SAFETY DATA SHEET
according to REACH

Eurodyn™ 3000 (1.1D)

SDS No. : 3019
Issue : 03.0
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SECTION 1: Identification of the substance / mixture and of the company / undertaking

1.1. Product identifier

Trade name(s)	**Eurodyn™ 3000**
Other means of identification	
Other names	Not applicable
Chemical name	Not applicable
INDEX number as listed in Annex VI of CLP	Not applicable
ID number of the C&L inventory	Not applicable
CAS number	Not applicable
REACH registration no(s)	Not applicable

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

Identified Use(s)	SU2a - Mining, (without offshore industries)
Use(s) advised against	Usage of the product only according to existing laws and official permissions. Not for sites with danger of fire damp or coal dust explosion.
Function(s) of substance / mixture	Eurodyn™ 3000 explosive dynamite is a nitroglycol based, maximum strength, detonator sensitive explosive. The product is designed for use in surface mining, quarrying and construction, tunnelling and underground blasting. It delivers exceptional results in hard rock applications and can be used in priming applications and as a high-density column explosive.

1.3. Details of the supplier of the safety data sheet

Supplier	**Orica Norway AS** Røykenveien 18 3412 LIERSTRANDA Norway

Phone / Fax / Email	+47 32 22 91 00 / +47 32 22 91 01 / nordics@orica.com
Technical support	+47 32 22 91 00
Contact to the responsible person for safety data sheet	sds.emea@orica.com

1.4. Emergency telephone number

Emergency phone number	For medical advice call: +47 22 59 13 00 For chemical emergencies (spill, leak, fire, exposure or accident), call: 110

SECTION 2: Hazards identification

H201 - Explosive, mass explosion hazard.
H330 - Fatal if inhaled.
H272 - May intensify fire; oxidiser.
H302 - Harmful if swallowed.
H373 - May cause damage to organs through prolonged or repeated exposure.
H412 - Harmful to aquatic life with long lasting effects.

2.1 Classification of the substance or mixture

The mixture is classified as dangerous within the meaning of Regulation (EC) No 1272/2008 and Regulation FOR-2012-06-16 No. 622.

Classification in accordance with Regulation (EC) No. 1272/2008 and Regulation FOR-2012-06-16 No. 622

Hazard class / category	Hazard statement(s)	Classification method	Additional Information
Expl. 1.1	H201	UN RTDG	CLP - figure 2.1.3
Acute Tox. 1	H330	1272/2008/EC	Tab. 3.1.2
Ox. Sol. 3	H272	-	-
Acute Tox. 4	H302	1272/2008/EC	Tab. 3.1.2

STOT RE 2	H373	1272/2008/EC	Tab. 3.9.4
Aquatic Chronic 3	H412	1272/2008/EC	Tab. 4.1.2

Wording of Hazard statements (H, EUH): see section 16.

2.2. Label elements

Labelling in accordance with Regulation (EC) No. 1272/2008 and Regulation FOR-2012-06-16 No. 622

Product identifier	**Eurodyn™ 3000**	
Index or C&L number	Not applicable	
Hazardous component(s)	Ammonium nitrate, CAS No.: 6484-52-2 Ethylene dinitrate, Index No.: 603-032-00-9 TNT, Index No.: 609-008-00-4	
Authorisation number	Not applicable	
Hazard pictogram(s)		
Signal word	Danger	
Hazard statement(s)	H201	Explosive, mass explosion hazard.
Precautionary statement(s)	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	P250	Do not subject to grinding / shock / … / friction.
	P280	Wear protective gloves / protective clothing / eye protection / face protection.
	P370+P380	In case of fire: Evacuate area.
	P372	Explosion risk in case of fire.
	P373	DO NOT fight fire when fire reaches explosives.

Additional Information (EU)	-
Additional Labelling	-
Note	Use of special provisions according to 1272/2008/EC art. 23e.

2.3. Other hazards

Results of PBT and vPvB assessment	Based on the current available information for the used ingredients, the PBT and vPvB criteria of Regulation (EC) No 1907/2006, Annex XIII will not be met.
Other hazards	Stythe is heavier than air and may accumulate below ground level, in pits, channels and basements in higher concentration. All chemicals are potentially dangerous, they should only be handled by properly trained personnel with the necessary care.
Additional Information	
Specific concentration limits	Ammonium nitrate, CAS No. 6484-52-2: C >80% H319 Eye Irrit. 2

SECTION 3: Composition / information on ingredients

Gelatinous mass, wrapped in tubes of waxed paper or plastic.

3.1. Substances

Not applicable

Substance	Registration No. *Index or C&L number*	EC No. *CAS No.*	Classification (1272/2008/EC)	Content (w/w)
-	-	-	-	-
-				

3.2. Mixtures

Substance	Registration No. *Index or C&L number*	EC No. *CAS No.*	Classification (1272/2008/EC)	Content (w/w)
Ammonium nitrate	01-2119490981-27-XXXX *Not applicable*	229-347-8 *6484-52-2*	H272, H319	45-55
Ethylene dinitrate	01-2119492860-31-0000 *603-032-00-9*	211-063-0 *628-96-6*	H200, H300, H310, H330, H373	35-39
TNT	01-2119860061-49-XXXX *609-008-00-4*	204-289-6 *118-96-7*	H201, H301, H311, H331, H373, H411	3-5
-				

Comments	-
Additional information	Wording of Hazard statements (H, EUH): see section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice	- IF exposed or concerned: Get medical advice / attention. - In case of unintentional ignition usual first aid measures are to be applied for bruises, wounds and burns. - In case of inhalation of decomposition products, affected person should be moved into fresh air and kept still. - Remove affected person from the danger area and lay down. - Do not leave affected person unattended. - When in doubt or if symptoms are observed, get medical advice. - If unconscious place in recovery position and seek medical advice.
In case of eye contact	- IF IN EYES: 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.

In case of skin contact	- Remove contaminated clothing. - Subsequently wash off with: Water and soap - Do not wash with: Solvents / thinner - In case of skin irritation, consult a physician.
If swallowed	- Rinse mouth. - IF SWALLOWED: Immediately call a POISON CENTER / doctor / …
If inhaled	- IF INHALED: Remove person to fresh air and keep comfortable for breathing. - Get medical attention if any discomfort continues. - In case of respiratory tract irritation, consult a physician. - If breathing is irregular or stopped, administer artificial respiration. - Apply cortisone spray at early stage. - Symptoms may develop several hours following exposure medical observation therefore necessary for at least 48 hours.

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

Acute symptoms / effects	Headache Methaemoglobinaemia
Delayed symptoms / effects	If decomposition products are inhaled the following symptoms can occur: - Pulmonary oedema
Self-protection for first-aider	First aider: Pay attention to self-protection!

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

Unlikely to be required but if necessary treat symptomatically.

SECTION 5: Fire fighting measures

Product is an explosive.

Keep unauthorised persons away.

Warn neighbourhood announcing risk of explosion.

5.1. Extinguishing media

Suitable extinguishing media	No fire-fighting attempts, risk of explosion.
Unsuitable extinguishing media	Not applicable

5.2. Special hazards arising from the substance or mixture

Product is an explosive.

Possible combustion gases or vapours	In case of fire may be liberated: - Ammonia (NH_3) - Nitrogen oxides (NO_X) - Carbon monoxide (CO) - Carbon dioxide (CO_2)

5.3. Advice for firefighters

Special protective equipment for fire fighting	In case of fire: Wear self-contained breathing apparatus.
Measures in case of adjacent fire (Fire has not yet reached product)	Co-ordinate fire-fighting measures to the fire surroundings. Use water spray jet to protect personnel and to cool endangered containers. Move undamaged containers from immediate hazard area if it can be done safely.
Measures in case of product fire (Fire has just reached the product or is about to reach it)	No fire-fighting attempts, risk of explosion. Immediately evacuate danger zone and seek safe cover.
Additional Information	Restrict the number of action force members in the hazard area. Avoid contact to combustible substances. Do not inhale explosion and combustion gases. 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

Wear personal protection equipment.

For non-emergency personnel	Avoid substance contact. Do not handle unprotected. Respect emergency plans. Ask for support by competent person.
For emergency responders	Close off hazard area widely. Ask for support by competent person.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Notes on prevention of the spread of spilled materials	Due to the consistency and product packaging spillage of ingredients is not likely.
Instructions for cleaning after spillage	Use only non-sparking tools. Take up mechanically, placing in appropriate containers for disposal.
Additional Information	When in doubt contact supplier.

6.4. Reference to other sections

Note also section 7, 8, 10 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Technical measures / Precautions	Only to be handled by authorized persons. The explosives must be under supervision and unavailable for unauthorized persons. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not subject to grinding / shock / … / friction. Available for use in ground temperatures -20 °C to a maximum of 50 °C. Not for sites with danger of fire damp or coal dust explosion.
General occupation hygiene	Do not breathe dust / fume / gas / mist / vapours / spray. In case of inadequate ventilation wear respiratory protection. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wash hands thoroughly after handling. Keep away from food, drink and animal feeding stuffs.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures / Storage conditions	The cases should be stacked in the manner designated on the cases.
Requirements for storage areas and containers	Store in a well-ventilated place. Keep container tightly closed. Store in original container if possible. Store locked up.
Common storage instruction	Storage of explosives and explosive articles should be agreed with national authorities.
Incompatible products	Respect restrictions according to national law.
Storage temperature	Best stored between 0 °C and 50 °C.
Relative humidity (%)	Store under normal conditions.

Stability in storage	Stable under normal storage conditions.
Quantitative restrictions	Maximum storage volume should be agreed with national authorities.
Maximum period of storage	Storage life of up to 24 months.
Storage class	Explosive substances.

7.3. Specific end use(s)

Read instructions before use.

No other specific end uses than those specified in section 1.2 are provided.

Usage of the product only according to existing laws and official permissions.

An Exel™ or i-kon™ detonator can reliably initiate Eurodyn™ 3000. If ignited with a Cordtex™ detonating cord, the cord must have a minimum filling weight of 6 g P.E.T.N./m and be led over the entire length of the charging pillar.

SECTION 8: Exposure controls / personal protection

Because of design and shape of the product a contact with ingredients is to be expected only in case of accidental release.

8,1 Control parameters

Exposure limit values

Components / CAS No.	Value	Limit	Basis	Comments
Ammonium nitrate 6484-52-2	-	Not established	-	-
Ethylene dinitrate 628-96-6	Long term Short term	0.18 mg/m³; 0.03 ppm 0.54 mg/m³; 0.09 ppm	- -	NO [1)] NO [1)]
TNT 118-96-7	Long term Short term	0.1 mg/m³ 0.3 mg/m³	- -	NO [1)] NO [1)]

Dust	Long term Long term	10 mg/m³ (inhalable dust) 5 mg/m³ (respirable aerosol)	- -	NO [1] NO [1]
Ammonia 7664-41-7	Long term Long term Short term Short term	14 mg/m³; 20 ppm 11 mg/m³; 15 ppm 36 mg/m³; 50 ppm 36 mg/m³; 50 ppm	GESTIS - GESTIS -	EU [2] NO [1] EU [2] NO [1]
Carbon dioxide 124-38-9	Long term Long term Short term	9000 mg/m³; 5000 ppm 9000 mg/m³; 5000 ppm 9000 mg/m³; 5000 ppm	GESTIS - -	EU [2] NO [1] NO [1]
Carbon monoxide 630-08-0	Long term Short term	29 mg/m³; 25 ppm 100 ppm	- -	NO [1] NO [1]
Nitrogen dioxide 10102-44-0	Long term Long term Short term	0.2 ppm 0.6 mg/m³; 1.1 ppm 1.2 mg/m³; 2.2 ppm	GESTIS - -	EU [3] NO [1] NO [1]
Nitrogen monoxide 10102-43-9	Long term Short term	30 mg/m³; 25 ppm 45 mg/m³; 37.5 ppm	- -	NO [1] NO [1]

[1] Administrative norms for pollution of the atmosphere.
[2] Indicative Occupational Exposure Limit Values and Limit Values for Occupational Exposure.
[3] Proposal, Indicative Occupational Exposure Limit Values.

Biological limit values

Components / CAS No.	Value	Limit	Specimen	Sampling time
Ammonium nitrate 6484-52-2	-	Not established	-	-

Ethylene dinitrate 628-96-6	-	Not established	-	-
TNT 118-96-7	-	Not established	-	-
Ammonia 7664-41-7	-	Not established	-	-
Carbon dioxide 124-38-9	-	Not established	-	-
Carbon monoxide 630-08-0	-	Not established	-	-
Nitrogen dioxide 10102-44-0	-	Not established	-	-
Nitrogen monoxide 10102-43-9	-	Not established	-	-

-

Recommended monitoring methods

The methods for measuring workplace atmosphere have to correspond to the requirements of norms DIN EN 482 and DIN EN 689.

Additional exposure limits under processing conditions

Route of exposure	Exposure frequency	DNEL	Critical component	Comments
Inhalation Inhalation	Long term - systemic effects Long term - systemic effects	37.6 mg/m³ 11.1 mg/m³	Ammonium nitrate Ammonium nitrate	Workers Consumer
Inhalation Inhalation	Long term - systemic effects Long term - systemic effects	0.085 mg/m³ 0.043 mg/m³	Ethylene dinitrate Ethylene dinitrate	Workers Consumer

Inhalation Inhalation Inhalation	Long term - systemic effects Long term - systemic effects Short term - systemic effects	0.035 mg/m³ 0.0086 mg/m³ 0.07 mg/m³	TNT TNT TNT	Workers Consumer Workers
Dermal Dermal	Long term - systemic effects Long term - systemic effects	21.3 mg/kg bw/d 12.8 mg/kg bw/d	Ammonium nitrate Ammonium nitrate	Workers Consumer
Dermal	Long term - systemic effects	0.06 mg/kg bw/d	Ethylene dinitrate	Workers
Dermal Dermal Dermal Dermal	Long term - systemic effects Long term - systemic effects Short term - systemic effects Short term - systemic effects	0.01 mg/kg bw/d 0.005 mg/kg bw/d 0.02 mg/kg bw/d 0.01 mg/kg bw/d	TNT TNT TNT TNT	Workers Consumer Workers Consumer
Oral	Long term - systemic effects	12.8 mg/kg bw/d	Ammonium nitrate	Consumer
Oral Oral	Long term - systemic effects Long term - systemic effects	0.03 mg/kg bw/d 0.015 mg/kg bw/d	Ethylene dinitrate Ethylene dinitrate	Workers Consumer

PNEC:

Ammonium nitrate: Fresh water: 0.45 mg/L, Marine water: 0.045 mg/L, Intermittent release: 4.5 mg/L, STP: 18 mg/L

Ethylene dinitrate: Fresh water: 3 µg/L, Marine water: 0.3 µg/L, Intermittent release: 19 µg mg/L, STP: 1.3 mg/L, Sediment (fresh water): 4 µg/kg dw, Sediment (marine water): 0.4 µg/kg dw, Soil: 2.5 µg/kg dw

TNT: Fresh water: 0.32 µg/L, Marine water: 0.07 µg/L, Intermittent release: 1.9 µg/L, STP: 0.2 µg/L, Sediment (fresh water): 2.6 µg/kg dw, Sediment (marine water): 0.52 µg/kg dw, Soil: 8 µg/kg dw

8.2. Exposure controls

Limitation and monitoring of occupational exposure

Product related measures to prevent exposure	Store in a well-ventilated place. Keep container tightly closed. Avoid damage of the product.
Instructive measures to prevent exposure	Do not breathe dust / fume / gas / mist / vapours / spray. In case of inadequate ventilation wear respiratory protection.

	Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Use skin care measures in accordance with professional association's rules. When working with substances minimum standards for protective measures in accordance with professional association's rules should be respected.
Organizational measures to prevent exposure	Minimize the time spent in the danger zone. Reduce staff in the danger zone to the required level. Separate storage facilities for street and work clothes should be available when a risk is to be expected from contamination of work clothes.
Technical measures to prevent exposure	See section 7. Further information: see exposure scenarios attached to this Safety Data Sheet.

Individual protection measures, such as personal protective equipment

Technical measures and the application of suitable work processes have priority over personal protection equipment.

The quality of the protective clothing resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.

For special purposes, it is recommended to check the resistance of the protective clothing to chemicals together with the supplier.

Professional association's rules should be respected.

Eye / face protection	Suitable eye protection: Eye glasses with side protection DIN-/EN-Norms: DIN EN 166
Hand protection	Suitable gloves type: Gloves with long cuffs Suitable material: NBR (Nitrile rubber), Neopren or Viton; Permeation level 5-6 Cat. II DIN-/EN-Norms: DIN EN 388

Skin protection	Work clothes made from cotton meets the requirements. Choice and design of the work clothes to be used depends on the results of the risk assessment for the specific working environment. It is necessary to consider the following needs of protection: - Protection against heat and open fire (clothing must not melt and not be flammable); - Protection against contact with chemicals (the fabric shall not absorb particles of explosives as this would make the fabric more flammable); - Protection from electrostatic charging; - Protective clothing used to protect against further hazards (reflective clothing, weather proof clothing) must comply with the above requirements.
Respiratory protection	No personal respiratory protective equipment normally required. Respiratory protection necessary at: exposure limit overshoot Suitable respiratory protection apparatus: Half-face mask (DIN EN 140); Type A2
Hygiene measures	Do not breathe dust / fume / gas / mist / vapours / spray. In case of inadequate ventilation wear respiratory protection. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.
Thermal hazards	No thermal hazard is to be expected.
Environmental exposure controls	
Product related measures to prevent exposure	Avoid damage of the product.
Instructive measures to prevent exposure	Avoid release to the environment.
Organizational measures to prevent exposure	-
Technical measures to prevent exposure	-

Limitation and monitoring of Consumer exposure	
Measures relating to the use of the substance (as such or in mixtures) by the consumer	Not applicable, the exposure of consumers is not to be expected.
Measures relating to the use of the substance in articles	Not applicable

SECTION 9: Physical and chemical properties

Gelatinous mass, wrapped in tubes of waxed paper or plastic.

9.1. Information on basic physical and chemical properties

Appearance	Physical state: Solid, Pasty Colour: Red brown
Odour	Characteristic, pungent, sharp
Odour threshold	Not applicable
pH	Not applicable
Melting point / freezing point	Not applicable
Initial boiling point and boiling range	No data available
Flash point	Not applicable
Evaporation rate	No data available
Flammability (solid, gas)	Not applicable
Upper / lower flammability or explosive limits	Not applicable
Vapour pressure	No data available
Vapour density	No data available

Relative density	1.45 g/cm^3 (20 °C)
Solubility(ies)	No data available
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	Explosive
Oxidising properties	Oxidising properties

9.2. Other information

Risk of explosion by shock, friction, fire or other sources of ignition.

See Technical Data Sheet for more information.

SECTION 10: Stability and reactivity

10.1. Reactivity

Risk of explosion by shock, friction, fire or other sources of ignition.

10.2. Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

10.3. Possibility of hazardous reactions

Fire, heat, electrostatic or impact may cause the product to explode.

10.4. Conditions to avoid

Mechanical influences (e.g. shock, pressure, impact, friction).

Fire, sparks or other ignition sources.

Electrostatic discharges.

10.5. Incompatible materials

Reducing agent, Acids, Alkalis, Combustible products, Metal powders, Chromates, Zinc, Copper, Copper alloys, Chlorates.

Product contact with alkaline substances leads to liberation of ammonia (corrosive).

10.6. Hazardous decomposition products

Ammonia (NH_3), Nitrogen oxides (NO_X), Carbon monoxide (CO), Carbon dioxide (CO_2)

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity of: Ammonium nitrate, CAS No. 6484-52-2

Route of exposure	Value	Effective dose	Species	Basis	Comments
Oral	LD_{50}	2950 mg/kg bw	Rat	1)	OECD 401
Dermal	LD_{50}	>5000 mg/kg bw	Rat	1)	OECD 402

1) SDS of Supplier

Acute toxicity of: Ethylene dinitrate, CAS No. 628-96-6

Route of exposure	Value	Effective dose	Species	Basis	Comments
Oral	LD_{50}	616 mg/kg bw	Rat	1)	-
Oral	LD_{50}	460 mg/kg bw	Rat	1)	OECD 460

Dermal	LD_{50}	3800 mg/kg bw	Rat	1)	OECD 402
Inhalation	LC_{50}	0.085 mg/m³	Calculation	1)	Long term DNEL

1) CSR

Acute toxicity of	TNT, CAS No. 118-96-7

Route of exposure	Value	Effective dose	Species	Basis	Comments
Oral	LD_{50}	607 mg/kg bw	Rat	1)	-
Oral	LD_{50}	660 mg/kg bw	Mouse	2)	OECD 420

1) GESTIS-database
2) Extract from ECHA CHEM

Acute toxicity of	Eurodyn™ 3000

Route of exposure	Value	Effective dose	Species	Basis	Comments
Oral	LD_{50}	>880 mg/kg bw	-	ATE_{mix}	Calculation
Dermal	LD_{50}	>3400 mg/kg bw	-	ATE_{mix}	Calculation
Inhalation	LC_{50}	>0.085 mg/m³	-	ATE_{mix}	Calculation

Inhalation is a unlikely route of exposure.

Skin corrosion / irritation	Ingredients are not classified.
Serious eye damage / eye irritation	The product does not fulfil the criteria (Calculation, Tab. 3.3.3, CLP-regulation).
Respiratory or skin sensitization	Ingredients are not classified.
Repeated dose toxicity	Ingredients are not classified.

Germ cell mutagenicity	Ingredients are not classified.
Carcinogenicity	Ingredients are not classified.
Reproductive toxicity	Ingredients are not classified.
STOT - single exposure	Ingredients are not classified.
STOT - repeated exposure	H373 - May cause damage to organs through prolonged or repeated exposure (Calculation, Tab. 3.9.4, CLP-regulation).
Aspiration hazard	Ingredients are not classified.

Information on likely routes of exposure

The primary route of exposure is the dermal route.

Mixture versus substance information

Ammonium nitrate:

- Reproductive toxicity: NOAEL ≥1500 mg/kg bw/d;
- Repeated dose toxicity: NOAEL = 256 mg/kg bw/d (chronic, rat)

TNT:

- Reproductive toxicity: NOAEL ca. 1.42 mg/kg bw/d (subchronic)

Other information

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

12.1. Toxicity

Toxicity of	Ammonium nitrate, CAS No. 6484-52-2
Acute fish toxicity	LC_{50} (48 h): 447 mg/L (no guideline followed)
Chronic fish toxicity	No data available

Acute toxicity to daphnia and other aquatic invertebrates	EC_{50} (48 h): 490 mg/L (no guideline followed, with potassium nitrate)
Chronic toxicity to daphnia and other aquatic invertebrates	No data available
Acute toxicity to algae	EC_{50} (10 d): >1700 mg/L (seawater, no guideline followed, performed with potassium nitrate)
Chronic toxicity to algae	No data available
M-Factor	Not applicable

Further toxicological information

Inhibition of microbial activity:	EC_{50} (3 h): >1000 mg/L, NOEC: 180 mg/L (OECD 209, with sodium nitrate)
Persistence and degradability:	The methods of determining this info are not applicable to inorganic substances.
Bioaccumulative potential:	The substance has no potential for bioaccumulation.
Mobility in soil:	The substance is soluble.

Toxicity of	Ethylene dinitrate, CAS No. 628-96-6
Acute fish toxicity	LC_{50} (96 h): 1.9 mg/L (Oncorhynchus mykiss, with Nitroglycerine) LC_{50} (96 h): 3.58 mg/L (Pimephales promelas, with Nitroglycerine) LOEC (96 h): 0.2 mg/L (Pimephales promelas, with Nitroglycerine) NOEC (96 h): 0.12 mg/L (Pimephales promelas, with Nitroglycerine)
Chronic fish toxicity	LOEC (28 d) 0.33 mg/L (Pimephales promelas, with Nitroglycerine) NOEC (28 d): 0.2 mg/L (Pimephales promelas, with Nitroglycerine) LOEC (60 d): 0.06 mg/L (Oncorhynchus mykiss, with Nitroglycerine) NOEC (60 d): 0.03 mg/L (Oncorhynchus mykiss, with Nitroglycerine)
Acute toxicity to daphnia and other aquatic invertebrates	EC_{50} (48 h): >100 mg/L (Daphnia magna, OECD 202) NOEC (48 h): ca. 100 mg/L (Daphnia magna)
Chronic toxicity to daphnia and other aquatic invertebrates	LOEC (7 d): 5.48 mg/L (Ceriodaphnia dubia, with Nitroglycerine) NOEC (7 d): 3.23 mg/L (Ceriodaphnia dubia, with Nitroglycerine)

Acute toxicity to algae	EC_{50} (72 h): 100 mg/L (Desmodesmus subspicatus, OECD 201) LOEC (72 h): 32 mg/L (Desmodesmus subspicatus) NOEC (72 h): 10 mg/L (Desmodesmus subspicatus)
Chronic toxicity to algae	No data available
M-Factor	Not applicable

Further toxicological information

Inhibition of microbial activity:	EC_{50} (3 h): 160 - 530 mg/L, NOEC: 10 mg/L (OECD 209)
Bioaccumulative potential:	The substance has no significant bioaccumulation potential.

The aquatic toxicity of Ethylene dinitrate was classified according to CLP Regulation with the following results:

Ethylene dinitrate does not classify for Chronic (Long-term) Aquatic Hazard because the log K_{OW} is less than 3, and, based on the combined QSAR modelling of biodegradation and read-across from biodegradation studies on nitroglycerine (refer to USEPA 2010),degradation is expected to be >70% in 28 days.

Toxicity of	TNT, CAS No. 118-96-7
Acute fish toxicity	LC_{50} (96 h): 0.46 mg/L (Pimephales promelas)
Chronic fish toxicity	No data available
Acute toxicity to daphnia and other aquatic invertebrates	LC_{50} (96 h): ca. 8.54 mmol/mL (Chironomus tentans (larvaes), static, freshwater) LC_{50} (96 h): ca. 34 mmol/mL (Tubifex tubifex, static, freshwater) LC_{50} (96 h): ca. 17 mmol/mL (Ceriodaphnia dubia, static, freshwater) EC_{50} (48 h): 9.49 mg/L (Daphnia magna, OECD 202) NOEC (48 h): 6.25 mg/L (Daphnia magna, OECD 202)
Chronic toxicity to daphnia and other aquatic invertebrates	No data available
Acute toxicity to algae	IC_{50} (96 h): 0.72 mg/L (Green algae, semi-static, freshwater) EC_{50} (72 h): 0.19 mg/L (Pseudokirchnerella subcapitata, OECD 201) NOEC (72 h): ≤ 0.1mg/L (Pseudokirchnerella subcapitata, OECD 201) EC_{50} (96 h): 2.5 µmol/L (Pseudokirchnerella subcapitata, static, freshwater)
Chronic toxicity to algae	No data available

M-Factor	Not applicable

Further toxicological information

Persistence and degradability:	This component is poorly biodegradable. It is not expected to hydrolysis in water.
Bioaccumulative potential:	Slow absorption is expected. Desorption from sediment is slow.
Mobility in soil:	Low mobility is expected.

Toxicity of	Eurodyn™ 3000
Acute fish toxicity	No data available
Chronic fish toxicity	No data available
Acute toxicity to daphnia and other aquatic invertebrates	No data available
Chronic toxicity to daphnia and other aquatic invertebrates	No data available
Acute toxicity to algae	No data available
Chronic toxicity to algae	No data available
M-Factor	Not applicable

Further toxicological information

No data available

12.2. Persistence and degradability

Biodegradation	No data available
Hydrolysis	No data available

12.3. Bioaccumulative potential

Partition coefficient: n-octanol / water	No data available
Bioconcentration factor (BCF)	No data available

12.4. Mobility in soil

Based on the high content of soluble ingredients a low potential for adsorption is to be expected.

12.5. Results of PBT and vPvB assessment

The PBT and vPvB criteria of Regulation (EC) No 1907/2006, Annex XIII will not be met.

12.6. Other adverse effects

Excessive exposure of Eurodyn™ 3000 can lead to an over-fertilization of soil and waters; therefore a careful handling of the product is mandatory.

SECTION 13: Disposal considerations

Waste material must be handled in accordance with the waste regulation (FOR-2004-06-01 no. 930). For further information about handling waste material please ask the supervisory authority (Directorate for Civil Protection and Emergency Planning) or Orica technical service.

13.1. Waste treatment methods

Leave product in original containers. No mixing with other waste. If possible take advantage of take-back systems for products and packaging.

Product residues	Burn under supervision of an expert at a government-approved explosive burning ground or destroy, by detonation in boreholes, in accordance with applicable local, provincial and federal laws.
Packaging	Handle uncleaned containers like the product itself.
Waste classification according to EWC	The allocation of waste identity numbers / waste descriptions must be carried out according to the EWC, specific to the industry and process. Evidence for disposal must be provided.

	List of proposed waste codes / waste designations in accordance with EWC: 16 04 03 Other waste explosives

SECTION 14: Transport information

14.1. UN number

0081

14.2. UN proper shipping name

EXPLOSIVE, BLASTING, TYPE A (Eurodyn™ 3000)

14.3. Transport hazard class(es)

1.1D

14.4. Packing group

Not applicable

14.5. Environmental hazards

Dangerous for the environment	No
IMDG Marine pollutant	No

14.6. Special precautions for user

Attention: explosive product

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

Name of product	Not applicable, transport in bulk is not to be expected.
Required type of ship	-
Pollution category	-

SECTION 15: Regulatory information

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

European regulations	Directive 2008/98/EC (Waste Framework Directive) Regulation 1907/2006/EC (REACH) Regulation 1272/2008/EC (CLP)
National regulations	FOR-2004-06-01 no. 930 (Waste regulation) FOR-2008-05-30 no. 516 (REACH regulation) FOR-2012-06-16 no. 622 (CLP regulation) Approval conditions must be respected. Compare national regulations for handling with explosives.

15.2. Chemical safety assessment

For the following substances of this mixture a chemical safety assessment has been carried out:

- Ammonium nitrate, CAS No. 6484-52-2
- Ethylene dinitrate, CAS No. 628-96-6

SECTION 16: Other information

List of relevant H and P statements

H200	Unstable explosives.
H201	Explosive; mass explosion hazard.
H272	May intensify fire; oxidiser.
H300	Fatal if swallowed.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H310	Fatal in contact with skin.
H311	Toxic in contact with skin.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H331	Toxic if inhaled.

H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P250	Do not subject to grinding / shock / … / friction.
P280	Wear protective gloves/protective clothing/eye protection / face protection.
P370+P380	In case of fire: Evacuate area.
P372	Explosion risk in case of fire.
P373	DO NOT fight fire when fire reaches explosives.

Training advice

Employees should be trained before handling the substance.

Refresher training should be scheduled at regular intervals and in accordance with legal requirements.

Recommended restrictions on use

Please note the use identified in section 1.2

Further information

ID	Identification number
PBT	Persistent, bioaccumulative and toxic
vPvB	Very persistent and very bioaccumulative
C&L	Classification and Labelling
EC No.	The three European lists of substances from the previous EU chemicals regulatory framework, EINECS, ELINCS and the NLP-list, in combination are called the EC Inventory. The EC Inventory is the source for the seven-digit EC number, an identifier of substances commercially available within the European Union.
CAS No.	Chemical Abstracts Service Number
UN RTDG	United Nations Regulations on the Transport of Dangerous Goods
Expl. 1.1	Explosives, Division 1.1
Acute Tox. 1	Acute toxicity, Hazard Category 1
Acute Tox. 4	Acute toxicity, Hazard Category 4

Ox. Sol. 3	Oxidising solid, Hazard Category 3
Eye Irrit. 2	Serious eye damage/eye irritation, Hazard Category 2
STOT RE 2	Specific Target Organ Toxicity — repeated exposure, Hazard Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment, Hazard Category 3
EUH	European Hazard Statement
CLP	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.
REACH	Regulation (EC) No 1907/2006 of the European parliament and of the council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.
K_{OW}	Octanol-water partition coefficient
DIN-/EN Norm	German Industry Standard / European Standard
A2	Filter category A2
BCF	Bioconcentration factor
LD_{50}	Median lethal dose
LC_{50}	Median lethal Concentration
EC_{50}	The effective concentration of substance that causes 50% of the maximum response.
ATE_{mix}	Acute Toxicity Estimates of mixture
PNEC	Predicted No Effect Concentration
PEC	Predicted Environmental Concentration
RCR	Risk Characterisation Ratio
LOEC	Lowest Observed Effect Concentration
NOEC	No Observed Effect Concentration
NOAEL	No Observed Adverse Effect Level
DNEL	Derived No Effect Level
CSA	Chemical Safety Assessment
CSR	Chemical Safety Report
RMM	Risk Management Measures

OC	Operational Conditions
OECD	Organisation for Economic Co-operation and Development
STP	Sewage Treatment Plant
bw	Body weight
bw/d	Body weight/day
SU	Sector of Use
NO	Norway
EWC	European Waste Catalogue
EC	European Community
EU	European Union

Sources of key data used to compile the Safety Data Sheet

GESTIS Database

Eurodyn™ 3000 Technical Data Sheet

Information which has been added, deleted or revised

Complete revision in the context of adaptations under Regulation 453/2010/EU.

Regulation 453/2010/EU is current not included in the Norwegian legislation, but all sections of this safety data sheet are based on it. The safety data sheet will be revised if the deviation from the Norwegian law text occurs.

The information contained is based on the present state of our knowledge.

It characterizes the product with regard to the appropriate safety precautions.

It does not represent any guarantee with regard to product.

1. Exposure Scenario (1)

Conservative extract / merging of the following exposure scenarios:

- Ammonium nitrate, Exposure scenario (2):
  Industrial use for formulation of preparations / articles, intermediate use and end-use in industrial settings.
- Ethylene dinitrate, Exposure scenario (2):
  End-use of substance in a preparation.
  (Covers exposures arising from end-use of substance in preparation by industrial workers at mining site.)

Sector of use (SU)	SU2a: Mining, (without offshore industries) SU19: Building and construction work
Chemical product category (PC)	PC11: Explosives
Process category (PROC)	PROC21: Low energy manipulation of substances bound in materials and/or articles
Article category (AC)	Not applicable
Environmental Release Category (ERC)	Not applicable

2. Contributing scenarios

2.1. Contributing scenario (1) controlling environmental exposure for ...

An environmental assessment for ethylene dinitrate and ammonium nitrate has not been performed as the substances do not meet the criteria for being classified as dangerous for the environment and are consumed during end-use.

Product characteristics	-
Amount used	-
Frequency and duration of use	-
Environment factors not influenced by risk management	-

Other given operational conditions affecting environmental exposure	-
Technical conditions and measures at process level (source) to prevent release	-
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	-
Organizational measures to prevent / limit release from site	-
Conditions and measures related to municipal sewage treatment plant	-
Conditions and measures related to external treatment of waste for disposal	-
Conditions and measures related to external recovery of waste	-

2.2. Contributing scenario (2) controlling worker exposure for:...

PROC21: Low energy manipulation of substances bound in materials and/or articles.

Product characteristics	Solid (pasty, based on final product characteristic). Concentration of substance in product: >25% Vapour pressure: 0.06 hPa (at 20 °C)
Amount used	Not relevant in ECETOC TRA
Frequency and duration of use / exposure	Duration (h/day): <0.25 Frequency: ≤345 days per year

Human factors not influenced by risk management	Not relevant in ECETOC TRA
Other given operational conditions affecting workers exposure	Domain: Industrial Location: Indoors Process conditions: Ambient temperature
Technical conditions and measures at process level (source) to prevent release	None
Technical conditions and measures to control dispersion from source towards the worker	An Exhaust Ventilation with minimum of 25% efficiency is required. Containment as appropriate Good standard of general ventilation
Organisational measures to prevent / limit releases, dispersion and exposure	Not relevant in ECETOC TRA
Conditions and measures related to personal protection, hygiene and health evaluation	Chemical goggles Chemically resistant gloves with specific activity training and intensive management supervision controls.

3. Exposure estimation and reference to its source

Exposure estimation for the environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Environment	Value	Level of Exposure (PEC)	RCR (PEC/PNEC)
-	-	-	-	-	-	-

An environmental assessment for ethylene dinitrate and ammonium nitrate has not been performed as the substances do not meet the criteria for being classified as dangerous for the environment and are consumed during end-use.

Exposure estimation for workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
ES 2	ECETOC TRA	-	Long-term exposure, systemic, inhalative	-	0.88
ES 2	ECETOC TRA	-	Long-term exposure, systemic, dermal	-	0.09

Values refer to Ethylene dinitrate.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Ethylene dinitrate:

Exposure estimation for PROCs using the ECETOC TRA worker v2.3:

In case the ECETOC TRA worker v2.3 has been used for the calculation of PROCs the following modifications has been done:

- Local Exhaust Ventilation (LEV): The LEV exposure modifying factors for dermal exposure implemented in the ECETOC TRA v2.3 are not considered;
- Exposure duration: Exposure duration modifying factors implemented in the ECETOC TRA v2.3 for inhalation exposure were also applied to dermal exposure
- Gloves: Implemented as an additional RMM. The following effectiveness values are assumed:
  - Use of suitable gloves: 80%;
  - Use of suitable gloves in combination with basic employee training: 90%;
  - Use of suitable gloves in combination with specific activity training: 95%;
  - Use of suitable gloves in combination with intensive management supervision controls: 98%.

Risk Control Ratio (RCR) combined: RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

5. Additional good practice advice beyond the REACH CSA

Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets. Such as:

- Containment as appropriate;
- Minimise number of staff exposed;
- Segregation of the emitting process;
- Effective contaminant extraction;
- Good standard of general ventilation;
- Minimisation of manual phases;
- Avoidance of contact with contaminated tools and objects;
- Regular cleaning of equipment and work area;
- Management / supervision in place to check that RMMs in place are being used correctly and OCs followed;
- Training staff on good practice;
- Good standard of personal hygiene.