MATERIAL SAFETY DATA SHEET

NONEL® MS

Manufactured by	**Dyno Nobel Sweden AB** **Gyttorp** **S-713 82 NORA** **SWEDEN** **Phone +46 587 850 00**	**Issued on** **Version** **Compiled by**	2000-02-24 4 Thomas Brandel

1 IDENTIFICATION

Trade name: Nonel® MS

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

2 COMPOSITION

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

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 returned to the manufacturer

7 STORAGE AND HANDLING

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

Handling: The products should be handled as specified in the manufacturer's instructions.

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 (^{o}C):	**Solidifying/melting point (^{o}C)**	Plastic of the tube 120°C PETN in the cap 141°C
Density (kg/m^3):	**Relative vapour density (air = 1)**	
Flash point (^{o}C):	**Ignition temp (^{o}C)**	202°C
Explosion range in air: (vol%)	**Solubility in organic solvents**	
Vapour pressure (^{o}C): **(mm Hg)** **(kPa)**	**pH of concentrate** **pH of ready-to-use solution (%)**	
Relative evaporation rate: **(Ether = 1)** **(BuAc = 100)**		

10 STABILITY AND REACTIVITY

Stability: It is recommended that Nonel LP 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_X), carbon monoxide and 0.03 g Pb. When a blasting cap is detonated, steel splinters are created.

11 TOXICOLOGICAL DATA

12 ECO-TOXICOLOGICAL DATA

13 DESTRUCTION

Contact the supplier for instructions

14 TRANSPORT REGULATIONS

UN No : 0360, 0361, 0500 **Packaging group** II

ADR/RID: 1.1B, 1.4B, 1.4S **Substance No** 1, 35, 47

IMDG Class: As above **Page** 1256 **EmS No** 1-01, 1-04

MFAG No: See subsection 7.3

DGR: See ADR

Description of goods: Detonator assemblies, non-electric, for blasting

Miscellaneous:

15 CLASSIFICATION AND MARKING

Chemical product hazardous to health: No

Chemical product hazardous to the environment: No

Flammable product: **Class**

Explosive product: Yes

Marking category(ies): Explosive

Danger symbol: Bomb label **Main text** Explosive

R(isk) texts: Explosive

S(afety) texts:

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.