



Description

Exel™ MS detonators are a series of full strength nonelectric detonators with millisecond (MS) delay intervals between successive firing times. Exel™ MS detonator assemblies consist of a non-electric detonator and a length of Exel™ signal tube. The detonator incorporates delay elements and >EU#3 strength base charge inside an aluminum shell. The Exel™ signal tube is a high strength, high abrasion resistant tubing which transmits the initiation signal to the detonator. One end of the signal tube is crimped into the detonator shell, and the other end is closed off by a waterproof seal.

Application

Exel™ MS detonators provide a series of delay times suitable for surface mining, quarrying and underground operations. Exel™ MS detonators will directly initiate cap sensitive boosters and packaged explosives. Refer to the relevant Technical Data Sheets for details.

Technical Properties

Signal tube	Yellow Exel™
- Outer diameter (mm)	3.0
- Nominal tensile strength	300 N at +20 °C
- Lengths (m)	4.8 – 27
- Shock wave propagation (m/s)	2000 ±100
Detonator	
- Base Charge (EN 13763-15)	Min. EU #3, (Old # 8)
- Shell material	Al

Available Delay Range

Delay #	3	4	5	6	7	8
Time (ms)	75	100	125	150	175	200
Delay #	9	10	11	12	13	14
Time (ms)	225	250	275	300	325	350
Delay #	15	16	17	18	19	20
Time (ms)	375	400	425	450	475	500

Incl. 6.0 m tube

Recommendations for Use

Exel™ MS detonators should always be secured inside a suitable primer, which fully encloses the detonator. Exposed detonators should not be placed inside blastholes or charging hoses. Exel™ MS detonators used inside blastholes should normally be "reverse-primed", with the detonator base pointing towards the collar of the blasthole. Excessive force should not be applied to signal tubes connected to in-hole detonators and primers. If a primer becomes stuck when attempting to retrieve or reposition it, a replacement unit should be used.

Exel™ MS detonator assemblies can be reliably initiated by:

- Exel™ Connectadet™ SL delayed surface connector units.
- Cord harness connection (detonating cord, which has a PETN core charge between 3.6 and 5.0 g/m) using standard J - Hook connections.

Exel™ MS blasts can be reliably initiated with:

- A starting device Exel™ Start DS2 or Exel™ Start HN1.
- A non-electric detonator assembly or plain detonator.
- An electric detonator assembly.
- An electronic detonator.
- Remote starting of Exel™ MS blasts is possible by using an Orca Remote Blasting System for initiation.

Packaging

Exel™ MS detonators are packed into sealed "barrier bags" inside cardboard cases. All units within a case have the same lead length and delay.

Exel™ MS

Tube Length (m)	Qty per bag (1.1B)	Qty per box (1.1B)
4.8	10	100
6.0	10	100
7.8	10	100
10.2	10	70
12.0	10	50
15.0	10	50
18.0	5	40
21.0	5	30
24.0	5	30
27.0	5	25

Storage and Handling

Product Classification

Authorised Name: *Exel™ MS*
 Proper Shipping Name: Detonator assemblies, non-electric
 UN No: 0360 0361 0500
 Classification: 1.1B 1.4B 1.4S
 EC Type Certificate: ENB/D/009/11

Exel™ MS detonators should be stored in a cool, dry detonator magazine. Stacks of cases should be no more than 2 metres high. *Exel™ MS* detonators should be used in temperatures from -45 °C up to 70 °C within 3 months of opening the sealed "barrier bag". Batches of detonators more than 2 years old should not be used.

Disposal

Detonator Article: Detonation under controlled conditions, seek expert advice.
 Dispose of remains of fired detonators in controlled and regulated landfill.
 DO NOT incinerate or burn detonators.
 Used Packaging: Disposal by controlled burning.

Safety

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 *Exel™ MS* assembly as a lowering line. Keep the shock tube taut until loading has been completed. Avoid damage to the shock tube during loading and stemming operations.

Exel™ MS detonators provide a high level of safety against initiation by static electricity, stray electrical currents and radio frequency transmissions. However, sensitive explosives are components of *Exel™ MS* detonators. Care should be taken not to cause initiation by intense impact, friction or heat.

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