

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

Details of the supplier of the Safety Data Sheet

Manufacturer/Supplier:

Dyno Nobel Inc.

6440 S. Millrock Drive, Suite 150

Salt Lake City, Utah 84121

Phone: 801-364-4800 Fax: 801-321-6703

E-Mail: dna.hse@am.dynonobel.com

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. 1.4 H204 Fire or projection hazard.

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

R5: Heating may cause an explosion.

Safety Data Sheet

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

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:

Warning

Hazard-determining components of labelling:

diazodinitro phenol (DDNP)
pentaerythritol tetranitrate (PETN)
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)
lead diazide orange lead
H204 Fire or projection 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.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P240	Ground/bond container and receiving equipment.
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: EUH201 Contains lead. Should not be used on surfaces liable to be chewed or sucked by children.

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

Safety Data Sheet

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

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.

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 ⚠ T 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 ⚠ F R11 ----- ⚠ Flam. Sol. 2, H228
CAS: 2691-41-0 EINECS: 220-260-0	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
CAS: 7782-49-2 EINECS: 231-957-4 Index number: 034-001-00-2	selenium ⚠ T R23/25 R33-53 ----- ⚠ Acute Tox. 3, H301; Acute Tox. 3, H331 ⚠ STOT RE 2, H373 ⚠ Aquatic Chronic 4, H413

Safety Data Sheet

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

CAS: 1314-41-6 EINECS: 215-235-6 Index number: 082-001-00-6	orange lead ⚠ T Repr. Cat. 1, 3 R61; ⚠ Xn R62-20/22; ⚠ N R50/53 R33 ⚠ 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: 10294-40-3 EINECS: 233-660-5 Index number: 056-002-00-7	barium chromate ⚠ Xn R20/22 ⚠ Carc. 1A, H350 ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332
CAS: 7758-97-6 EINECS: 231-846-0 Index number: 082-004-00-2	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
CAS: 4682-03-5	diazodinitro phenol (DDNP) ⚠ Xi R36/38; ⚠ Xi R43; ⚠ E R3 ⚠ Unst. Expl., H200 ⚠ Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317
CAS: 7440-36-0 EINECS: 231-146-5	antimony substance with a Community workplace exposure limit
CAS: 7440-33-7 EINECS: 231-143-9	tungsten substance with a Community workplace exposure limit
CAS: 7429-90-5 EINECS: 231-072-3 Index number: 013-001-00-6	aluminium powder (pyrophoric) ⚠ F R15-17 ⚠ Pyr. Sol. 1, H250; Water-react. 2, H261
CAS: 7439-98-7 EINECS: 231-107-2	molybdenum substance with a Community workplace exposure limit
CAS: 61790-53-2	Diatomaceous earth (Silica-Amorphous) substance with a Community workplace exposure limit
CAS: 7778-74-7 EINECS: 231-912-9 Index number: 017-008-00-5	potassium perchlorate ⚠ Xn R22; ⚠ O R9 ⚠ Ox. Sol. 1, H271 ⚠ Acute Tox. 4, H302
CAS: 7727-43-7 EINECS: 231-784-4	barium sulphate, natural substance with a Community workplace exposure limit
SVHC	
13424-46-9	lead diazide
1314-41-6	orange lead
7758-97-6	lead chromate

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

Safety Data Sheet

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

SECTION 4: FIRST AID MEASURES

Description of first aid measures

General information: No special measures required.

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: Unlikely route of exposure.

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.

Indication of any immediate medical attention and special treatment needed

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.

Fire or projection hazard.

Product may explode if burned in confined space. Individual cartridges may explode. Mass explosion of many cartridges at once is unlikely.

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. Will not mass explode if multiple devices are involved. Burning material may produce toxic and irritating vapors. In unusual cases, shrapnel may be thrown from exploding devices under containment. See 2008 Emergency response Guidebook for further information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Wear protective clothing.

Ensure adequate ventilation

Protect from heat.

Environmental precautions:

Do not allow to enter sewers/ surface or ground water.

Inform respective authorities in case of seepage into water course or sewage system.

Safety Data Sheet

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

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

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.

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 in cool, dry conditions in well sealed receptacles.

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/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

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

Safety Data Sheet

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

Trade name: NONEL® Non-electric Delay Detonators

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
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

Safety Data Sheet

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

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
EV (Canada)	Long-term value: 10 mg/m ³ total dust
61790-53-2 Diatomaceous earth (Silica-Amorphous)	
PEL (USA)	20mppcf or 80mg/m ³ /%SiO ₂
REL (USA)	Long-term value: 6 mg/m ³ See Pocket Guide App. C
TLV (USA)	TLV withdrawn
EL (Canada)	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)	and insoluble compounds, as We
REL (USA)	Short-term value: 10 mg/m ³ Long-term value: 5 mg/m ³ as W

Safety Data Sheet

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

Trade name: NONEL® Non-electric Delay Detonators

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
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

Safety Data Sheet

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

Trade name: NONEL® Non-electric Delay Detonators

	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)

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 ignition sources away - Do not smoke.

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

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

Safety Data Sheet

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

Trade name: NONEL® Non-electric Delay Detonators

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:

Face protection



Safety glasses

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:

Odourless

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):

Fire or projection hazard.

Auto/Self-ignition temperature:

Not determined.

Decomposition temperature:

Not determined.

Self-igniting:

Product is not self-igniting.

Danger of explosion:

Heating may cause an explosion.

Explosion limits:

Lower:

Not determined.

Upper:

Not determined.

Vapour pressure:

Not applicable.

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.

Safety Data Sheet

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

SECTION 10: STABILITY AND REACTIVITY

Reactivity

Chemical stability

Thermal decomposition / conditions to be avoided: No decomposition if used and stored according to specifications. 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. Reacts violently with oxidising agents.

Conditions to avoid Keep ignition sources away - Do not smoke.

Incompatible materials: No further relevant information available.

Hazardous decomposition products: Carbon monoxide and carbon dioxide

Hydrocarbons

Leadoxide vapour

Bariumoxide vapour

Toxic metal oxide smoke

Chlorine compounds

Danger of forming toxic pyrolysis products.

Nitrogen oxides

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.

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

Repeated dose toxicity: Contains known or suspect carcinogens when inhaled. Product is in non-inhalable form and is nonclassifiable as a carcinogen.

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction): Contains known or suspect carcinogens when inhaled. Product is in non-inhalable form and is non-classifiable as a carcinogen.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Aquatic toxicity: Toxic for aquatic organisms

Persistence and degradability: No further relevant information available.

Bioaccumulative potential: May be accumulated in organism

Mobility in soil: No further relevant information available.

Ecotoxicological effects:

Remark: Toxic for fish

Safety Data Sheet

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

Additional ecological information:

General notes: Water hazard class 3 (German Regulation) (Self-assessment): extremely hazardous for water
Do not allow product to reach ground water, water course or sewage system, even in small quantities. Danger to drinking water if even extremely small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

The product contains heavy metals. Avoid transfer into the environment. Specific preliminary treatments are necessary

Toxic for aquatic organisms

Due to available data on eliminability/decomposition and bioaccumulation potential prolonged term damage of the environment can not be excluded.

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, IATA UN0361

UN proper shipping name

DOT Detonator assemblies, non-electric
ADR 0361 DETONATOR ASSEMBLIES, NONELECTRIC,
IMDG DETONATOR ASSEMBLIES, NONELECTRIC,
IATA DETONATOR ASSEMBLIES, NON-ELECTRIC

Transport hazard class(es)

DOT, ADR, IMDG, IATA



Class 1.4

Label 1.4B

Packing group


DOT, ADR, IMDG, IATA II

Environmental hazards:

Marine pollutant: No

Safety Data Sheet

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

Special marking (IATA):	Prohibited from Transport in Passenger Aircraft.
 Cargo Aircraft Only.	
Special precautions for user	Not applicable.
EMS Number:	F-B, S-X
Segregation groups	Lead and its compounds
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
ADR	
Limited quantities (LQ)	0
Excepted quantities (EQ)	Code: EO
Tunnel restriction code	2 (E)
IMDG	
Limited quantities (LQ)	0
Excepted quantities (EQ)	Code: EO
UN "Model Regulation":	UN 0361, DETONATOR ASSEMBLIES, NONELECTRIC, 1.4B, 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):

Chemicals known to cause cancer:

13424-46-9	lead diazide
7439-92-1	lead
1314-41-6	orange lead

Safety Data Sheet

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

Trade name: NONEL® Non-electric Delay Detonators

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)		
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

Safety Data Sheet

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

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

Relevant phrases

H200 Unstable explosives.	
H201 Explosive; mass explosion hazard.	
H228 Flammable solid.	
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.	

Safety Data Sheet

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

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 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)	

Safety Data Sheet

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

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	
Expl. 1.4: Explosives, Division 1.4	
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

SDS Prepared by: ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902
Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com

Party Responsible for the Preparation of this Document

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800

Disclaimer

Dyno Nobel Inc. and its subsidiaries disclaim any warranties with respect to this product, the safety or suitability thereof, the information contained herein, or the results to be obtained, whether express or implied, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND/OR OTHER WARRANTY. The information contained herein is provided for reference purposes only and is

SDS# 1122 Date: 07/20/2020

DYNO
Dyno Nobel

Page 18/18

Groundbreaking Performance®

Safety Data Sheet

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

Trade name: NONEL® Non-electric Delay Detonators

intended only for persons having relevant technical skills. Because conditions and manner of use are outside of our control, the user is responsible for determining the conditions of safe use of the product. Buyers and users assume all risk, responsibility and liability whatsoever from any and all injuries (including death), losses, or damages to persons or property arising from the use of this product or information. Under no circumstances shall either Dyno Nobel Inc. or any of its subsidiaries be liable for special, consequential or incidental damages or for anticipated loss of profits.