

# Safety Data Sheet

according to regulation 453/2010/EU amending 1907/2006/EC

## Exel™ (1.1B, 1.4B, 1.4S)

SDS No. : 3016  
Issue : 03.0  
Date of revising : 2013-08-20

The Power  
of Partnership

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

#### 1.1. Product identifier

|               |  |
|---------------|--|
| Trade name(s) | <b>Exel™ MS</b><br><b>Exel™ LP</b><br><b>Exel™ U Det</b> |
|---------------|--|

#### Other means of identification

|             |                |
|-------------|----------------|
| Other names | Not applicable |
|-------------|----------------|

|               |                |
|---------------|----------------|
| Chemical name | Not applicable |
|---------------|----------------|

|   |                |
|---|----------------|
| INDEX number as listed in Annex VI of CLP | Not applicable |
|---|----------------|

|                                |                |
|--------------------------------|----------------|
| ID number of the C&L inventory | Not applicable |
|--------------------------------|----------------|

|            |                |
|------------|----------------|
| CAS number | Not applicable |
|------------|----------------|

|                          |                |
|--------------------------|----------------|
| REACH registration no(s) | Not applicable |
|--------------------------|----------------|

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

|                   |   |
|-------------------|---|
| Identified Use(s) | SU 2a - Mining, (without offshore industries) |
|-------------------|---|

|                        |  |
|------------------------|--|
| Use(s) advised against | Usage of the product only according to existing laws and official permissions. |
|------------------------|--|

|                                    |   |
|------------------------------------|---|
| Function(s) of substance / mixture | Detonators will directly initiate cap sensitive boosters and packaged explosives. |
|------------------------------------|---|

#### 1.3. Details of the supplier of the safety data sheet

|          |   |
|----------|---|
| Supplier | <b>Orica UK Limited</b><br>North Quarry Business Park<br>Skull House Lane<br>Appley Bridge<br>Wigan WN6 9DL<br>United Kingdom |
|----------|---|

|                     |   |
|---------------------|---|
| Phone / Fax / Email | +44 (0) 1257 256 100 / +44 (0) 1257 255 670 / andy.rossiter@orica.com |
|---------------------|---|



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Technical support +44 (0) 1257 256 100

Contact to the responsible person for safety data sheet sds.emea@orica.com

### 1.4. Emergency telephone number

Emergency phone number For medical advice call: +49 (0) 551 19240  
(GIZ-Nord, Göttingen, Germany)  
(Member of EPECS network)  
For chemical emergencies (spill, leak, fire, exposure or accident), call:  
+44 (0) 1928 572000

## SECTION 2: Hazards identification

Unpackaged detonators are defined as: H201 - Explosive, mass explosion hazard.  
Risk of explosion by shock, friction, fire or other sources of ignition.  
Shrapnel from detonation may cause burns and wounds.

### 2.1 Classification of the substance or mixture

The mixture is classified as dangerous within the meaning of Regulation (EC) No 1272/2008.  
The preparation is classified as dangerous according to Directive 1999/45/EC.

#### Classification in accordance with Regulation (EC) No. 1272/2008

| Hazard class / category | Hazard statement(s) | Classification method | Additional Information |
|-------------------------|---------------------|-----------------------|------------------------|
| Expl. 1.1               | H201                | UN RTDG               | CLP - figure 2.1.3     |

This classification describes UNPACKED detonators. The transport classification can differ depending on the approved packaging.

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

#### Classification in accordance with Directive 67/548/EEC or Directive 1999/45/EC

| Properties or classification letter | R phrases  |
|-------------------------------------|--|
| E                                   | R2<br>Risk of explosion by shock, friction, fire or other sources of ignition. |

No additional information



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### 2.2. Label elements

Labelling in accordance with Regulation (EC) No. 1272/2008

Product identifier

**Exel™ MS**  
**Exel™ LP**  
**Exel™ U Det**

Index or C&L number

Not applicable

Hazardous component(s)

Lead(II,IV)oxide, Index No.: 082-001-00-6  
P.E.T.N., Index No.: 603-035-00-5  
Hexogen, EC No.: 204-500-1

Authorization number

Not applicable

Hazard pictogram(s)



Signal word

Danger

Hazard statement(s)

H201 Explosive, mass explosion hazard.

Precautionary statement(s)

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P250 Do not subject to grinding / shock / ... / friction.  
P280 Wear protective gloves / protective clothing / eye protection / face protection.  
P370+P380 In case of fire: Evacuate area.  
P372 Explosion risk in case of fire.  
P373 DO NOT fight fire when fire reaches explosives.

Additional Information (EU)

-

Additional Labelling

-

Note

By using special approved packaging a reduction of a explosive hazard is possible (Signal word: Warning; Hazard statement: H204 - Fire or projection hazard.).

Use of special provisions according to 1272/2008/EC art. 23e.

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Labelling in accordance with Directive 67/548/EEC or Directive 1999/45/EC

Hazard symbol(s)



Identification of danger

Explosive

R phrases

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

S phrases

S15 Keep away from heat.  
S16 Keep away from sources of ignition - No smoking.  
S20/21 When using do not eat, drink or smoke.  
S33 Take precautionary measures against static discharges.  
S36/37/39 Wear suitable protective clothing, gloves and eye / face protection.

Note

Use of special provisions according to 67/548/EEC art. 25(1) and 1999/45/EC art. 12(1).

### 2.3. Other hazards

Results of PBT and vPvB assessment

No assessment established up to now.

Other hazards

During use of article, a release of lead containing reaction products occurs.  
Stythe is heavier than air and may accumulate below ground level, in pits, channels and basements in higher concentration.  
All chemicals are potentially dangerous; they should only be handled by properly trained personnel with the necessary care.

### Additional Information

Specific concentration limits

Lead(II,IV)oxide, Index No.: 082-001-00-6

|          |        |              |
|----------|--------|--------------|
| C ≥2.5 % | H361f  | Repr. 1B     |
|          | R62    | Repr. Cat. 3 |
| C ≥1.0 % | R20/22 | Xn           |
| C ≥0.5 % | H373   | STOT RE 2    |
|          | R33    |              |

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### SECTION 3: Composition / information on ingredients

Because of the sealed assembly of the detonator, no contact to the ingredients is to be expected under normal use.  
The assembly containing an explosive charged shock tube and a detonator.

#### 3.1. Substances

Not applicable

| Substance | Registration No.<br><i>Index or C&amp;L number</i> | EC No.<br><i>CAS No.</i> | Classification (1272/2008/EC)<br><i>Classification (67/548/EEC)</i> | Content<br>(w/w) |
|-----------|--|--------------------------|---|------------------|
| -         | -  | -                        | -   | -                |

-

#### 3.2. Mixtures

| Substance        | Registration No.<br><i>Index or C&amp;L number</i> | EC No.<br><i>CAS No.</i>          | Classification (1272/2008/EC)<br><i>Classification (67/548/EEC)</i>          | Content<br>(w/w) |
|------------------|--|-----------------------------------|--|------------------|
| Lead(II,IV)oxide | Not applicable<br><br><i>082-001-00-6</i>          | 215-235-6<br><br><i>1314-41-6</i> | H360Df, H332, H302, H373,<br>H400, H410<br><br><i>R 61-20/22-33-50/53-62</i> | 0-12<br>(1.5)    |
| P.E.T.N.         | Not applicable<br><br><i>603-035-00-5</i>          | 201-084-3<br><br><i>78-11-5</i>   | H200<br><br><i>R 3</i>   | 0-11<br>(6.0)    |
| Hexogen          | Not applicable<br><br><i>Not applicable</i>        | 204-500-1<br><br><i>121-82-4</i>  | H201, H301, H315, H319<br><br><i>R 2-25-36-38</i>                            | 0-10<br>(6.5)    |

The percentages of the ingredients relate only to the detonator (in brackets: Average value).

The shock tube contains no substances presenting a health or environmental hazard within the meaning of Directive 67/548/EEC and substances presenting a health or environmental hazard within the meaning of Regulation (EC) No 1272/2008.

#### Comments

-

#### Additional information

Wording of R phrases and hazard statements (H, EUH): see section 16.



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### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

##### General advice

- Remove affected person from the danger area and lay down.
- Do not leave affected person unattended.
- When in doubt or if symptoms are observed, get medical advice.
- If unconscious place in recovery position and seek medical advice.

##### In case of eye contact

- In case of eye irritation consult an ophthalmologist.
- Shrapnel from detonation may cause great damage, immediately consult an ophthalmologist.

##### In case of skin contact

- In case of skin irritation, consult a physician.
- Shrapnel from detonation may cause burns and wounds, possibly blood poisoning, consult a physician.

##### If swallowed

- Rinse mouth.
- Consult a physician.

##### If inhaled

- In case of inhalation of decomposition products, affected person should be moved into fresh air and kept still.
- Get medical attention if any discomfort continues.
- In case of respiratory tract irritation, consult a physician.
- If breathing is irregular or stopped, administer artificial respiration.
- Apply cortisone spray at early stage.
- Symptoms may develop several hours following exposure medical observation therefore necessary for at least 48 hours.

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

##### Acute symptoms / effects

Shrapnel from detonation may cause burns and wounds.

##### Delayed symptoms / effects

If decomposition products are inhaled the following symptoms can occur:

- Pulmonary oedema

##### Self-protection for first-aider

First aider: Pay attention to self-protection!

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

-



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### SECTION 5: Fire fighting measures

Product is an explosive.  
Keep unauthorised persons away.  
Warn neighbourhood announcing risk of explosion.

#### 5.1. Extinguishing media

Suitable extinguishing media No fire-fighting attempts, risk of explosion.

Unsuitable extinguishing media Not applicable

#### 5.2. Special hazards arising from the substance or mixture

Product is an explosive.

Possible combustion gases or vapours

In case of fire may be liberated:

- Nitrogen oxides (NO<sub>x</sub>)
- Carbon monoxide (CO)
- Carbon dioxide (CO<sub>2</sub>)
- Lead containing reaction products

#### 5.3. Advice for firefighters

Special protective equipment for fire fighting

In case of fire: Wear self-contained breathing apparatus.

Measures in case of adjacent fire (Fire has not yet reached product)

Co-ordinate fire-fighting measures to the fire surroundings.  
Use water spray jet to protect personnel and to cool endangered containers.  
Move undamaged containers from immediate hazard area if it can be done safely.

Measures in case of product fire (Fire has just reached the product or is about to reach it)

No fire-fighting attempts, risk of explosion.  
Immediately evacuate danger zone and seek safe cover.

Additional Information

Restrict the number of action force members in the hazard area.  
Do not inhale explosion and combustion gases.  
Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

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### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

|                             |   |
|-----------------------------|---|
| For non-emergency personnel | Avoid substance contact.<br>Do not handle unprotected.<br>Respect emergency plans.<br>Evacuate danger area and notify supervisor.<br>Ask for support by competent person. |
|-----------------------------|---|

|                          |  |
|--------------------------|--|
| For emergency responders | Close off hazard area.<br>Ask for support by competent person. |
|--------------------------|--|

#### 6.2. Environmental precautions

Due to the consistency and product packaging spillage of ingredients is not likely.  
No special environmental measures are necessary.

#### 6.3. Methods and material for containment and cleaning up

|  |   |
|--|---|
| Notes on prevention of the spread of spilled materials | Due to the consistency and product packaging spillage of ingredients is not likely. |
|--|---|

|  |   |
|--|---|
| Instructions for cleaning after spillage | Due to the consistency and product packaging spillage of ingredients is not likely. |
|--|---|

|                        |                                 |
|------------------------|---------------------------------|
| Additional Information | When in doubt contact supplier. |
|------------------------|---------------------------------|

#### 6.4. Reference to other sections

Note also section 7, 8, 10 and 13.



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### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

##### Technical measures / Precautions

Only to be handled by authorized persons.  
The explosives must be under supervision and unavailable for unauthorized persons.  
Operating temperature range from -40 °C to +70 °C (Exel™ LP).  
Operating temperature range from -45 °C to +70 °C (Exel™ MS).  
Operating temperature range from -45 °C to +70 °C (Exel™ U Det).  
Handle with care - avoid bumps, friction and impact.  
Keep away from sources of ignition - No smoking.  
Avoid damage to the shock tube.  
Never pull so hard as to stretch or break shock tubing, a premature initiation may result.  
Do not use the shock tube as a lowering line.  
The detonator is factory assembled into the connector block and no attempt should be made to disassemble it.

##### General occupation hygiene

Do not eat, drink or smoke when using this product.  
Contaminated work clothing should not be allowed out of the workplace.  
Wash hands before breaks and after work.

#### 7.2. Conditions for safe storage, including any incompatibilities

##### Technical measures / Storage conditions

Stacks of cases should be no more than 2 metres high.

##### Requirements for storage areas and containers

Store in original container if possible.

##### Common storage instruction

Storage of explosives and explosive articles should be agreed with national authorities.

##### Incompatible products

Respect restrictions according to national law.

##### Storage temperature

Store under cool conditions.

##### Relative humidity (%)

Store under dry conditions.

##### Stability in storage

Stable under normal storage conditions.

##### Quantitative restrictions

Maximum storage volume should be agreed with national authorities.



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### Maximum period of storage

Should be used within 3 months after opening the inner bags.  
Batches of detonators more than 2 years old should not be used.

### Storage class

Explosive substances.

### 7.3. Specific end use(s)

Read instructions before use.

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

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

## SECTION 8: Exposure controls / personal protection

Because of the sealed assembly of detonators no contact with the ingredients is to be expected.

In case of broken / damaged detonators a contact with the ingredients can not be excluded.

### 8.1. Control parameters

#### Exposure limit values

| Components / CAS No.                              | Value                  | Limit   | Basis              | Comments                             |
|---|------------------------|---|--------------------|--------------------------------------|
| Lead and inorganic compounds (as Pb)<br>7439-92-1 | Long term<br>Long term | 0.15 mg/m <sup>3</sup> (inhalable aerosol)<br>0.15 mg/m <sup>3</sup>              | 98/24/EC<br>GESTIS | EU <sup>1)</sup><br>UK <sup>2)</sup> |
| Lead(II,IV)oxide<br>1314-41-6                     | -                      | See "Lead and inorganic compounds (as Pb)"  | -                  | -                                    |
| P.E.T.N.<br>78-11-5                               | -                      | Not established   | -                  | -                                    |
| Hexogen<br>121-82-4                               | -                      | Not established   | -                  | -                                    |
| Dust  | Long term<br>Long term | 10 mg/m <sup>3</sup> (inhalable dust)<br>4 mg/m <sup>3</sup> (respirable aerosol) | -<br>-             | UK<br>UK                             |

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|                                 |            |                                     |        |                  |
|---------------------------------|------------|-------------------------------------|--------|------------------|
| Carbon dioxide<br>124-38-9      | Long term  | 9000 mg/m <sup>3</sup> ; 5000 ppm   | GESTIS | EU <sup>3)</sup> |
|                                 | Long term  | 9150 mg/m <sup>3</sup> ; 5000 ppm   | GESTIS | UK               |
|                                 | Short term | 27400 mg/m <sup>3</sup> ; 15000 ppm | GESTIS | UK               |
| Carbon monoxide<br>630-08-0     | Long term  | 35 mg/m <sup>3</sup> ; 30 ppm       | GESTIS | UK               |
|                                 | Short term | 232 mg/m <sup>3</sup> ; 200 ppm     | GESTIS | UK               |
| Nitrogen dioxide<br>10102-44-0  | Long term  | 0.2 ppm                             | GESTIS | EU <sup>4)</sup> |
|                                 | Short term | 9.6 mg/m <sup>3</sup> ; 5 ppm       | GESTIS | UK               |
| Nitrogen monoxide<br>10102-43-9 | -          | Not established                     | -      | -                |

1) Binding Occupational Exposure Limit Value – BOELV

2) Control of Lead at Work Regulations (2002) apply.

3) Indicative Occupational Exposure Limit Values and Limit Values for Occupational Exposure.

4) Proposal, Indicative Occupational Exposure Limit Values

### Biological limit values

| Components / CAS No.                              | Value | Limit                                      | Specimen | Sampling time   |
|---|-------|--|----------|-----------------|
| Lead and inorganic compounds (as Pb)<br>7439-92-1 | Lead  | 70 µg/100 mL (EU)                          | Blood    | No restrictions |
| Lead(II,IV)oxide<br>1314-41-6                     | -     | See "Lead and inorganic compounds (as Pb)" | -        | -               |
| P.E.T.N.<br>78-11-5                               | -     | Not established                            | -        | -               |
| Hexogen<br>121-82-4                               | -     | Not established                            | -        | -               |
| Carbon dioxide<br>124-38-9                        | -     | Not established                            | -        | -               |

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|                                 |   |                 |   |   |
|---------------------------------|---|-----------------|---|---|
| Carbon monoxide<br>630-08-0     | - | Not established | - | - |
| Nitrogen dioxide<br>10102-44-0  | - | Not established | - | - |
| Nitrogen monoxide<br>10102-43-9 | - | Not established | - | - |
| -                               |   |                 |   |   |

### Recommended monitoring methods

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

### Additional exposure limits under processing conditions

| Route of exposure | Exposure frequency           | DNEL                    | Critical component | Comments |
|-------------------|------------------------------|-------------------------|--------------------|----------|
| Inhalation        | Long term - systemic effects | 220.4 mg/m <sup>3</sup> | P.E.T.N.           | Workers  |

### PNEC:

Lead: Fresh water: 6.5 µg/L, Marine water: 3.4 µg/L, STP: 100 µg/L, Sediment (fresh water): 174 mg/kg dw, Sediment (marine water): 164 mg/kg dw, Soil: 147 mg/kg soil dw, Oral: 10.9 mg/kg food

Lead(II,IV)oxide: Fresh water: 6.5 µg/L, Marine water: 3.4 µg/L, STP: 100 µg/L, Sediment (fresh water): 174 mg/kg dw, Sediment (marine water): 164 mg/kg dw, Soil: 147 mg/kg soil dw, Oral: 10.9 mg/kg food

P.E.T.N.: Fresh water: 0.3 mg/L

## 8.2. Exposure controls

### Limitation and monitoring of occupational exposure

#### Product related measures to prevent exposure

Keep cases closed and store in a cool, well ventilated place.  
Avoid damage of the article.

#### Instructive measures to prevent exposure

Do not eat, drink or smoke when using this product.  
Wash hands before breaks and after work.  
Use skin care measures in accordance with professional association's rules.  
When working with substances minimum standards for protective measures in accordance with professional association's rules should be respected.

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### Organizational measures to prevent exposure

Minimize the time spent in the danger zone.

Reduce staff in the danger zone to the required level.

Separate storage facilities for street and work clothes should be available when a risk is to be expected from contamination of work clothes.

### Technical measures to prevent exposure

See section 7. No additional measures necessary.

### Individual protection measures, such as personal protective equipment

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

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

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

Professional association's rules should be respected.

### Eye / face protection

Suitable eye protection: Eye glasses with side protection

DIN-/EN-Norm: DIN EN 166

### Hand protection

Suitable gloves type: Half-gloves

Suitable material: NBR (Nitrile rubber)

DIN-/EN-Norm: DIN EN 388

### Skin protection

Work clothes made from cotton meets the requirements.

Choice and design of the work clothes to be used depends on the results of the risk assessment for the specific working environment.

It is necessary to consider the following needs of protection:

- Protection against heat and open fire (clothing must not melt and not be flammable);
- Protection against contact with chemicals (the fabric shall not absorb particles of explosives as this would make the fabric more flammable);
- Protection from electrostatic charging;
- Protective clothing used to protect against further hazards (reflective clothing, weather proof clothing) must comply with the above requirements.

### Respiratory protection

No personal respiratory protective equipment normally required.

Respiratory protection necessary at: insufficient ventilation

Suitable respiratory protection apparatus: Particle filter device (DIN EN 143)  
Type P2/P3

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### Hygiene measures

Do not eat, drink or smoke when using this product.  
Wash hands before breaks and after work.

### Thermal hazards

No thermal hazard is to be expected.

### Environmental exposure controls

#### Product related measures to prevent exposure

Not applicable, because of the sealed assembly of the detonator.

#### Instructive measures to prevent exposure

Not applicable, because of the sealed assembly of the detonator.

#### Organizational measures to prevent exposure

Not applicable, because of the sealed assembly of the detonator.

#### Technical measures to prevent exposure

Not applicable, because of the sealed assembly of the detonator.

### Limitation and monitoring of Consumer exposure

#### Measures relating to the use of the substance (as such or in mixtures) by the consumer

Not applicable, the exposure of consumers is not to be expected.

#### Measures relating to the use of the substance in articles

Not applicable, the explosives inside of detonators are consumed during detonation.

## SECTION 9: Physical and chemical properties

Because of the complex assembly of the article information to most of the requested physical and chemical properties can't be given.

### 9.1. Information on basic physical and chemical properties

#### Appearance

Solid, complex assembly with shock tube and detonator.

#### Odour

Odourless

#### Odour threshold

Not applicable

#### pH

Not applicable

#### Melting point / freezing point

Not applicable

#### Initial boiling point and boiling range

Not applicable



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|  |                   |
|--|-------------------|
| Flash point                                    | No data available |
| Evaporation rate                               | Not applicable    |
| Flammability (solid, gas)                      | Not applicable    |
| Upper / lower flammability or explosive limits | Not applicable    |
| Vapour pressure                                | Not applicable    |
| Vapour density                                 | Not applicable    |
| Relative density                               | Not applicable    |
| Solubility(ies)                                | Not applicable    |
| Partition coefficient:<br>n-octanol / water    | Not applicable    |
| Auto-ignition temperature                      | No data available |
| Decomposition temperature                      | No data available |
| Viscosity                                      | Not applicable    |
| Explosive properties                           | Explosive         |
| Oxidising properties                           | Not applicable    |

### 9.2. Other information

Risk of explosion by shock, friction, fire or other sources of ignition (R2).  
See Technical Data Sheet for more information.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Risk of explosion by shock, friction, fire or other sources of ignition (R2).  
In case of impact or pressure influence:

- Danger of explosion
- Danger of bursting



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### 10.2. Chemical stability

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

### 10.3. Possibility of hazardous reactions

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

### 10.4. Conditions to avoid

Mechanical influences (e.g. shock, pressure, impact, friction).  
Fire, sparks or other ignition sources.  
Electrostatic discharges.

### 10.5. Incompatible materials

Contact to acids and bases.

### 10.6. Hazardous decomposition products

Lead containing reaction products.  
Nitrogen oxides (NO<sub>x</sub>), Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>)

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity of Lead and inorganic compounds (as Pb), CAS No. 7439-92-1

| Route of exposure | Value | Effective dose | Species | Basis | Comments |
|-------------------|-------|----------------|---------|-------|----------|
| -                 | -     | -              | -       | -     | -        |

No data available

Acute toxicity of P.E.T.N., CAS No. 78-11-5

| Route of exposure | Value            | Effective dose | Species | Basis         | Comments |
|-------------------|------------------|----------------|---------|---------------|----------|
| Oral              | LD <sub>50</sub> | 1660 mg/kg     | Rat     | <sup>1)</sup> | -        |

<sup>1)</sup> GESTIS-database





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Acute toxicity of Hexogen, CAS No. 121-82-4

| Route of exposure | Value            | Effective dose | Species | Basis         | Comments |
|-------------------|------------------|----------------|---------|---------------|----------|
| Oral              | LD <sub>50</sub> | 100 mg/kg      | Rat     | <sup>1)</sup> | -        |

<sup>1)</sup> GESTIS-database

Skin corrosion / irritation H 315 - Causes skin irritation.

Serious eye damage / eye irritation H319 - Causes serious eye irritation.

Respiratory or skin sensitization No data available

Repeated dose toxicity No data available

Germ cell mutagenicity No data available

Carcinogenicity No data available

Reproductive toxicity H360Df - May damage the unborn child. Suspected of damaging fertility.

STOT - single exposure The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure H373 - May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard No aspiration toxicity classification.

### Information on likely routes of exposure

Inhalation of lead fumes and dust.

### Mixture versus substance information

On the basis of the morphology of the product, no hazardous properties are to be expected when it is handled and used with appropriate care.

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### Other information

The following applies to lead compounds in general:

Due to the poor absorbability via the gastrointestinal tract, only very high doses lead to acute cases of intoxication. After a latency period of several hours, metallic taste, nausea, vomiting, and colic's occur, in many instances followed by shock. Chronic uptake causes peripheral muscular weakness ("drop-wrist"), anaemia, and central nervous disorders.

Women of child-bearing age should not be exposed to the substance over longer periods of time (observe critical threshold).

Further data:

Handle in accordance with good industrial hygiene and safety practice.

## SECTION 12: Ecological information

### 12.1. Toxicity

|   |   |
|---|---|
| Toxicity of   | Lead and inorganic compounds (as Pb), CAS No. 7439-92-1 |
| Acute fish toxicity   | LC <sub>50</sub> (96 h): 2.8 mg/L (median)              |
| Chronic fish toxicity                                       | No data available                                       |
| Acute toxicity to daphnia and other aquatic invertebrates   | EC <sub>50</sub> (48 h): 4.46 mg/L (median)             |
| Chronic toxicity to daphnia and other aquatic invertebrates | No data available                                       |
| Acute toxicity to algae                                     | No data available                                       |
| Chronic toxicity to algae                                   | No data available                                       |
| M-Factor  | Not applicable  |

### Further toxicological information

No data available

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|   |   |
|---|---|
| Toxicity of   | P.E.T.N., CAS No. 78-11-5                                 |
| Acute fish toxicity   | LC <sub>50</sub> (96 h): 27000 mg/L (Pimephales promelas) |
| Chronic fish toxicity                                       | No data available   |
| Acute toxicity to daphnia and other aquatic invertebrates   | LC <sub>50</sub> (48 h): 8500 mg/L (Daphnia magna)        |
| Chronic toxicity to daphnia and other aquatic invertebrates | No data available   |
| Acute toxicity to algae                                     | No data available   |
| Chronic toxicity to algae                                   | No data available   |
| M-Factor  | Not applicable  |

### Further toxicological information

No data available

|   |   |
|---|---|
| Toxicity of   | Hexogen, CAS No. 121-82-4                               |
| Acute fish toxicity   | LC <sub>50</sub> (96 h): 3.6 mg/L (Lepomis macrochirus) |
| Chronic fish toxicity                                       | No data available                                       |
| Acute toxicity to daphnia and other aquatic invertebrates   | LC <sub>50</sub> (24 h): ≥10.0 mg/L (Daphnia magna)     |
| Chronic toxicity to daphnia and other aquatic invertebrates | No data available                                       |
| Acute toxicity to algae                                     | No data available                                       |
| Chronic toxicity to algae                                   | No data available                                       |
| M-Factor  | Not applicable  |

### Further toxicological information

No data available



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### 12.2. Persistence and degradability

|                |                   |
|----------------|-------------------|
| Biodegradation | Not applicable    |
| Hydrolysis     | No data available |

### 12.3. Bioaccumulative potential

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

### 12.4. Mobility in soil

No data available

### 12.5. Results of PBT and vPvB assessment

PBT / vPvB assessment not available as chemical safety assessment not required / not conducted.

### 12.6. Other adverse effects

No data available

## SECTION 13: Disposal considerations

Waste material must be disposed of in accordance with Directive on waste 2008/98/EC as well as other national and local regulations. It is recommended to stay in contact with the authorities and / or waste disposal company to request further information about the recovery or disposal.

### 13.1. Waste treatment methods

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

|                  |   |
|------------------|---|
| Product residues | Burn under supervision of an expert at a government-approved explosive burning ground or destroy, by detonation in boreholes, in accordance with applicable local, provincial and federal laws. |
| Packaging        | Handle uncleaned containers like the product itself.  |

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### Waste classification according to EWC

The allocation of waste identity numbers / waste descriptions must be carried out according to the EWC, specific to the industry and process. Evidence for disposal must be provided.

List of proposed waste codes / waste designations in accordance with EWC:

16 04 03 Other waste explosives

## SECTION 14: Transport information

### 14.1. UN number

0360 (when packaging fits to transport hazard class 1.1B)  
0361 (when packaging fits to transport hazard class 1.4B)  
0500 (when packaging fits to transport hazard class 1.4S)

### 14.2. UN proper shipping name

DETONATOR ASSEMBLIES, NON ELECTRIC

### 14.3. Transport hazard class(es)

1.1B (when packaging is approved by the notified body according to this transport hazard class)  
1.4B (when packaging is approved by the notified body according to this transport hazard class)  
1.4S (when packaging is approved by the notified body according to this transport hazard class)

### 14.4. Packing group

Not applicable

### 14.5. Environmental hazards

Dangerous for the environment No

IMDG Marine pollutant No

### 14.6. Special precautions for user

Attention: explosive article

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

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

## SECTION 15: Regulatory information

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

|                      |  |
|----------------------|--|
| European regulations | Directive 67/548/EEC (Dangerous Substance Directive)<br>Directive 1999/45/EC (Dangerous Preparation Directive)<br>Directive 2008/98/EC (Waste Framework Directive)<br>Regulation 1907/2006/EC (REACH)<br>Regulation 1272/2008/EC (CLP) |
| National regulations | Approval conditions must be respected.<br>Compare national regulations for handling with explosives.   |

### 15.2. Chemical safety assessment

Chemical safety assessments for substances in this mixture were not carried out.

## SECTION 16: Other information

### List of relevant H and P statements

|        |   |
|--------|---|
| H200   | Unstable explosives.  |
| H201   | Explosive; mass explosion hazard.                             |
| H204   | Fire or projection hazard.                                    |
| H301   | Toxic if swallowed.   |
| H302   | Harmful if swallowed.   |
| H315   | Causes skin irritation.                                       |
| H319   | Causes serious eye irritation.                                |
| H332   | Harmful if inhaled.   |
| H360Df | May damage the unborn child. Suspected of damaging fertility. |
| H361f  | Suspected of damaging fertility.                              |

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|           |  |
|-----------|--|
| 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.  |
| P210      | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P250      | Do not subject to grinding / shock / ... / friction.   |
| P280      | Wear protective gloves / protective clothing / eye protection / face protection.               |
| P370+P380 | In case of fire: Evacuate area.  |
| P372      | Explosion risk in case of fire.  |
| P373      | DO NOT fight fire when fire reaches explosives.  |

### List of relevant R and S phrases

|           |   |
|-----------|---|
| R2        | Risk of explosion by shock, friction, fire or other sources of ignition.                        |
| R3        | Extreme risk of explosion by shock, friction, fire or other sources of ignition.                |
| R20/22    | Harmful by inhalation and if swallowed.   |
| R25       | Toxic if swallowed.   |
| R33       | Danger of cumulative effects.   |
| R36       | Irritating to eyes.   |
| R38       | Irritating to skin.   |
| R50/53    | Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment. |
| R61       | May cause harm to the unborn child.   |
| R62       | Possible risk of impaired fertility.  |
| S15       | Keep away from heat.  |
| S16       | Keep away from sources of ignition - No smoking.  |
| S20/21    | When using do not eat, drink or smoke.  |
| S33       | Take precautionary measures against static discharges.  |
| S36/37/39 | Wear suitable protective clothing, gloves and eye / face protection.                            |

### Training advice

Employees should be trained before handling the substance.  
Refresher training should be scheduled at regular intervals and in accordance with legal requirements.

### Recommended restrictions on use

Please note the use identified in section 1.2



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### Further information

|                  |   |
|------------------|---|
| ID               | Identification number   |
| PBT              | Persistent, bioaccumulative and toxic   |
| vPvB             | Very persistent and very bioaccumulative  |
| C&L              | Classification and Labelling  |
| EC No.           | The three European lists of substances from the previous EU chemicals regulatory framework, EINECS, ELINCS and the NLP-list, in combination are called the EC Inventory. The EC Inventory is the source for the seven-digit EC number, an identifier of substances commercially available within the European Union.  |
| CAS No.          | Chemical Abstracts Service Number   |
| Repr. 1B         | Reproductive toxicity, Hazard Category 1B   |
| Repr. Cat. 3     | Toxic for reproduction, category 3  |
| E                | Explosive   |
| Xn               | Harmful   |
| STOT RE 2        | Specific Target Organ Toxicity — repeated exposure, Hazard category 2   |
| UN RTDG          | United Nations Regulations on the Transport of Dangerous Goods  |
| Expl. 1.1        | Explosives, Division 1.1  |
| Expl. 1.4        | Explosives, Division 1.4  |
| R phrases        | Risk phrases  |
| S phrases        | Safety phrases  |
| EUH              | European Hazard Statement   |
| CLP              | Regulation (EC) No 1272/2008 of the European parliament and of the council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.   |
| REACH            | Regulation (EC) No 1907/2006 of the European parliament and of the council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC. |
| K <sub>OW</sub>  | Octanol-water partition coefficient   |
| DIN-/EN Norm     | German Industry Standard / European Standard  |
| P2/P3            | Particle filter category P2/P3  |
| BCF              | Bioconcentration factor   |
| LD <sub>50</sub> | Median lethal dose  |
| LC <sub>50</sub> | Median lethal Concentration   |



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|                  |   |
|------------------|---|
| EC <sub>50</sub> | The effective concentration of substance that causes 50% of the maximum response. |
| DNEL             | Derived No Effect Level   |
| PNEC             | Predicted No Effect Concentration   |
| STP              | Sewage Treatment Plant  |
| dw               | Dry weight  |
| SU               | Sector of Use   |
| EWC              | European Waste Catalogue  |
| UK               | United Kingdom  |
| EU               | European Union  |
| EC               | European Community  |
| EEC              | European Economic Community   |

### Sources of key data used to compile the Safety Data Sheet

GESTIS Database  
TOXNET Database  
Exel™ Technical Data Sheet

### Information which has been added, deleted or revised

Changes to the previous version are marked by "|" on the left side of the document.

*The information contained is based on the present state of our knowledge.  
It characterizes the product with regard to the appropriate safety precautions.  
It does not represent any guarantee with regard to product.*