according to AwSV, Annex 1).

Hazardous Incident Ordinance (12. BImSchV) : Is not subject to the Hazardous Incident Ordinance (12. BImSchV)

Netherlands

SZW-lijst van kankerverwekkende stoffen : Cobalt chloride anhydrous,Manganese sulphate monohydrate are listed

SZW-lijst van mutagene stoffen : Manganese sulphate monohydrate is listed

SZW-lijst van reprotoxische stoffen – Borstvoeding : None of the components are listed

SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : Cobalt chloride anhydrous,Boric acid,Disodium molybdate are listed

SZW-lijst van reprotoxische stoffen – Ontwikkeling : Boric acid,copper sulphate are listed

Denmark

Danish National Regulations : Pregnant/breastfeeding women working with the product must not be in direct contact with the product

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes			
Section	**Changed item**	**Change**	**Comments**
	Flammability	Added	
	Revision date	Modified	
	Supersedes	Added	
	Adverse health effects caused by endocrine disrupting properties	Added	
	Regulatory framework	Added	
1.1	Product group	Modified	
1.1	Trade name	Modified	
1.1	Name	Modified	
2.1	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Modified	

Indication of changes			
Section	**Changed item**	**Change**	**Comments**
2.1	Adverse physicochemical, human health and environmental effects	Added	
2.2	Precautionary statements (CLP)	Modified	
2.2	Hazard statements (CLP)	Modified	
3	Composition/information on ingredients	Modified	
4.1	First-aid measures after skin contact	Added	
4.1	First-aid measures after inhalation	Added	
4.1	First-aid measures after ingestion	Added	
4.1	First-aid measures after eye contact	Added	
4.2	Symptoms/effects after eye contact	Added	
4.3	Other medical advice or treatment	Added	
5.1	Suitable extinguishing media	Modified	
5.2	Hazardous decomposition products in case of fire	Modified	
5.3	Protection during firefighting	Modified	
6.1	Protective equipment	Added	
6.1	Emergency procedures	Modified	
6.2	Environmental precautions	Modified	
6.3	Other information	Added	
6.3	Methods for cleaning up	Modified	
6.4	Reference to other sections (8, 13)	Added	
7.1	Hygiene measures	Added	
7.1	Precautions for safe handling	Modified	
7.2	Storage conditions	Modified	
8.2	Environmental exposure controls	Added	
8.2	Appropriate engineering controls	Added	
9.1	Viscosity, kinematic	Added	
9.1	Freezing point	Added	
9.1	Flash point	Added	
9.1	Explosive limits (vol %)	Added	
9.1	Auto-ignition temperature	Added	
10.3	Possibility of hazardous reactions	Added	
10.6	Hazardous decomposition products	Modified	
12.1	Ecology - general	Added	

Murashige & Skoog Medium modification No.1B (Micro and 0.5 conc. Macro elements, incl. vitamins)

Safety Data Sheet

according to Regulation (EU) 2015/830

Indication of changes			
Section	**Changed item**	**Change**	**Comments**
12.6	Adverse effects on the environment caused by endocrine disrupting properties	Added	
13.1	Waste treatment methods	Modified	
15.2	Chemical safety assessment	Added	
16	Data sources	Modified	
16	Abbreviations and acronyms	Modified	

Abbreviations and acronyms:	
ATE	Acute Toxicity Estimate
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
BCF	Bioconcentration factor
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DPD	Dangerous Preparations Directive 1999/45/EC
DSD	Dangerous Substances Directive 67/548/EEC
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
PBT	Persistent Bioaccumulative Toxic
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
SDS	Safety Data Sheet
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard
IARC	International Agency for Research on Cancer
NOAEL	No-Observed Adverse Effect Level

Abbreviations and acronyms:	
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disrupting properties

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. TNO (Netherlands Organisation for Applied Scientific Research). ECHA (European Chemicals Agency). Supplier's safety documents.

Full text of H- and EUH-statements:	
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment – Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment – Chronic Hazard, Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment – Chronic Hazard, Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment – Chronic Hazard, Category 3
Carc. 1B	Carcinogenicity (inhalation) Category 1B
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
H272	May intensify fire; oxidiser.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341	Suspected of causing genetic defects.

Full text of H- and EUH-statements:	
H350i	May cause cancer by inhalation.
H360F	May damage fertility.
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.
H412	Harmful to aquatic life with long lasting effects.
Muta. 2	Germ cell mutagenicity, Category 2
Ox. Sol. 2	Oxidising Solids, Category 2
Ox. Sol. 3	Oxidising Solids, Category 3
Repr. 1B	Reproductive toxicity, Category 1B
Resp. Sens. 1	Respiratory sensitisation, Category 1
Skin Irrit. 2	Skin corrosion/irritation, Category 2
Skin Sens. 1	Skin sensitisation, Category 1
STOT RE 1	Specific target organ toxicity – Repeated exposure, Category 1
STOT RE 2	Specific target organ toxicity – Repeated exposure, Category 2