

Safety Data Sheet

According to: 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS
Trade Name: NONEL® Non-electric Delay Detonators

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

Name, Address, and Telephone of the Responsible Party

Dyno Nobel Inc.

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SDS #: 1122

Date: 07/20/2020

Supersedes: 05/22/2015

Product identifier

Trade name: **NONEL® Non-electric Delay Detonators**

Article number: 1122

Other product identifiers:

NONEL® MS
NONEL® EZ DET®
NONEL® MS ARCTIC
NONEL® EZTL™
NONEL® LP NONEL® EZ DRIFTER®
NONEL® SL
NONEL® SUPER
NONEL® TD
NONEL® MS CONNECTOR
NONEL® TWINPLEX™
NONEL® STARTER

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

No further relevant information available.

Application of the substance / the mixture

Explosive product.
Commercial blasting applications

Emergency telephone number:

CHEMTREC 1-800-424-9300 (US/Canada)
+01 703-527-3887 (International)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Classifications listed also are applicable to the OSHA GHS Hazard Communication Standard (29CFR1910.1200).



exploding bomb

Expl. 1.1 H201 Explosive; mass explosion hazard.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

⚠ Xn; Harmful

R22: Harmful if swallowed.

💣 E; Explosive

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R2: Risk of explosion by shock, friction, fire or other sources of ignition.

Information concerning particular hazards for human and environment: The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system: The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.

Additional information: There are no other hazards not otherwise classified that have been identified.

0 percent of the mixture consists of component(s) of unknown toxicity

Label elements

Labelling according to Regulation (EC) No 1272/2008

The product is additionally classified and labelled according to the Globally Harmonized System within the United States (GHS).

The product is classified and labelled according to the CLP regulation.

Hazard pictograms



GHS01

Signal word:

Danger

Hazard-determining components of labelling:

potassium perchlorate
pentaerythritol tetranitrate (PETN)

H201 Explosive; mass explosion hazard.

Hazard statements:

Precautionary statements:

P210

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P250

Do not subject to grinding/shock/friction.

P264

Wash thoroughly after handling.

P280

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

P240

Ground/bond container and receiving equipment.

P270

Do not eat, drink or smoke when using this product.

P373

DO NOT fight fire when fire reaches explosives.

P370 + P380

In case of fire: Evacuate area.

P372

Explosion risk in case of fire.

P401

Store in accordance with local/regional/national/international regulations.

P501

Dispose of contents/container in accordance with local/regional/national/international regulations.

Additional information:

EUH208 Contains diazodinitro phenol (DDNP). May produce an allergic reaction.

Hazard description:

WHMIS-symbols:

Explosive products are not classified under WHMIS.

NFPA ratings (scale 0 - 4):

Not available.

HMIS-ratings (scale 0 - 4):

Not available

HMIS Long Term Health Hazard Substances

13424-46-9 | lead diazide

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7439-92-1	lead
13463-67-7	titanium dioxide
7758-97-6	lead chromate
7778-74-7	potassium perchlorate

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

Explosive Product Notice: PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES - The prevention of accidents in the use of explosives is a result of careful planning and observance of the best known practices. The explosives user must remember that he is dealing with a powerful force and that various devices and methods have been developed to assist him in directing this force. He should realize that this force, if misdirected, may either kill or injure both him and his fellow workers.

WARNING - All explosives are dangerous and must be carefully handled and used following approved safety procedures either by or under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, or ordinances. If you have any questions or doubts as to how to use any explosive product, DO NOT USE IT before consulting with your supervisor, or the manufacturer, if you do not have a supervisor. If your supervisor has any questions or doubts, he should consult the manufacturer before use.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures

Description: Mixture of substances listed below with nonhazardous additions.

Some delay periods may contain potassium perchlorate. Those that do contain between from about 4 to a maximum of approximately 60 mg perchlorate per detonator.

Dangerous components:	
CAS: 78-11-5 EINECS: 201-084-3 Index number: 603-035-00-5	pentaerythritol tetranitrate (PETN) ⚠ E R3 ⚠ Unst. Expl., H200
CAS: 13424-46-9 EINECS: 236-542-1 Index number: 082-003-00-7	lead diazide ⚠ T Repr. Cat. 1, 3 R61; ⚠ Xn R62-20/22; ⚠ E R3; ⚠ N R50/53 R33 ⚠ Unst. Expl., H200 ⚠ Carc. 1B, H350; Repr. 1A, H360Df; STOT RE 2, H373 ⚠ Aquatic Acute 1, H400; Aquatic Chronic 1, H410 ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332
CAS: 7439-92-1 EINECS: 231-100-4	lead ⚠ Repr. Cat. 1 R60-61-48/23/25; ⚠ N R50/53 ⚠ Repr. 1A, H360FD; STOT RE 1, H372 ⚠ Aquatic Acute 1, H400; Aquatic Chronic 1, H410
CAS: 7440-21-3 EINECS: 231-130-8	silicon ⚠ R11 ⚠ Flam. Sol. 2, H228
CAS: 7782-49-2 EINECS: 231-957-4 Index number: 034-001-00-2	selenium ⚠ R23/25 R33-53

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	<p> Acute Tox. 3, H301; Acute Tox. 3, H331 STOT RE 2, H373 Aquatic Chronic 4, H413 </p>
<p> CAS: 1314-41-6 EINECS: 215-235-6 Index number: 082-001-00-6 </p>	<p> orange lead T Repr. Cat. 1, 3 R61; Xn R62-20/22; N R50/53 R33 </p>
	<p> Carc. 1B, H350; Repr. 1A, H360Df; STOT RE 2, H373 Aquatic Acute 1, H400; Aquatic Chronic 1, H410 Acute Tox. 4, H302; Acute Tox. 4, H332 </p>
<p> CAS: 13463-67-7 EINECS: 236-675-5 </p>	<p> titanium dioxide substance with a Community workplace exposure limit </p>
<p> CAS: 10294-40-3 EINECS: 233-660-5 Index number: 056-002-00-7 </p>	<p> barium chromate Xn R20/22 Carc. 1A, H350 Acute Tox. 4, H302; Acute Tox. 4, H332 </p>
<p> CAS: 7758-97-6 EINECS: 231-846-0 Index number: 082-004-00-2 </p>	<p> lead chromate T Carc. Cat. 2, Repr. Cat. 1, 3 R45-61; Xn R62; N R50/53 R33 Carc. 1B, H350; Repr. 1A, H360Df; STOT RE 2, H373 Aquatic Acute 1, H400; Aquatic Chronic 1, H410 </p>
<p> CAS: 7727-43-7 EINECS: 231-784-4 </p>	<p> barium sulphate, natural substance with a Community workplace exposure limit </p>
<p> CAS: 7778-74-7 EINECS: 231-912-9 Index number: 017-008-00-5 </p>	<p> potassium perchlorate Xn R22; O R9 Ox. Sol. 1, H271 Acute Tox. 4, H302 </p>
<p> CAS: 61790-53-2 </p>	<p> Diatomaceous earth (Silica-Amorphous) substance with a Community workplace exposure limit </p>
<p> CAS: 7439-98-7 EINECS: 231-107-2 </p>	<p> molybdenum substance with a Community workplace exposure limit </p>
<p> CAS: 7440-33-7 EINECS: 231-143-9 </p>	<p> tungsten substance with a Community workplace exposure limit </p>
<p> CAS: 7429-90-5 EINECS: 231-072-3 Index number: 013-001-00-6 </p>	<p> aluminium powder (pyrophoric) F R15-17 Pyr. Sol. 1, H250; Water-react. 2, H261 </p>
<p> CAS: 7440-36-0 EINECS: 231-146-5 </p>	<p> antimony substance with a Community workplace exposure limit </p>
<p> CAS: 2691-41-0 EINECS: 220-260-0 </p>	<p> octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) T R24; Xn R22; E R2 Expl. 1.1, H201 Acute Tox. 3, H301; Acute Tox. 3, H311 </p>
<p> CAS: 4682-03-5 </p>	<p> diazodinitro phenol (DDNP) Xi R36/38; Xi R43; E R3 Unst. Expl., H200 </p>

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DYNO
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Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317

SVHC

13424-46-9	lead diazide
1314-41-6	orange lead
7758-97-6	lead chromate

Additional information: For the listed ingredients, the identity and exact percentages are being withheld as a trade secret. For the wording of the listed risk phrases refer to section 16.

SECTION 4: FIRST AID MEASURES

Description of first aid measures

General information: Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

After inhalation: Unlikely route of exposure.

Supply fresh air; consult doctor in case of complaints.

After skin contact: Generally the product does not irritate the skin. Wash with soap and water.

If skin irritation is experienced, consult a doctor.

After eye contact: Remove contact lenses if worn.

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

After swallowing: Rinse out mouth and then drink plenty of water.

Do not induce vomiting; call for medical help immediately.

Most important symptoms and effects, both acute and delayed Blast injury if mishandled.

Hazards

Danger of blast or crush-type injuries. Harmful if swallowed.

Danger of disturbed cardiac rhythm.

Indication of any immediate medical attention and special treatment needed

Medical supervision for at least 48 hours.

Product may produce physical injury if mishandled. Treatment of these injuries should be based on the blast and compression effects.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing agents: DO NOT fight fire when fire reaches explosives.

For safety reasons unsuitable extinguishing agents: None.

Special hazards arising from the substance or mixture

DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions. Can explode or detonate under fire conditions. Burning material may produce toxic vapors. It is recommended that users of explosives material be familiar with the Institute of Makers of Explosives Safety Library publications.

Explosive; mass explosion hazard.

Advice for firefighters

Protective equipment: Wear self-contained respiratory protective device.

Wear fully protective suit.

Additional information

Eliminate all ignition sources if safe to do so.

Flammability Classification: (defined by 29 CFR 1910.1200) Explosive. Can explode under fire conditions. Individual devices will randomly explode. Mass explosion of multiple devices is possible under certain conditions. Burning material may produce toxic and irritating vapors. In unusual cases, shrapnel may be thrown from exploding devices under

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containment. See 2012 Emergency response Guidebook for further information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Remove persons from danger area.

Ensure adequate ventilation

Wear protective clothing.

Protect from heat. Evacuate area.

Isolate area and prevent access.

Environmental precautions

No special measures required.

Methods and material for containment and cleaning up

Pick up mechanically.

Send for recovery or disposal in suitable receptacles.

Dispose unusable material as waste according to item 13.

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Open and handle receptacle with care.

Handle with care. Avoid jolting, friction and impact.

Use only in well ventilated areas.

Do not subject to grinding/shock/friction.

Information about fire - and explosion protection: Protect from heat.

Prevent impact and friction.

Emergency cooling must be available in case of nearby fire.

Conditions for safe storage, including any incompatibilities

Storage:

Requirements to be met by storerooms and receptacles: Store in a cool location.

Avoid storage near extreme heat, ignition sources or open flame.

Information about storage in one common storage facility: Store away from foodstuffs.

Further information about storage conditions: Store under lock and key and with access restricted to technical experts or their assistants only.

Keep away from heat.

Specific end use(s): No further relevant information available.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical facilities: No further data; see item 7.

Control parameters

Ingredients with limit values that require monitoring at the workplace:

13424-46-9 lead diazide

PEL (USA)

Long-term value: 0,05 mg/m³
as Pb; See 29 CFR 1910,1025

REL (USA)

Long-term value: 0,05* mg/m³

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TLV (USA)	as Pb;*8-hr TWA; See Pocket Guide App. C Long-term value: 0,05 mg/m ³
EL (Canada)	as Pb; BEI Long-term value: 0,05 mg/m ³ as Pb; IARC 2A, R
7439-92-1 lead	
PEL (USA)	Long-term value: 0,05* mg/m ³ *see 29 CFR 1910,1025
REL (USA)	Long-term value: 0,05* mg/m ³ *8-hr TWA,excl. lead arsenate;See PocketGuideApp.C
TLV (USA)	Long-term value: 0,05* mg/m ³ *and inorganic compounds, as Pb; BEI
EL (Canada)	Long-term value: 0,05 mg/m ³ R; IARC 2B
EV (Canada)	Long-term value: 0,05 mg/m ³ as Pb, Skin (organic compounds)
7440-21-3 silicon	
PEL (USA)	Long-term value: 15* 5** mg/m ³ *total dust **respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m ³ *total dust **respirable fraction
TLV (USA)	TLV withdrawn
EL (Canada)	Long-term value: 10* 3** mg/m ³ *total dust;**respirable fraction
EV (Canada)	Long-term value: 10 mg/m ³ total dust
7782-49-2 selenium	
PEL (USA)	Long-term value: 0,2 mg/m ³ as Se
REL (USA)	Long-term value: 0,2 mg/m ³ as Se
TLV (USA)	Long-term value: 0,2 mg/m ³ as Se
EL (Canada)	Long-term value: 0,1 mg/m ³
EV (Canada)	Long-term value: 0,2 mg/m ³
1314-41-6 orange lead	
PEL (USA)	Long-term value: 0,05 mg/m ³ as Pb; See 29 CFR 1910,1025
REL (USA)	Long-term value: 0,05* mg/m ³ as Pb;*8-hr TWA; See Pocket Guide App. C
TLV (USA)	Long-term value: 0,05 mg/m ³ as Pb; BEI
EL (Canada)	Long-term value: 0,05 mg/m ³ as Pb; IARC 2A, R

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EV (Canada)	Long-term value: 0,05 mg/m ³ as Pb, Skin (organic compounds)
13463-67-7 titanium dioxide	
PEL (USA)	Long-term value: 15* mg/m ³ *total dust
REL (USA)	See Pocket Guide App. A
TLV (USA)	Long-term value: 10 mg/m ³ withdrawn from NIC
EL (Canada)	Long-term value: 10* 3** mg/m ³ *total dust;**respirable fraction; IARC 2B
EV (Canada)	Long-term value: 10 mg/m ³ total dust
10294-40-3 barium chromate	
PEL (USA)	Long-term value: 0,005* mg/m ³ Ceiling limit: 0,1** mg/m ³ *as Cr(VI) **as CrO ₃ ; see 29 CFR 1910,1026
REL (USA)	Long-term value: 0,0002 mg/m ³ as Cr; See Pocket Guide Apps. A and C
TLV (USA)	Long-term value: 0,01 mg/m ³ as Cr
EL (Canada)	Long-term value: 0,01 mg/m ³ as Cr; ACGIH A1 IARC 1
7758-97-6 lead chromate	
IOELV (EU)	Long-term value: 2 mg/m ³ as Cr
PEL (USA)	Long-term value: 0,005* mg/m ³ Ceiling limit: 0,1** mg/m ³ *as Cr(VI) **as CrO ₃ ; see 29 CFR 1910,1026
REL (USA)	Long-term value: 0,0002 mg/m ³ as Cr; See Pocket Guide Apps. A and C
TLV (USA)	Long-term value: 0,05* 0,012** mg/m ³ *as Pb; BEI ; **as Cr
EL (Canada)	Long-term value: 0,05* 0,012** mg/m ³ ACIGH A2, IARC 2A; R; *as Pb;**as Cr
EV (Canada)	Long-term value: 0,012* 0,05** mg/m ³ *as Cr, **as Pb
7727-43-7 barium sulphate, natural	
PEL (USA)	Long-term value: 15* 5** mg/m ³ *total dust **respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m ³ *total dust **respirable fraction
TLV (USA)	Long-term value: 5* mg/m ³ *inhalable fraction; E
EL (Canada)	Long-term value: 10* 3** mg/m ³ *total dust, **respirable fraction

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EV (Canada)	Long-term value: 10 mg/m ³ total dust
61790-53-2 Diatomaceous earth (Silica-Amorphous)	
PEL (USA) REL (USA)	20mppcf or 80mg/m ³ /%SiO ² Long-term value: 6 mg/m ³ See Pocket Guide App. C
TLV (USA) EL (Canada)	TLV withdrawn Long-term value: 4* 1,5** mg/m ³ *total, **respirable
EV (Canada)	Long-term value: 10* 3** mg/m ³ uncalcined; *inhalable;**respirable
7439-98-7 molybdenum	
PEL (USA)	Long-term value: 15* mg/m ³ *Total dust
TLV (USA)	Long-term value: 10* 3** mg/m ³ as Mo; *inhalable fraction ** respirable fraction
EL (Canada)	Long-term value: 3* 10** mg/m ³ as Mo; *respirable **inhalable
EV (Canada)	Long-term value: 10* 3** 0,5*** mg/m ³ metal,insol.compd.:*inh;**resp;sol.compd.:***resp
7440-33-7 tungsten	
PEL (USA) REL (USA)	and insoluble compounds, as We Short-term value: 10 mg/m ³ Long-term value: 5 mg/m ³ as W
TLV (USA)	Short-term value: 10 mg/m ³ Long-term value: 5 mg/m ³ as W
EL (Canada)	Short-term value: 10 mg/m ³ Long-term value: 5 mg/m ³ as W
EV (Canada)	Short-term value: 10* 3** mg/m ³ Long-term value: 5* 1** mg/m ³ (as tungsten; compds.:*water-insol.;**water-sol.
7429-90-5 aluminium powder (pyrophoric)	
PEL (USA)	Long-term value: 15*; 15** mg/m ³ *Total dust; ** Respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m ³ as Al*Total dust**Respirable/pyro powd./welding f.
TLV (USA)	Long-term value: 1* mg/m ³ as Al; *as respirable fraction
EL (Canada)	Long-term value: 1,0 mg/m ³ respirable, as Al
EV (Canada)	Long-term value: 5 mg/m ³ aluminium-containing (as aluminium)
7440-36-0 antimony	
PEL (USA)	Long-term value: 0,5 mg/m ³ as Sb
REL (USA)	Long-term value: 0,5 mg/m ³ as Sb

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TLV (USA)	Long-term value: 0,5 mg/m ³ as Sb
EL (Canada)	Long-term value: 0,5 mg/m ³
EV (Canada)	Long-term value: 0,5 mg/m ³
DNELs No further relevant information available.	
PNECs No further relevant information available.	
Ingredients with biological limit values:	
13424-46-9 lead diazide	
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead
7439-92-1 lead	
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead 10 µg/100 ml Medium: blood Time: not critical Parameter: Lead (women of child bearing potential)
1314-41-6 orange lead	
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead
10294-40-3 barium chromate	
BEI (USA)	25 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Total chromium (fume) 10 µg/L Medium: urine Time: increase during shift Parameter: Total chromium (fume)
7758-97-6 lead chromate	
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead 10 µg/100 ml Medium: blood Time: not critical Parameter: Lead (women of child bearing potential)

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Additional information: The lists valid during the making were used as basis.

Exposure controls

Personal protective equipment:

General protective and hygienic measures: The usual precautionary measures are to be adhered to when handling chemicals.

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

Respiratory protection: Not required under normal conditions of use.

Respiratory protection may be required after product use.

Protection of hands: Wear gloves for the protection against mechanical hazards according to NIOSH or EN 388.

Material of gloves: The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material: The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:



Safety glasses

Face protection

Body protection: Impervious protective clothing

Limitation and supervision of exposure into the environment: No further relevant information available.

Risk management measures: Organizational measures should be in place for all activities involving this product.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

General Information

Appearance:

Form:

Solid material

Colour:

According to product specification

Odour:

Characteristic

Odour threshold:

Not determined.

pH-value:

Not applicable.

Change in condition

Melting point/Melting range:

Not Determined.

Boiling point/Boiling range:

Undetermined.

Flash point:

Not applicable.

Flammability (solid, gaseous):

Explosive; mass explosion hazard.

Auto/Self-ignition temperature:

Not determined.

Decomposition temperature:

Not determined.

Self-igniting:

Product is not self-igniting.

Danger of explosion:

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

Explosion limits:

Lower:

Not determined.

Upper:

Not determined.

Vapour pressure:

Not applicable.

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Density:	Not determined.
Relative density	Not determined.
Vapour density	Not applicable.
Evaporation rate	Not applicable.
Solubility in / Miscibility with water:	Variable, dependent upon product composition and packaging.
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
Other information	No further relevant information available.

SECTION 10: STABILITY AND REACTIVITY

Reactivity

Chemical stability

Thermal decomposition / conditions to be avoided: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Possibility of hazardous reactions: Danger of explosion. Toxic fumes may be released if heated above the decomposition point.

Conditions to avoid: No further relevant information available.

Incompatible materials: No further relevant information available.

Hazardous decomposition products: Carbon monoxide and carbon dioxide Hydrocarbons Nitrogen oxides Chlorine compounds Leadoxide vapour Bariumoxide vapour Toxic metal oxide smoke Danger of forming toxic pyrolysis products.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity:

LD/LC50 values relevant for classification:

7439-92-1 lead

Oral LD50 >2000 mg/kg (rat)

7782-49-2 selenium

Oral LD50 6700 mg/kg (rat)

7758-97-6 lead chromate

Oral LD50 12000 mg/kg (mouse)

Primary irritant effect:

on the skin: Not a skin irritant in unused form. Vapors/particles from used product are possibly irritating to skin.

on the eye: Not an eye irritant in unused form. Vapors/particles from used product are possibly irritating to eyes.

Sensitisation: No sensitising effects known.

Subacute to chronic toxicity: No further relevant information available.

Additional toxicological information: The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version: Harmful

Acute effects (acute toxicity, irritation and corrosivity): Danger of blast or crush-type injuries. Harmful if swallowed.

Repeated dose toxicity: No further relevant information available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Aquatic toxicity: No further relevant information available.

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Groundbreaking Performance®

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According to: 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS

Trade Name: NONEL® Non-electric Delay Detonators

Persistence and degradability: No further relevant information available.

Bioaccumulative potential: No further relevant information available.

Mobility in soil: No further relevant information available.

Additional ecological information:

General notes: Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

Other adverse effects: No further relevant information available.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Recommendation: Must not be disposed together with household garbage. Do not allow product to reach sewage system. Damaged materials pose a danger to anyone in the immediate area; consult experts for disposal of damaged products.

The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.

Uncleaned packaging:

Recommendation: Disposal must be made according to official regulations.

SECTION 14: TRANSPORT INFORMATION

UN-Number

DOT, ADR, IMDG: UN0360

IATA: FORBIDDEN

UN proper shipping name

DOT, IMDG: DETONATOR ASSEMBLIES, NON-ELECTRIC

ADR: 0360 DETONATOR ASSEMBLIES, NON-ELECTRIC

IATA: FORBIDDEN

Transport hazard class(es)

DOT

Class:



1.1

Label: 1.1

ADR, IMDG

Class:



1.1

Label: 1.1B

IATA

Class:

FORBIDDEN

Packing group

DOT, ADR, IMDG:

II

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IATA:	FORBIDDEN
Environmental hazards:	
Marine pollutant:	No
Special marking (IATA):	FORBIDDEN BY AIR.
Special precautions for user:	Not applicable.
EMS Number:	F-B,S-X
Segregation groups	Perchlorates
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	
Transport/Additional information:	Not applicable.

ADR	
Limited quantities (LQ)	0
Excepted quantities (EQ)	Code: E0 Not permitted as Excepted Quantity
Tunnel restriction code	1
IMDG	
Limited quantities (LQ)	0
Excepted quantities (EQ)	Code E0 Not permitted as Excepted Quantity
IATA	FORBIDDEN
UN "Model Regulation":	UN0360, DETONATOR ASSEMBLIES, NON- ELECTRIC, 1.1B, II

SECTION 15: REGULATORY INFORMATION

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

United States (USA)

SARA	
Section 355 (extremely hazardous substances):	
None of the ingredients are listed.	
Section 313 (Specific toxic chemical listings):	
13424-46-9	lead diazide
7439-92-1	lead
7782-49-2	selenium
1314-41-6	orange lead
10294-40-3	barium chromate
7758-97-6	lead chromate
7727-43-7	barium sulphate, natural
7429-90-5	aluminium powder (pyrophoric)
7440-36-0	antimony
TSCA (Toxic Substances Control Act):	
All ingredients are listed.	
Proposition 65 (California):	

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Chemicals known to cause cancer:		
13424-46-9	lead diazide	
7439-92-1	lead	
1314-41-6	orange lead	
13463-67-7	titanium dioxide	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Chemicals known to cause reproductive toxicity for females:		
7439-92-1	lead	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Chemicals known to cause reproductive toxicity for males:		
7439-92-1	lead	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Chemicals known to cause developmental toxicity:		
13424-46-9	lead diazide	
7439-92-1	lead	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Carcinogenic Categories		
EPA (Environmental Protection Agency)		
13424-46-9	lead diazide	B2
7439-92-1	lead	B2
7782-49-2	selenium	D
1314-41-6	orange lead	B2
10294-40-3	barium chromate	A(inh), D(oral), K/L(inh), CBD(oral)
7758-97-6	lead chromate	K
7727-43-7	barium sulphate, natural	D, CBD(inh), NL(oral)
7778-74-7	potassium perchlorate	NL
2691-41-0	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	D
IARC (International Agency for Research on Cancer)		
13424-46-9	lead diazide	2A
7439-92-1	lead	2B
7782-49-2	selenium	3
1314-41-6	orange lead	2A
13463-67-7	titanium dioxide	2B
10294-40-3	barium chromate	1
7758-97-6	lead chromate	1
61790-53-2	Diatomaceous earth (Silica-Amorphous)	3
TLV (Threshold Limit Value established by ACGIH)		

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13424-46-9	lead diazide	A3
7439-92-1	lead	A3
1314-41-6	orange lead	A3
13463-67-7	titanium dioxide	A4
10294-40-3	barium chromate	A1
7758-97-6	lead chromate	A2
7439-98-7	molybdenum	A3
7429-90-5	aluminium powder (pyrophoric)	A4
NIOSH-Ca (National Institute for Occupational Safety and Health)		
13463-67-7	titanium dioxide	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Canada		
Canadian Domestic Substances List (DSL)		
Some components are listed on the NDSL.		
All ingredients are listed.		
Canadian Ingredient Disclosure list (limit 0.1%)		
7439-92-1	lead	
7782-49-2	selenium	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Canadian Ingredient Disclosure list (limit 1%)		
7439-98-7	molybdenum	
7440-33-7	tungsten	
7429-90-5	aluminium powder (pyrophoric)	
7440-36-0	antimony	
Other regulations, limitations and prohibitive regulations		
This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.		
Substances of very high concern (SVHC) according to REACH, Article 57		
13424-46-9	lead diazide	
1314-41-6	orange lead	
7758-97-6	lead chromate	
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.		

SECTION 16: OTHER INFORMATION

Phrases pertinentes

H200 Unstable explosives.

H201 Explosive; mass explosion hazard.

H228 Flammable solid.

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H250 Catches fire spontaneously if exposed to air.	
H261 In contact with water releases flammable gases.	
H271 May cause fire or explosion; strong oxidiser.	
H301 Toxic if swallowed.	
H302 Harmful if swallowed.	
H311 Toxic in contact with skin.	
H315 Causes skin irritation.	
H317 May cause an allergic skin reaction.	
H319 Causes serious eye irritation.	
H331 Toxic if inhaled.	
H332 Harmful if inhaled.	
H350 May cause cancer.	
H360Df May damage the unborn child. Suspected of damaging 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.	
H413 May cause long lasting harmful effects to aquatic life.	
R11 Highly flammable.	
R15 Contact with water liberates extremely flammable gases.	
R17 Spontaneously flammable in air.	
R2 Risk of explosion by shock, friction, fire or other sources of ignition.	
R20/22 Harmful by inhalation and if swallowed.	
R22 Harmful if swallowed.	
R23/25 Toxic by inhalation and if swallowed.	
R24 Toxic in contact with skin.	
R3 Extreme risk of explosion by shock, friction, fire or other sources of ignition.	
R33 Danger of cumulative effects.	
R36/38 Irritating to eyes and skin.	
R43 May cause sensitisation by skin contact.	
R45 May cause cancer.	
R48/23/25 Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.	
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.	
R53 May cause long-term adverse effects in the aquatic environment.	
R60 May impair fertility.	
R61 May cause harm to the unborn child.	
R62 Possible risk of impaired fertility.	
R9 Explosive when mixed with combustible material.	

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for

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Dangerous Goods DOT: US Department of Transportation	
IATA: International Air Transport Association	
GHS: Globally Harmonised System of Classification and Labelling of Chemicals	
ACGIH: American Conference of Governmental Industrial Hygienists	
EINECS: European Inventory of Existing Commercial Chemical Substances	
ELINCS: European List of Notified Chemical Substances	
CAS: Chemical Abstracts Service (division of the American Chemical Society)	
NFPA: National Fire Protection Association (USA)	
HMIS: Hazardous Materials Identification System (USA)	
WHMIS: Workplace Hazardous Materials Information System (Canada)	
DNEL: Derived No-Effect Level (REACH)	
PNEC: Predicted No-Effect Concentration (REACH)	
LC50: Lethal concentration, 50 percent	
LD50: Lethal dose, 50 percent	
Expl. 1.1: Explosives, Division 1.1	
Unst. Expl.: Explosives, Unstable explosives	
Flam. Sol. 2: Flammable solids, Hazard Category 2	
Pyr. Sol. 1: Pyrophoric Solids, Hazard Category 1	
Water-react. 2: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 2	
Ox. Sol. 1: Oxidising Solids, Hazard Category 1	
Acute Tox. 3: Acute toxicity, Hazard Category 3	
Acute Tox. 4: Acute toxicity, Hazard Category 4	
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2	
Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2	
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1	
Carc. 1A: Carcinogenicity, Hazard Category 1A Carc. 1B: Carcinogenicity, Hazard Category 1B	
Repr. 1A: Reproductive toxicity, Hazard Category 1A Repr. 1A: Reproductive toxicity, Hazard Category 1A	
STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1	
STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2	
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 4: Hazardous to the aquatic environment - Chronic Hazard, Category 4	

Sources

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DYNO
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Trade Name: NONEL® Non-electric Delay Detonators

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