

**MATERIAL SAFETY DATA SHEET**

**NONEL<sup>®</sup> UNIDET + εclip**

|                        |  |                    |                |
|------------------------|--|--------------------|----------------|
| <b>Manufactured by</b> | Dyno Nobel Sweden AB<br>Gyttorp<br>S-713 82 NORA<br>SWEDEN<br>Phone +46 587 850 00 | <b>Issued on</b>   | 2000-02-03     |
|                        |  | <b>Version</b>     | 4              |
|                        |  | <b>Compiled by</b> | Thomas Brandel |

**1 IDENTIFICATION**

**Trade name:** Nonel<sup>®</sup> Unidet with εclip

**Chemical/technical classification:** Detonators assemblies, non-electric, for blasting

**2 COMPOSITION**

| <u>Substances which may render the product hazardous to health</u> | <u>CAS No</u> | <u>Content %</u> | <u>TLW</u> | <u>Remarks</u> |
|--|---------------|------------------|------------|----------------|
| <i>Detonators:</i>   |               |                  |            |                |
| Hexogen (RDX)  | 121-82-4      |                  |            |                |
| PETN   | 78-11-5       | ~1 g/cap         |            |                |
| <i>Nonel tube:</i>   |               |                  |            |                |
| Octogen (HMX)  | 2914-29-6     | 16 mg/m          |            |                |
| Aluminium powder   | 7429-90-5     | 2 mg/m           |            |                |
| <b><u>Other substances</u></b>                                     |               |                  |            |                |
| <i>Nonel tube:</i>   |               |                  |            |                |
| Inner layer: Ionomer   | 25608-26-6    | ~2 g/m           |            |                |
| Middle & outer layer: Polyethylene                                 | 25087-34-7    | ~2 + 2 g/m       |            |                |
| <i>Connector:</i>  |               |                  |            |                |
| Polyethylene   | 25087-34-7    |                  |            |                |
| <i>Detonator:</i>  |               |                  |            |                |
| Aluminium shell  | 7429-90-5     |                  |            |                |
| Sealing element (EPDM/PP rubber)                                   | 144046-11-7   |                  |            |                |

**3 HEALTH HAZARDS**

**Inhalation:**

**Eyes:** Risk of splinters from uncontrolled detonations.

**Skin:** Risk of splinters from uncontrolled detonations.

**Ingestion:**

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### 4 FIRST AID

**Inhalation:**

**Eyes:**

**Skin:**

**Ingestion:**

**Information to physician:** The blasting cap produces steel and aluminium splinters.

### 5 FIRE PROTECTION

**Specific fire hazard or explosion risk:** Risk of explosion in the event of fire, or high pressure impact.

**Safety measures:**

**Extinguishing agent:**

**Extinguishing agent  
NOT to be used:**

### 6 MEASURES IN THE EVENT OF SPILLAGE

Defective and damaged caps should be destroyed according to the manufacturers recommendations.

Individual detonators can be destroyed by detonating them in conjunction with the firing of a round. Cut the tubes off the detonators and drop the detonators one-by-one into one or more of the drill holes. They will detonate when the round is fired.

If larger quantities of detonators need to be destroyed due to damage or age, please contact Dyno Nobel or nearest Dyno Nobel representative.

*Destroying Nonel tubes:*

With the aid of a DynoStart blasting machine, initiate and burn out the reactive substance in the tube and then send it to:

1. A recycling site
2. A garbage dump
3. An incineration site.

### 7 STORAGE AND HANDLING

**Storage:** Storage of explosives according to local restrictions and authorities regulations.

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### 8 PRECAUTIONS DURING STORAGE AND HANDLING

**Preventive measures:** No smoking, fire, sparks or welding. Static electricity must be avoided.

**Personal protection gear:** When handling blasting caps it is recommended that protective goggles are used.

### 9 PHYSICAL/CHEMICAL PROPERTIES

**Description of product:** Blasting cap of aluminium with non-electric signal conductor of low-energy type (plastic tubing covered inside with a reactive substance). Connectors of polyethylene.

**Boiling point (°C):** Solidifying/melting point (°C) Plastic of the tube 120°C  
PETN in the cap 141°C

**Density (kg/m<sup>3</sup>):** Relative vapour density (air = 1)

**Flash point (°C):** Ignition temp (°C) 202°C

**Explosion range in air: (vol%)** Solubility in organic solvents

**Vapour pressure (°C):** pH of concentrate  
(mm Hg) pH of ready-to-use solution (%)  
(kPa)

**Relative evaporation rate:**  
(Ether = 1)  
(BuAc = 100)

### 10 STABILITY AND REACTIVITY

**Stability:** It is recommended that Nonel Unidet is stored at a maximum temperature of 50°C.

**Avoid mixing with:** During storage avoid store together with other explosives material.

**Dangerous decomposition products:**

**Dangerous combustion products:** Nitrous gases (NO<sub>x</sub>), carbon monoxide and 0.03 g Pb.  
When a blasting cap is detonated, steel splinters are created.

### 11 TOXICOLOGICAL DATA

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## 12 ECO-TOXICOLOGICAL DATA

## 13 DESTRUCTION

Contact the supplier for instructions.

## 14 TRANSPORT REGULATIONS

|                              |  |                        |           |               |            |
|------------------------------|--|------------------------|-----------|---------------|------------|
| <b>UN No :</b>               | 0360, 0361, 0500                                 | <b>Packaging group</b> | II        |               |            |
| <b>ADR/RID:</b>              | 1.1B, 1.4B, 1.4S                                 | <b>Substance No</b>    | 1, 35, 47 |               |            |
| <b>IMDG Class:</b>           | As above   | <b>Page</b>            | 1256      | <b>EmS No</b> | 1-01, 1-04 |
| <b>MFAG No:</b>              | See subsection 7.3                               |                        |           |               |            |
| <b>DGR:</b>                  | See ADR  |                        |           |               |            |
| <b>Description of goods:</b> | Detonator assemblies, non-electric, for blasting |                        |           |               |            |
| <b>Miscellaneous:</b>        |  |                        |           |               |            |

## 15 CLASSIFICATION AND MARKING

|   |            |                  |           |
|---|------------|------------------|-----------|
| <b>Chemical product hazardous to health:</b>          | No         |                  |           |
| <b>Chemical product hazardous to the environment:</b> | No         |                  |           |
| <b>Flammable product:</b>                             |            | <b>Class</b>     |           |
| <b>Explosive product:</b>                             | Yes        |                  |           |
| <b>Marking category(ies):</b>                         | Explosive  |                  |           |
| <b>Danger symbol:</b>                                 | Bomb label | <b>Main text</b> | Explosive |
| <b>R(isk) texts:</b>                                  | Explosive  |                  |           |
| <b>S(afety) texts:</b>                                |            |                  |           |

## **16 OTHER INFORMATION**

Permission is required for the handling of blasting caps.

Nonel blasting caps are made without a primary explosive which make them safer to manufacture and handle. Sensitivity to impact and friction is significantly less than in caps made with the more sensitive primary explosives.

Nonel blasting caps do not contain any carcinogenic components or raw materials and the amount of lead is very low. By using new substances which are not classified as hazardous to the environment we have greatly reduced the amount of dangerous residues produced when the blasting caps are detonated. It is our aim to develop products which are as environmentally friendly as possible. Lead, for example, has to a great extent been replaced by non-classified substances.

The detonation of a single blasting cap produces one litre of gas which must be regarded as minimal in this context in comparison with the amount of gas produced by the blast.