

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

1076 Detonators, Electric 1.1 pages 2-20

1076 Detonators, Electric 1.4B pages 21-39

1076 Detonators, Electric 1.4S pages 40-57

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

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

- **1.1 Product identifier**
- **Trade name:** Detonators, Electric (Class 1.1B)
- **Article number:** 1076
- **Other product identifiers:**
ELECTRIC SUPER™ COAL
ELECTRIC SUPER™ LP
ELECTRIC SUPER™ SP
ELECTRIC SUPER™ STARTER
ELECTRIC INSTANT
- **1.2 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
- **1.3 Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
Dyno Nobel Inc.
2795 East Cottonwood Parkway, Suite 500
Salt Lake City, Utah 84121
Phone: 801-364-4800
Fax: 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com
- **1.4 Emergency telephone number:**
CHEMTREC
1-800-424-9300 (US/Canada)
+01 703-527-3887 (International)

SECTION 2: Hazards identification

- **2.1 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).
Hazard Statement H410 is not applicable to the OSHA US regulations.



exploding bomb

Expl. 1.1 H201 Explosive; mass explosion hazard.

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



E; Explosive

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.

(Contd. on page 2)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 1)

- **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

- **2.2 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:**

pentaerythritol tetranitrate (PETN)

diazodinitro phenol (DDNP)

Nitrocellulose, colloided, granular

lead diazide

- **Hazard statements**

H201 Explosive; mass explosion hazard.

- **Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P230 Keep wetted.

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

(Contd. on page 3)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 2)

· HMIS Long Term Health Hazard Substances

13424-46-9	lead diazide
7758-97-6	lead chromate
13463-67-7	titanium dioxide
7778-74-7	potassium perchlorate

- **2.3 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

- **3.2 Mixtures**
- **Description:** Mixture of substances listed below with nonhazardous additions.

· Dangerous components:

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: 78-11-5 EINECS: 201-084-3 Index number: 603-035-00-5	pentaerythritol tetranitrate (PETN)  E R3 -----  Unst. Expl., H200
CAS: 7440-33-7 EINECS: 231-143-9	tungsten substance with a Community workplace exposure limit

(Contd. on page 4)

Safety Data Sheet




























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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: **Detonators, Electric (Class 1.1B)**

(Contd. of page 3)

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: 7440-36-0 EINECS: 231-146-5	antimony substance with a Community workplace exposure limit
CAS: 7440-21-3 EINECS: 231-130-8	silicon  F R11 -----  Flam. Sol. 2, H228
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: 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: 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: 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
CAS: 13463-67-7 EINECS: 236-675-5	titanium dioxide substance with a Community workplace exposure limit
CAS: 7727-43-7 EINECS: 231-784-4	barium sulphate, natural substance with a Community workplace exposure limit
CAS: 7440-42-8 EINECS: 231-151-2	boron
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

(Contd. on page 5)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 4)

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: 9004-70-0 EC number: 603-037-0	Nitrocellulose, colloided, granular ☒ E R3 ⚠ Expl. 1.1, H201

· SVHC

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

· 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

· 4.1 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.

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

· **Hazards** Danger of blast or crush-type injuries.

· **4.3 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

· 5.1 Extinguishing media

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

· **For safety reasons unsuitable extinguishing agents:** None.

· 5.2 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

(Contd. on page 6)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 5)

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.

- **5.3 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 containment. See 2012 Emergency response Guidebook for further information.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**

Remove persons from danger area.

Wear protective clothing.

Ensure adequate ventilation

Protect from heat.

Isolate area and prevent access.

- **6.2 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.

- **6.3 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.

- **6.4 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

- **7.1 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.

(Contd. on page 7)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 6)

- **7.2 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.
- **7.3 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.
- **8.1 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

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

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

(Contd. on page 8)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 7)

EL (Canada)	Long-term value: 0,5 mg/m ³
EV (Canada)	Long-term value: 0,5 mg/m ³
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
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
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.)
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

(Contd. on page 9)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 8)

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)

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

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

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

• **DNELs** No further relevant information available.

(Contd. on page 10)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 9)

- **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
-----------	--

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)

1314-41-6 orange lead

BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead
-----------	--

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

- **8.2 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.
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.

(Contd. on page 11)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 10)

- **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

- **9.1 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):**

Not determined.

- **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.

(Contd. on page 12)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 11)

- 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.
 - **9.2 Other information:** No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity**
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- **10.3 Possibility of hazardous reactions**
Danger of explosion.
Toxic fumes may be released if heated above the decomposition point.
- **10.4 Conditions to avoid:** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Leadoxide vapour
Nitrogen oxides
Chlorine compounds
Hydrocarbons
Toxic metal oxide smoke
Danger of forming toxic pyrolysis products.

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity:**

· **LD/LC50 values relevant for classification:**

7758-97-6 lead chromate

Oral	LD50	12000 mg/kg (mouse)
------	------	---------------------

(Contd. on page 13)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 12)

7782-49-2 selenium

Oral	LD50	6700 mg/kg (rat)
------	------	------------------

- **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:** No further relevant information available.

SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** Toxic for aquatic organisms
- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** May be accumulated in organism
- **12.4 Mobility in soil** No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Very toxic for fish
- **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
Very toxic for aquatic organisms
Due to available data on eliminability/decomposition and bioaccumulation potential prolonged term damage of the environment can not be excluded.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**
Must not be disposed together with household garbage. Do not allow product to reach sewage system.

(Contd. on page 14)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 13)

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

- **14.1 UN-Number**
- **DOT, ADR, IMDG** UN0030
- **IATA** FORBIDDEN
- **14.2 UN proper shipping name**
- **DOT** Detonators, Electric
- **ADR** 0030, DETONATORS, ELECTRIC
- **IMDG** DETONATORS, ELECTRIC
- **IATA** FORBIDDEN
- **14.3 Transport hazard class(es)**

- **DOT**



- **Class** 1.1
- **Label** 1.1

- **ADR, IMDG**



- **Class** 1.1
- **Label** 1.1B

- **IATA**
- **Class** FORBIDDEN
- **Label** -
- **14.4 Packing group**
- **DOT, ADR, IMDG** II
- **IATA** FORBIDDEN

- **14.5 Environmental hazards:**
- **Marine pollutant:** Yes
- **Special marking (IATA):** FORBIDDEN BY AIR.
- **14.6 Special precautions for user:** Not applicable.
- **EMS Number:** F-B, S-
- **Segregation groups** Lead and its compounds

(Contd. on page 15)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 14)

- **14.7 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: E0
Not permitted as Excepted Quantity
- **Tunnel restriction code** (1)
- **IATA** FORBIDDEN.
- **UN "Model Regulation":** UN0030, DETONATORS, ELECTRIC, 1.1B, II

SECTION 15: Regulatory information

- **15.1 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
10294-40-3	barium chromate
7440-36-0	antimony
7758-97-6	lead chromate
1314-41-6	orange lead
7782-49-2	selenium
7727-43-7	barium sulphate, natural

· TSCA (Toxic Substances Control Act):

All ingredients are listed.

· Proposition 65 (California):

· Chemicals known to cause cancer:

13424-46-9	lead diazide
10294-40-3	barium chromate
7758-97-6	lead chromate
1314-41-6	orange lead
13463-67-7	titanium dioxide

· Chemicals known to cause reproductive toxicity for females:

10294-40-3	barium chromate
7758-97-6	lead chromate

(Contd. on page 16)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 15)

· **Chemicals known to cause reproductive toxicity for males:**

10294-40-3	barium chromate
7758-97-6	lead chromate

· **Chemicals known to cause developmental toxicity:**

13424-46-9	lead diazide
10294-40-3	barium chromate
7758-97-6	lead chromate

· **Carcinogenic Categories**

· **EPA (Environmental Protection Agency)**

13424-46-9	lead diazide	B2
10294-40-3	barium chromate	A(inh), D(oral), K/L(inh), CBD(oral)
7758-97-6	lead chromate	K
1314-41-6	orange lead	B2
7782-49-2	selenium	D
7727-43-7	barium sulphate, natural	D, CBD(inh), NL(oral)
7440-42-8	boron	I (oral)
7778-74-7	potassium perchlorate	NL

· **IARC (International Agency for Research on Cancer)**

13424-46-9	lead diazide	2A
10294-40-3	barium chromate	1
7758-97-6	lead chromate	1
1314-41-6	orange lead	2A
7782-49-2	selenium	3
13463-67-7	titanium dioxide	2B

· **TLV (Threshold Limit Value established by ACGIH)**

13424-46-9	lead diazide	A3
10294-40-3	barium chromate	A1
7758-97-6	lead chromate	A2
1314-41-6	orange lead	A3
13463-67-7	titanium dioxide	A4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

10294-40-3	barium chromate
7758-97-6	lead chromate
13463-67-7	titanium dioxide

· **Canada**

· **Canadian Domestic Substances List (DSL)**

Some components are listed on the NDSL.

Not all ingredients listed.

(Contd. on page 17)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 16)

· **Canadian Ingredient Disclosure list (limit 0.1%)**

10294-40-3	barium chromate
7758-97-6	lead chromate
7782-49-2	selenium

· **Canadian Ingredient Disclosure list (limit 1%)**

7440-36-0	antimony
7440-33-7	tungsten

· **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
7758-97-6	lead chromate
1314-41-6	orange lead

· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

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 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.

· **Relevant phrases**

H200	Unstable explosives.
H201	Explosive; mass explosion hazard.
H228	Flammable solid.
H271	May cause fire or explosion; strong oxidiser.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
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.

(Contd. on page 18)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 17)

- 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.
 R20/22 Harmful by inhalation and if swallowed.
 R22 Harmful if swallowed.
 R23/25 Toxic by inhalation and if swallowed.
 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)
 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
 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

(Contd. on page 19)

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.1B)

(Contd. of page 18)

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 - AcuteHazard, 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

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

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

- **1.1 Product identifier**
- **Trade name:** Detonators, Electric (Class 1.4B)
- **Article number:** 1076
- **Other product identifiers:**
ELECTRIC SUPER™ COAL
ELECTRIC SUPER™ LP
ELECTRIC SUPER™ SP
ELECTRIC SUPER™ STARTER
ELECTRIC INSTANT
- **1.2 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
- **1.3 Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
Dyno Nobel Inc.
2795 East Cottonwood Parkway, Suite 500
Salt Lake City, Utah 84121
Phone: 801-364-4800
Fax: 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com
- **1.4 Emergency telephone number:**
CHEMTREC
1-800-424-9300 (US/Canada)
+01 703-527-3887 (International)

SECTION 2: Hazards identification

- **2.1 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.
 - **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.

(Contd. on page 2)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 1)

- **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

- **2.2 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:**

pentaerythritol tetranitrate (PETN)

diazodinitro phenol (DDNP)

Nitrocellulose, colloided, granular

lead diazide

- **Hazard statements**

H204 Fire or projection hazard.

- **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:**

F - Dangerously reactive material

Explosive products are not classified under WHMIS.

(Contd. on page 3)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: **Detonators, Electric (Class 1.4B)**

(Contd. of page 2)



- **NFPA ratings (scale 0 - 4)** Not available.
- **HMIS-ratings (scale 0 - 4)**
Warning: Contains lead salt(s). Long-term health hazard.
Not available

- **HMIS Long Term Health Hazard Substances**

13424-46-9	lead diazide
7758-97-6	lead chromate
13463-67-7	titanium dioxide
7778-74-7	potassium perchlorate

- **2.3 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

- **3.2 Mixtures**
- **Description:** Mixture of substances listed below with nonhazardous additions.

- **Dangerous components:**

CAS: 78-11-5	pentaerythritol tetranitrate (PETN)
EINECS: 201-084-3	 E R3
Index number: 603-035-00-5	 Unst. Expl., H200

(Contd. on page 4)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: **Detonators, Electric (Class 1.4B)**

(Contd. of page 3)

CAS: 4682-03-5	<p>diazodinitro phenol (DDNP)</p> <p> Xi R36/38; Xi R43; E R3</p> <p> Unst. Expl., H200</p> <p> Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317</p>
CAS: 9004-70-0 EC number: 603-037-0	<p>Nitrocellulose, colloided, granular</p> <p> E R3</p> <p> Expl. 1.1, H201</p>
CAS: 13424-46-9 EINECS: 236-542-1 Index number: 082-003-00-7	<p>lead diazide</p> <p> T Repr. Cat. 1, 3 R61; Xn R62-20/22; E R3; N R50/53 R33</p> <p> Unst. Expl., H200</p> <p> Carc. 1B, H350; Repr. 1A, H360Df; STOT RE 2, H373</p> <p> Aquatic Acute 1, H400; Aquatic Chronic 1, H410</p> <p> Acute Tox. 4, H302; Acute Tox. 4, H332</p>
CAS: 7440-33-7 EINECS: 231-143-9	<p>tungsten</p> <p>substance with a Community workplace exposure limit</p>
CAS: 10294-40-3 EINECS: 233-660-5 Index number: 056-002-00-7	<p>barium chromate</p> <p> Xn R20/22</p> <p> Carc. 1A, H350</p> <p> Acute Tox. 4, H302; Acute Tox. 4, H332</p>
CAS: 7440-36-0 EINECS: 231-146-5	<p>antimony</p> <p>substance with a Community workplace exposure limit</p>
CAS: 7440-21-3 EINECS: 231-130-8	<p>silicon</p> <p> F R11</p> <p> Flam. Sol. 2, H228</p>
CAS: 1314-41-6 EINECS: 215-235-6 Index number: 082-001-00-6	<p>orange lead</p> <p> 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</p> <p> Aquatic Acute 1, H400; Aquatic Chronic 1, H410</p> <p> Acute Tox. 4, H302; Acute Tox. 4, H332</p>
CAS: 7439-92-1 EINECS: 231-100-4	<p>lead</p> <p> T Repr. Cat. 1 R60-61-48/23/25; N R50/53</p> <p> Repr. 1A, H360FD; STOT RE 1, H372</p> <p> Aquatic Acute 1, H400; Aquatic Chronic 1, H410</p>
CAS: 7758-97-6 EINECS: 231-846-0 Index number: 082-004-00-2	<p>lead chromate</p> <p> T Carc. Cat. 2, Repr. Cat. 1, 3 R45-61; Xn R62; N R50/53 R33</p> <p> Carc. 1B, H350; Repr. 1A, H360Df; STOT RE 2, H373</p> <p> Aquatic Acute 1, H400; Aquatic Chronic 1, H410</p>

(Contd. on page 5)

Safety Data Sheet








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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 4)

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
CAS: 13463-67-7 EINECS: 236-675-5	titanium dioxide substance with a Community workplace exposure limit
CAS: 7727-43-7 EINECS: 231-784-4	barium sulphate, natural substance with a Community workplace exposure limit
CAS: 7440-42-8 EINECS: 231-151-2	boron
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

· SVHC

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

· 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

- **4.1 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:** Do not induce vomiting; call for medical help immediately.
- **4.2 Most important symptoms and effects, both acute and delayed** Blast injury if mishandled.
- **Hazards** Danger of blast or crush-type injuries.

(Contd. on page 6)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 5)

· **4.3 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

· **5.1 Extinguishing media**

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

· **For safety reasons unsuitable extinguishing agents:** None.

· **5.2 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.

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

· **5.3 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

· **6.1 Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation

Wear protective clothing.

Protect from heat.

Evacuate area.

Isolate area and prevent access.

· **6.2 Environmental precautions:** No special measures required.

· **6.3 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.

· **6.4 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.

(Contd. on page 7)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 6)

SECTION 7: Handling and storage

7.1 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.

7.2 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.

7.3 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.

8.1 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

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

(Contd. on page 8)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 7)

EL (Canada)	Long-term value: 0,01 mg/m ³ as Cr; ACGIH A1 IARC 1
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
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
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
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.
7440-21-3 silicon	
PEL (USA)	Long-term value: 15* 5** mg/m ³ *total dust **respirable fraction

(Contd. on page 9)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 8)

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
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)
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
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
7727-43-7 barium sulphate, natural	
PEL (USA)	Long-term value: 15* 5** mg/m ³ *total dust **respirable fraction

(Contd. on page 10)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 9)

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

- **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
-----------	--

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)

1314-41-6 orange lead

BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead
-----------	--

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

(Contd. on page 11)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 10)

- **8.2 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.

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 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:** Protective work 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

- **9.1 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.

(Contd. on page 12)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 11)

- **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.
- **9.2 Other information:** No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity**
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- **10.3 Possibility of hazardous reactions**
Danger of explosion.
Toxic fumes may be released if heated above the decomposition point.
- **10.4 Conditions to avoid:** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Hydrocarbons
Leadoxide vapour
Nitrogen oxides
Chlorine compounds
Danger of forming toxic pyrolysis products.

(Contd. on page 13)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

Toxic metal oxide smoke

(Contd. of page 12)

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

LD/LC50 values relevant for classification:

7758-97-6 lead chromate

Oral	LD50	12000 mg/kg (mouse)
------	------	---------------------

7782-49-2 selenium

Oral	LD50	6700 mg/kg (rat)
------	------	------------------

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:** No further relevant information available.

SECTION 12: Ecological information

12.1 Toxicity

• **Aquatic toxicity:** Toxic for aquatic organisms

• **12.2 Persistence and degradability** No further relevant information available.

• **12.3 Bioaccumulative potential** May be accumulated in organism

• **12.4 Mobility in soil** No further relevant information available.

Ecotoxicological effects:

• **Remark:** Very toxic for fish

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

Very toxic for aquatic organisms

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

12.5 Results of PBT and vPvB assessment

• **PBT:** Not applicable.

• **vPvB:** Not applicable.

(Contd. on page 14)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

· **12.6 Other adverse effects** No further relevant information available.

(Contd. of page 13)

SECTION 13: Disposal considerations

· **13.1 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

· **14.1 UN-Number**

· DOT, ADR, IMDG, IATA

UN0255

· **14.2 UN proper shipping name**

· DOT, IMDG, IATA

DETONATORS, ELECTRIC

· ADR

0255 DETONATORS, ELECTRIC

· **14.3 Transport hazard class(es)**

· DOT



· Class

1.4

· Label

1.4

· **ADR, IMDG, IATA**



· Class

1.4

· Label

1.4B

· **14.4 Packing group**

· DOT, ADR, IMDG, IATA

II

· **14.5 Environmental hazards:**

· **Marine pollutant:**

No

(Contd. on page 15)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 14)

- **Special marking (IATA):** Prohibited from Transport in Passenger Aircraft.



Cargo Aircraft Only.

- **14.6 Special precautions for user:** Not applicable.
- **EMS Number:** F-B,S-X
- **Segregation groups:** Lead and its compounds
- **14.7 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: 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
- **UN "Model Regulation":** UN0255, DETONATORS, ELECTRIC, 1.4B, II

SECTION 15: Regulatory information

- **15.1 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
10294-40-3	barium chromate
7440-36-0	antimony
7758-97-6	lead chromate
1314-41-6	orange lead
7782-49-2	selenium
7727-43-7	barium sulphate, natural

- **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

- **Proposition 65 (California):**

- **Chemicals known to cause cancer:**

13424-46-9 | lead diazide

(Contd. on page 16)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 15)

10294-40-3	barium chromate
7758-97-6	lead chromate
1314-41-6	orange lead
13463-67-7	titanium dioxide

· **Chemicals known to cause reproductive toxicity for females:**

10294-40-3	barium chromate
7758-97-6	lead chromate

· **Chemicals known to cause reproductive toxicity for males:**

10294-40-3	barium chromate
7758-97-6	lead chromate

· **Chemicals known to cause developmental toxicity:**

13424-46-9	lead diazide
10294-40-3	barium chromate
7758-97-6	lead chromate

· **Carcinogenic Categories**

· **EPA (Environmental Protection Agency)**

13424-46-9	lead diazide	B2
10294-40-3	barium chromate	A(inh), D(oral), K/L(inh), CBD(oral)
7758-97-6	lead chromate	K
1314-41-6	orange lead	B2
7782-49-2	selenium	D
7727-43-7	barium sulphate, natural	D, CBD(inh), NL(oral)
7440-42-8	boron	I (oral)
7778-74-7	potassium perchlorate	NL

· **IARC (International Agency for Research on Cancer)**

13424-46-9	lead diazide	2A
10294-40-3	barium chromate	1
7758-97-6	lead chromate	1
1314-41-6	orange lead	2A
7782-49-2	selenium	3
13463-67-7	titanium dioxide	2B

· **TLV (Threshold Limit Value established by ACGIH)**

13424-46-9	lead diazide	A3
10294-40-3	barium chromate	A1
7758-97-6	lead chromate	A2
1314-41-6	orange lead	A3
13463-67-7	titanium dioxide	A4

(Contd. on page 17)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 16)

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

10294-40-3	barium chromate
------------	-----------------

7758-97-6	lead chromate
-----------	---------------

13463-67-7	titanium dioxide
------------	------------------

· **Canada**

· **Canadian Domestic Substances List (DSL)**

Some components are listed on the NDSL.

All ingredients are listed.

· **Canadian Ingredient Disclosure list (limit 0.1%)**

10294-40-3	barium chromate
------------	-----------------

7758-97-6	lead chromate
-----------	---------------

7782-49-2	selenium
-----------	----------

· **Canadian Ingredient Disclosure list (limit 1%)**

7440-36-0	antimony
-----------	----------

7440-33-7	tungsten
-----------	----------

· **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
------------	--------------

7758-97-6	lead chromate
-----------	---------------

1314-41-6	orange lead
-----------	-------------

· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

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 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.

· **Relevant phrases**

H200 Unstable explosives.

H201 Explosive; mass explosion hazard.

H228 Flammable solid.

(Contd. on page 18)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 17)

- H271 May cause fire or explosion; strong oxidiser.
 H301 Toxic if swallowed.
 H302 Harmful if swallowed.
 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.
 R20/22 Harmful by inhalation and if swallowed.
 R22 Harmful if swallowed.
 R23/25 Toxic by inhalation and if swallowed.
 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)
 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

(Contd. on page 19)

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4B)

(Contd. of page 18)

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
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

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

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

- **1.1 Product identifier**
- **Trade name:** Detonators, Electric (Class 1.4S)
- **Article number:** 1076
- **Other product identifiers:**
ELECTRIC SUPER™ COAL
ELECTRIC SUPER™ LP
ELECTRIC SUPER™ SP
ELECTRIC SUPER™ STARTER
ELECTRIC INSTANT
- **1.2 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
- **1.3 Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
Dyno Nobel Inc.
2795 East Cottonwood Parkway, Suite 500
Salt Lake City, Utah 84121
Phone: 801-364-4800
Fax: 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com
- **1.4 Emergency telephone number:**
CHEMTREC
1-800-424-9300 (US/Canada)
+01 703-527-3887 (International)

SECTION 2: Hazards identification

- **2.1 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.
 - **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.

(Contd. on page 2)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 1)

- **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

- **2.2 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 statements**

H204 Fire or projection hazard.

- **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.

EUH209 Can become highly flammable in use.

- **Hazard description:**

- **WHMIS-symbols:** Explosive products are not classified under WHMIS.

- **NFPA ratings (scale 0 - 4)** Not available.

- **HMIS-ratings (scale 0 - 4)**

Warning: Contains lead salt(s). Long-term health hazard.

Not available

- **HMIS Long Term Health Hazard Substances**

13424-46-9	lead diazide
7758-97-6	lead chromate

(Contd. on page 3)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 2)

13463-67-7	titanium dioxide
7778-74-7	potassium perchlorate

- **2.3 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

- **3.2 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: 15245-44-0 EINECS: 239-290-0 Index number: 609-019-00-4	lead 2,4,6-trinitro-m-phenylene dioxide  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

(Contd. on page 4)

Safety Data Sheet






























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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: **Detonators, Electric (Class 1.4S)**

(Contd. of page 3)

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: 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: 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: 7440-36-0 EINECS: 231-146-5	antimony
CAS: 7440-21-3 EINECS: 231-130-8	silicon  F R11  Flam. Sol. 2, H228
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
CAS: 13463-67-7 EINECS: 236-675-5	titanium dioxide
CAS: 7727-43-7 EINECS: 231-784-4	barium sulphate, natural substance with a Community workplace exposure limit
CAS: 7440-42-8 EINECS: 231-151-2	boron
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: 9004-70-0 EC number: 603-037-0	Nitrocellulose, colloided, granular  E R3  Exp. 1.1, H201
CAS: 7440-33-7 EINECS: 231-143-9	tungsten substance with a Community workplace exposure limit

(Contd. on page 5)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 4)

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: 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: 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

· SVHC

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

· 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

· 4.1 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:** Do not induce vomiting; call for medical help immediately.

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

· **Hazards** Danger of blast or crush-type injuries.

· 4.3 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.

(Contd. on page 6)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 5)

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:** DO NOT fight fire when fire reaches explosives.
- **For safety reasons unsuitable extinguishing agents:** None.
- **5.2 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. Product may explode if burned in confined space. Individual cartridges may explode. Mass explosion of many cartridges at once is unlikely.
- **5.3 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

- **6.1 Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation
Wear protective clothing.
Protect from heat.
Evacuate area.
Isolate area and prevent access.
- **6.2 Environmental precautions:** No special measures required.
- **6.3 Methods and material for containment and cleaning up:**
Send for recovery or disposal in suitable receptacles.
Dispose unusable material as waste according to item 13.
- **6.4 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

- **7.1 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.

(Contd. on page 7)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 6)

- **Information about fire - and explosion protection:**
Protect from heat.
Emergency cooling must be available in case of nearby fire.
- **7.2 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.
- **7.3 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.
- **8.1 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

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

(Contd. on page 8)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 7)

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
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.)

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

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)

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

(Contd. on page 9)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 8)

EL (Canada)	Long-term value: 0,1 mg/m ³
EV (Canada)	Long-term value: 0,2 mg/m ³
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

- **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

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)

1314-41-6 orange lead

BEI (USA) 30 µg/100 ml
Medium: blood
Time: not critical
Parameter: Lead

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

· **8.2 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.
Wash hands before breaks and at the end of work.

(Contd. on page 10)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 9)

- **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:** Protective work 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

- **9.1 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.

(Contd. on page 11)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 10)

- **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.
- **9.2 Other information:** No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity**
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- **10.3 Possibility of hazardous reactions**
Danger of explosion.
Toxic fumes may be released if heated above the decomposition point.
- **10.4 Conditions to avoid:** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Hydrocarbons
Leadoxide vapour
Nitrogen oxides
Chlorine compounds
Danger of forming toxic pyrolysis products.
Toxic metal oxide smoke

(Contd. on page 12)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 11)

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

LD/LC50 values relevant for classification:

7758-97-6 lead chromate

Oral	LD50	12000 mg/kg (mouse)
------	------	---------------------

7782-49-2 selenium

Oral	LD50	6700 mg/kg (rat)
------	------	------------------

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: No further relevant information available.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity: Toxic for aquatic organisms

12.2 Persistence and degradability No further relevant information available.

12.3 Bioaccumulative potential May be accumulated in organism

12.4 Mobility in soil No further relevant information available.

Ecotoxicological effects:

Remark: Very toxic for fish

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

Very toxic for aquatic organisms

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

12.5 Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

12.6 Other adverse effects No further relevant information available.

(Contd. on page 13)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 12)

SECTION 13: Disposal considerations

13.1 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

14.1 UN-Number

- DOT, ADR, IMDG, IATA UN0456

14.2 UN proper shipping name

- DOT, IMDG, IATA DETONATORS, ELECTRIC
- ADR 0456 DETONATORS, ELECTRIC

14.3 Transport hazard class(es)

DOT



- Class 1.4
- Label 1.4

ADR, IMDG, IATA



- Class 1.4
- Label 1.4S
- 14.4 Packing group
- DOT, ADR, IMDG, IATA II
- 14.5 Environmental hazards:
- Marine pollutant: No
- 14.6 Special precautions for user Not applicable.
- EMS Number: F-A,S-Q
- 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

(Contd. on page 14)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 13)

· **Transport/Additional information:**

- **ADR**
- Limited quantities (LQ) 0
 - Excepted quantities (EQ) Code: E0
Not permitted as Excepted Quantity
- **Tunnel restriction code** E (2)

· **IMDG**

- Limited quantities (LQ) 0
 - Excepted quantities (EQ) Code: E0
Not permitted as Excepted Quantity
- **UN "Model Regulation":** UN0456, DETONATORS, ELECTRIC, 1.4S, II

SECTION 15: Regulatory information

- **15.1 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
10294-40-3	barium chromate
7440-36-0	antimony
7758-97-6	lead chromate
1314-41-6	orange lead
7782-49-2	selenium
7727-43-7	barium sulphate, natural

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **Proposition 65 (California):**

· **Chemicals known to cause cancer:**

13424-46-9	lead diazide
10294-40-3	barium chromate
7758-97-6	lead chromate
1314-41-6	orange lead
13463-67-7	titanium dioxide

· **Chemicals known to cause reproductive toxicity for females:**

10294-40-3	barium chromate
7758-97-6	lead chromate

(Contd. on page 15)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 14)

· **Chemicals known to cause reproductive toxicity for males:**

10294-40-3	barium chromate
7758-97-6	lead chromate

· **Chemicals known to cause developmental toxicity:**

13424-46-9	lead diazide
10294-40-3	barium chromate
7758-97-6	lead chromate

· **Carcinogenic Categories**

· **EPA (Environmental Protection Agency)**

13424-46-9	lead diazide	B2
10294-40-3	barium chromate	A(inh), D(oral), K/L(inh), CBD(oral)
7758-97-6	lead chromate	K
1314-41-6	orange lead	B2
7782-49-2	selenium	D
7727-43-7	barium sulphate, natural	D, CBD(inh), NL(oral)
7440-42-8	boron	I (oral)
7778-74-7	potassium perchlorate	NL

· **IARC (International Agency for Research on Cancer)**

13424-46-9	lead diazide	2A
10294-40-3	barium chromate	1
7758-97-6	lead chromate	1
1314-41-6	orange lead	2A
7782-49-2	selenium	3
13463-67-7	titanium dioxide	2B

· **TLV (Threshold Limit Value established by ACGIH)**

13424-46-9	lead diazide	A3
10294-40-3	barium chromate	A1
7758-97-6	lead chromate	A2
1314-41-6	orange lead	A3
13463-67-7	titanium dioxide	A4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

10294-40-3	barium chromate
7758-97-6	lead chromate
13463-67-7	titanium dioxide

Not hazardous under WHMIS.

· **Canada**

· **Canadian Domestic Substances List (DSL)**

Some components are listed on the NDSL.

All ingredients are listed.

(Contd. on page 16)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 15)

· **Canadian Ingredient Disclosure list (limit 0.1%)**

10294-40-3	barium chromate
7758-97-6	lead chromate
7782-49-2	selenium

· **Canadian Ingredient Disclosure list (limit 1%)**

7440-36-0	antimony
7440-33-7	tungsten

· **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
7758-97-6	lead chromate
1314-41-6	orange lead

· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

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 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.

· **Relevant phrases**

H200	Unstable explosives.
H201	Explosive; mass explosion hazard.
H228	Flammable solid.
H271	May cause fire or explosion; strong oxidiser.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
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.

(Contd. on page 17)

Safety Data Sheet

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

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 16)

- 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.
 R20/22 Harmful by inhalation and if swallowed.
 R22 Harmful if swallowed.
 R23/25 Toxic by inhalation and if swallowed.
 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)
 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
 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

(Contd. on page 18)

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 22.05.2015

Revision: 22.05.2015

Trade name: Detonators, Electric (Class 1.4S)

(Contd. of page 17)

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 - AcuteHazard, 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