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

1.1. Product identifier

Trade name/designation:

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

Use of the substance/mixture:

Active agent

1.3. Details of the supplier of the safety data sheet

Supplier (manufacturer/importer/only representative/downstream user/distributor):

Valsynthese S. A.

Société Suisse des Explosifs Group Fabrikstrasse 48

3900 Brig Switzerland

Telephone: +41 27 922 71 11
Telefax: +41 27 922 72 00
E-mail: info@valsynthese.ch
Website: www.valsynthese.ch

E-mail (competent person): msds@sse-group.com

1.4. Emergency telephone number

United States of America: Poison control center - national hotline number 1-800-222-1222 Great Britain: National phone number 111 Belgium: Centre antipoisons +32 070 245 245 / Bulgaria: +359 2 9154 233 / Croatia: +3851 2348 342 / Cyprus: +357 1401 / Czech Republic: +420 224 919 293, +420 224 915 402 / Denmark: +45 82 12 12 12 / Estonia: +372 16662, +372 7943 794 / Finland: +358 09 471 77 / France: numéro ORFILA (INRS): +33 (0)1 45 42 59 59 / Greece: +30 21077 93777 / Hungary: +36 80 201 199 (24 hours) / Ireland: +353 (1) 809 2166 / Italy: +39 06 4997800 / Lithuania: +370 (85) 2362052 / Luxembourg: +352 8002 5500 / The Nederlands: +31 (0) 30 274 8888 / Norway: +47 22 59 13 00 / Portugal: +351 800 250 250 / Romania: +402 213 183 606 / Slovakia: +421 2 5477 4166 / Spain: National Emergency Telephone Number: +34 91 562 04 20 / Sweden: +46 112 (emergency 24 hours), +46 08-331231 (mon-fri 9.00-17.00). European Union: Call 112 if no specific phone number available., +41 27 922 71 11 (Only available during office hours.)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Hazard classes and hazard categories	Hazard statements	Classification pro cedure
Explosives (Expl. 1.1)	H201: Explosive; mass explosion hazard.	
Acute toxicity (oral) (Acute Tox. 4)	H302: Harmful if swallowed.	
Acute toxicity (dermal) (Acute Tox. 3)	H311: Toxic in contact with skin.	
STOT-repeated exposure (STOT RE 2)	H373: May cause damage to organs through prolonged or repeated exposure. ()	
Hazardous to the aquatic environment (Aquatic Chronic 3)	H412: Harmful to aquatic life with long lasting effects.	
Acute toxicity (inhalative) (Acute Tox. 3)	H331: Toxic if inhaled.	

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2.2. Label elements

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







GHS08 Health hazard



GHS01 Exploding bomb

Signal word: Danger

Hazard statements for physical hazards		
H201	Explosive; mass explosion hazard.	

hazard statements for health hazards		
H302	Harmful if swallowed.	
H311	Toxic in contact with skin.	
H331	Toxic if inhaled.	
H373	May cause damage to organs through prolonged or repeated exposure. ()	

Hazard statements for environmental hazards	
H412 Harmful to aquatic life with long lasting effects.	

Supplemental hazard information: -

Precautionary statements Prevention		
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.	
P260	Do not breathe dust/fume/gas/mist/vapours/spray.	
P280	Wear protective gloves/protective clothing/eye protection/face protection.	

Precautionary statements Response		
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.	
P310	Immediately call a POISON CENTER/doctor/etc	
P370 + P372 + P380 + P373	In case of fire: Explosion risk. Evacuate area. DO NOT fight fire when fire reaches explosives.	

2.3. Other hazards

Other adverse effects:

In contact with water, pure nitroglycerin may separate and there is a risk of subsequent detonation due to heat, shock or friction.

SECTION 3: Composition / information on ingredients

3.2. Mixtures

Hazardous ingredients / Hazardous impurities / Stabilisers:

product identifiers	Substance name Classification according to Regulation (EC) No 1272/2008 [CLP]	Concen- tration
CAS No.: 10039-26-6	Lactose The substance is classified as not hazardous according to regulation (EC) No 1272/2008 [CLP].	90 weight-%
CAS No.: 55-63-0 EC No.: 200-240-8	glycerol trinitrate Acute Tox. 1, Acute Tox. 2, Aquatic Chronic 2, Expl. 1.1, STOT RE 2 O Danger H201-H300-H310-H330-H373-H411	10 weight-%

Full text of H- and EUH-phrases: see section 16.

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SECTION 4: First aid measures

4.1. Description of first aid measures

General information:

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). Remove victim out of the danger area. Remove contaminated, saturated clothing. If unconscious but breathing normally, place in recovery position and seek medical advice. Do not leave affected person unattended. Warning First aider: Pay attention to self-protection!

Following inhalation:

Provide fresh air. In case of inhalation of decomposition products, affected person should be moved into fresh air and kept still. Hazardous decomposition products: Nitrogen oxides (NOx). Call a physician immediately. If breathing is irregular or stopped, administer artificial respiration. No mouth-to-mouth or mouth-to-nose resuscitation. Use Ambu bag or ventilator.

In case of skin contact:

After contact with skin, wash immediately with plenty of water and soap. Take off immediately all contaminated clothing. Get immediate medical advice/attention.

After eye contact:

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.

Following ingestion:

Rinse mouth. Let water be drunken in little sips (dilution effect). Get medical advice/attention if you feel unwell

Self-protection of the first aider:

Use personal protection equipment. No direct artificial respiration to be given by first aider. Avoid contact with skin, eyes and clothes.

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

Respiratory paralysis, low blood pressure, accompanied by severe headache, dizziness, narcosis, intoxication, euphoria, nausea, vomiting.

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:

Carbon dioxide (CO2), alcohol resistant foam, Extinguishing powder

Unsuitable extinguishing media:

Water

5.2. Special hazards arising from the substance or mixture

In contact with water, pure nitroglycerin may separate and there is a risk of subsequent detonation due to heat, shock or friction.

Hazardous combustion products:

Carbon dioxide (CO2), Carbon monoxide, Nitrogen oxides (NOx)

5.3. Advice for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing.

5.4. Additional information

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Personal precautions:

Remove persons to safety.

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Protective equipment:

Wear protective gloves/protective clothing/eye protection/face protection.

6.1.2. For emergency responders

Personal protection equipment:

Personal protection equipment: see section 8

6.2. Environmental precautions

Do not allow to enter into surface water or drains. Notify the respective authorities in accordance with local law in the case of environmental pollution immediately.

6.3. Methods and material for containment and cleaning up

For containment:

Take up mechanically, placing in appropriate containers for disposal.

For cleaning up:

Do not rinse down with water. In contact with water, pure nitroglycerin may separate and there is a risk of subsequent detonation due to heat, shock or friction.

6.4. Reference to other sections

Safe handling: see section 7 Personal protection equipment: see section 8 Disposal: see section 13

6.5. Additional information

Use appropriate container to avoid environmental contamination.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Protective measures

Advices on safe handling:

Wear personal protection equipment (refer to section 8). Do not breathe dust. Take off immediately all contaminated clothing and wash it before reuse.

Fire prevent measures:

Take precautionary measures against static discharge.

Measures to prevent aerosol and dust generation:

The substance should only be handled in closed apparatus or systems. Take up dust-free and set down dust-free. Collect in closed and suitable containers for disposal.

Advices on general occupational hygiene

When using do not eat, drink or smoke. Avoid contact with eyes and skin. Wash hands and face before breaks and after work and take a shower if necessary. Contaminated work clothing should not be allowed out of the workplace.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions:

Keep container tightly closed in a cool, well-ventilated place. Protect from moisture.

Requirements for storage rooms and vessels:

Make sure spills can be contained, e.g. in sump pallets or kerbed areas.

Hints on storage assembly:

Do not store together with: Oxidizing agent, Acids, alkalines. aqueous solution

Storage class (TRGS 510, Germany): 6.1A – Combustible substances of acute toxicity, category 1 and 2 / very toxic substances

7.3. Specific end use(s)

No data available

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1. Occupational exposure limit values

Limit value type (country of origin)	Substance name	 Long-term occupational exposure limit value short-term occupational exposure limit value Instantaneous value Monitoring and observation processes Remark
ES	glycerol trinitrate CAS No.: 55-63-0 EC No.: 200-240-8	① 0.01 ppm (0.094 mg/m³) ② 0.02 ppm (0.19 mg/m³) ⑤ (puede ser absorbido a través dérmica)
IOELV (EU)	glycerol trinitrate CAS No.: 55-63-0 EC No.: 200-240-8	① 0.01 ppm (0.095 mg/m³) ② 0.02 ppm (0.19 mg/m³) ⑤ (may be absorbed through the skin)
WEL (GB)	glycerol trinitrate CAS No.: 55-63-0 EC No.: 200-240-8	① 0.01 ppm (0.095 mg/m³) ② 0.02 ppm (0.19 mg/m³) ⑤ (may be absorbed through the skin)
VRI (FR)	glycerol trinitrate CAS No.: 55-63-0 EC No.: 200-240-8	① 0.01 ppm (0.095 mg/m³) ② 0.02 ppm (0.19 mg/m³) ⑤ (peut être absorbé par la peau)
OSHA (US)	glycerol trinitrate CAS No.: 55-63-0 EC No.: 200-240-8	③ 0.2 ppm (2 mg/m³) ⑤ (may be absorbed through the skin)
NIOSH (US)	glycerol trinitrate CAS No.: 55-63-0 EC No.: 200-240-8	② 0.1 mg/m³ ⑤ (may be absorbed through the skin)
ACGIH (US)	glycerol trinitrate CAS No.: 55-63-0 EC No.: 200-240-8	① 0.05 ppm (0.46 mg/m³) ⑤ (may be absorbed through the skin)

8.1.2. Biological limit values

Limit value type (country of origin)	Substance name	Limit value	 parameter Test material Time of sampling Remark
BMGV (GB)	glycerol trinitrate CAS No.: 55-63-0 EC No.: 200-240-8	15 μmol/mol creatinine	 total nitroglycols urine At the end of the period of exposure

8.1.3. DNEL-/PNEC-values

No data available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate ventilation as well as local exhaustion at critical locations.

8.2.2. Personal protection equipment







Eye/face protection:

Eye glasses with side protection DIN EN 166.

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Skin protection:

Use protective gloves in accordance to EN 374. The following material is suitable: NBR. Minimal thickness 0.4 mm. Wear protective clothes against chemical agents in accordance to EN 340 / EN 14605.

Respiratory protection:

In case of inadequate ventilation wear respiratory protection. Respiratory protection according to EN 136 or EN 140 with filter ABEK-P3.

8.2.3. Environmental exposure controls

Do not allow to enter into surface water or drains.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state: solid Colour: white

Odour: not determinedFaint smell of lactose

Safety relevant basis data

parameter		at °C	Method	Remark
pH	not determined			
Melting point	202 °C			lactose (glycerol trinitrate 13.5°C)
Freezing point	not determined			
Initial boiling point and boiling range	not applicable			Thermal decomposition, Decom position temperature glycerol tr initrate 212°C
Decomposition temperature	not determined			
Flash point	not applicable			
Evaporation rate	not determined			
Auto-ignition temperature	390		DIN 51794	lactose
Upper/lower flammability or explosive limits	not applicable			
Vapour pressure	0.00033 hPa	20 °C		glycerol trinitrate
Vapour density	not determined			
Density	not determined			
Relative density	not determined			
Bulk density	0.5 g/cm ³	20 °C		
Water solubility	easily soluble	20 °C		glycerol trinitrate 1.25 g/l (poor ly soluble)
Partition coefficient: n-octanol/ water	not determined			
Dynamic viscosity	not determined			
Kinematic viscosity	not determined			

9.2. Other information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Reaction with: Acids, alkalines, Oxidising agent, strong, Reducing agent, strong

10.2. Chemical stability

The product is chemically stable under recommended conditions of storage, use and temperature.

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Heat, flames and sparks. Water, Do not expose to temperatures exceeding 50 °C/122 °F.

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10.5. Incompatible materials

Oxidising agent, strong

10.6. Hazardous decomposition products

Nitrogen oxides (NOx)

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Substance name	Toxicological information
glycerol trinitrate CAS No.: 55-63-0 EC No.: 200-240-8	LD ₅₀ oral: 105 mg/kg (Rat) LD ₅₀ dermal:
	29.2 mg/kg (Rat)

Acute oral toxicity:

Harmful if swallowed.

Acute dermal toxicity:

Toxic in contact with skin.

Acute inhalation toxicity:

Toxic if inhaled.

Skin corrosion/irritation:

Based on available data, the classification criteria are not met.

Serious eye damage/irritation:

Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation:

Based on available data, the classification criteria are not met.

Germ cell mutagenicity:

Based on available data, the classification criteria are not met.

Carcinogenicity:

Based on available data, the classification criteria are not met.

Reproductive toxicity:

Based on available data, the classification criteria are not met.

STOT-single exposure:

Based on available data, the classification criteria are not met.

STOT-repeated exposure:

May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard:

Based on available data, the classification criteria are not met.

Additional information:

No data available

11.2. Information on other hazards

No data available

SECTION 12: Ecological information

12.1. Toxicity

Substance name	Toxicological information
glycerol trinitrate CAS No.: 55-63-0 EC No.: 200-240-8	LC ₅₀ : 3.58 mg/l 4 d (Pimephales promelas (fathead min now)) EC ₅₀ : 1.15 mg/l 4 d (Selenastrum capricornutum) EC ₅₀ : 17.8 mg/l 2 d (Ceriodaphnia spec) NOEC: 3.23 mg/l 4 d (Ceriodaphnia spec) NOEC: 0.37 mg/l 4 d (Selenastrum capricornutum)

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Aquatic toxicity:

Harmful to aquatic life with long lasting effects.

12.2. Persistence and degradability

No data available

12.3. Bioaccumulative potential

Accumulation / Evaluation:

No indication of bioaccumulation potential.

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

Substance name	Results of PBT and vPvB assessment
glycerol trinitrate CAS No.: 55-63-0 EC No.: 200-240-8	The substance in the mixture does not meet the PBT/ vPvB criteria according to REACH, annex XIII.

12.6. Endocrine disrupting properties

No data available

12.7. Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

The product may not be eliminated as municipal solid waste nor allowed to end up in the drainage system. These packs can be delivered packaging-specific to the existing collection points for hazardous waste

13.1.1. Product/Packaging disposal

Waste codes/waste designations according to EWC/AVV

Waste code product:

_		•
ĺ	07 05 13 *	Solid wastes containing hazardous substances

^{*:} Evidence for disposal must be provided.

Remark:

Wastecode according to regulation EU 2014/955:

Waste code packaging:

Remark:

15 01 10 (S) Packaging, containing residues of chemical agents or hazardous waste with particularly dangerous properties or contaminated by chemical agents or hazardous waste with particularly dangerous properties.

Waste treatment options

Appropriate disposal / Product:

Pick up product with sawdust in a ratio of 1:10 and return to the manufacturer. Burn in an open hearth only in accordance with local government regulations.

Appropriate disposal / Package:

Residues of the product and packaging have to be collected as hazardous waste.

SECTION 14: Transport information

Land transport (ADR/RID)	Inland waterway craft (ADN)	Sea transport (IMDG)	Air transport (ICAO- TI / IATA-DGR)
14.1. UN number or ID number			
UN 0475	UN 0475	UN 0475	UN 0475

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Land transport (ADR/RID)	Inland waterway craft (ADN)	Sea transport (IMDG)	Air transport (ICAO- TI / IATA-DGR)
14.2. UN proper sh	ipping name		
SUBSTANCES, EXPLOSIVE, N.O.S. (Nitroglycerine diluted in Lactose)	SUBSTANCES, EXPLOSIVE, N.O.S. (Nitroglycerine diluted in Lactose)	SUBSTANCES, EXPLOSIVE, N.O.S. (Nitroglycerine diluted in Lactose)	SUBSTANCES, EXPLOSIVE, N.O.S.
14.3. Transport haz	ard class(es)		_
1.1	1.1	1.1	1.1
14.4. Packing grou	p		
No data available			_
14.5. Environmenta	al hazards		_
No	No	No	No
14.6. Special preca	utions for user		
Special provisions: 178, 274	Special provisions: 178, 274	Special provisions: 178, 274	Special provisions: 178, 274
Limited quantity (LQ): 0	Limited quantity (LQ): 0	Limited quantity (LQ): 0	Limited quantity (LQ): 0
Excepted Quantities (EQ): E0	Excepted Quantities (EQ): E0	Excepted Quantities (EQ): E0	Excepted Quantities (EQ): E0
Hazard identificati on number (Kemler No.):	Classification code:	EmS-No.: F-E, S-Y Remark:	Remark:
Classification code: 1.1D	Remark:		
tunnel restriction code: (B1000C)			
Remark:			

14.7. Maritime transport in bulk according to IMO instruments

No data available

SECTION 15: Regulatory information

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

15.1.1. EU legislation

Other regulations (EU):

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances [Seveso-III-Directive], Hazard categories:

- H2 Acute toxic
- P1a Explosive substances/mixtures and articles containing explosives

15.1.2. National regulations

No data available

15.2. Chemical Safety Assessment

No data available

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SECTION 16: Other information

16.1. Indication of changes

14.2.	UN proper shipping name
14.6.	Special precautions for user

16.2. Abbreviations and acronyms

ADN European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ADR European agreement concerning the international carriage of dangerous goods by road

CAS Chemical Abstract Service

CLP Classification, labelling and Packaging

EC50 Effective Concentration 50%

EN European norm

IATA International Air Transport Association

IMDG-Code International Maritime Dangerous Goods Code

LC50 Lethal Concentration 50%

LD50 Lethal Dose 50%

OECD Organization for Economic Cooperation and Development

PBT persistent, bioaccumulative, toxic

PNEC Predicted No Effect Concentration

REACH Registration, Evaluation and Authorization of Chemicals

RID Regulations concerning the international carriage of dangerous goods by rail

SVHC Substance of Very High Concern

UN United Nations

VOC Volatile organic compounds

vPvB very persistent, very bioaccumulative

16.3. Key literature references and sources for data

Inventory of substances of the European Chemical Agency (ECHA). Security safety data sheet of the ingredients.

16.4. Classification for mixtures and used evaluation method according to regulation (EC) No 1272/2008 [CLP]

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

Hazard classes and hazard categories	Hazard statements	Classification pro cedure
Explosives (Expl. 1.1)	H201: Explosive; mass explosion hazard.	
Acute toxicity (oral) (Acute Tox. 4)	H302: Harmful if swallowed.	
Acute toxicity (dermal) (Acute Tox. 3)	H311: Toxic in contact with skin.	
STOT-repeated exposure (STOT RE 2)	H373: May cause damage to organs through prolonged or repeated exposure. ()	
Hazardous to the aquatic environment (Aquatic Chronic 3)	H412: Harmful to aquatic life with long lasting effects.	
Acute toxicity (inhalative) (Acute Tox. 3)	H331: Toxic if inhaled.	

16.5. Relevant R-, H- and EUH-phrases (Number and full text)

Hazard statements	
H201	Explosive; mass explosion hazard.
H300	Fatal if swallowed.
H310	Fatal in contact with skin.
H330	Fatal if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure. ()
H411	Toxic to aquatic life with long lasting effects.

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16.6. Training advice

Persons charged with the handling and cleaning of the product must be trained prior to start their work and in regular intervals. They must be informed about the risks using the product and the mesures to take for efficient prevention. This concerns particularly working security, first aid, health and environment protection.

environment protection.
16.7. Additional information
The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information 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 cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new madeup material.
* Data changed compared with the previous version