

Exel™ MS



Description

Exel™ MS detonators are a series of full strength nonelectric detonators with millisecond (MS) delay intervals between successive firing times. The detonator assemblies consist of a non-electric detonator and a length of Exel™ signal tube.

Exel™ MS detonators from Orica Sweden use the NPED (Non Primary Explosives Detonator) technology and are therefore free of lead azide. The detonators have an aluminium shell and an initiation output strength of a Reference Detonator #3. The Exel™ shock tube is a high strength and abrasion resistant tubing, which transmits the initiation signal to the detonator. One end of the shock tube is crimped into the detonator shell, and the other end is closed off by an ultrasonic seal.

Exel™ MS detonators 475 (#19), 500 (#20) and 1000 (#40) also meet the tighter delay time accuracy acceptance requirements for the combined use of in-hole detonators with surface delay connectors. In these applications all blast holes are charged with Exel™ MS in-hole detonators with the same delay time. The initiation sequence is then determined on the surface by means of the surface delay connectors. To minimize the risk of out of sequence firing when using the Exel™ MS in-hole detonators in combination with Exel™ Connectadet™ SL, the Exel™ MS in-hole detonators 475 (#19), 500 (#20) and 1000 (#40) have a more uniform delay.

Application

Exel™ MS detonators provide a series of delay times suitable for surface mining, quarrying & construction and underground blasting applications.

Exel™ MS detonators will directly initiate cap sensitive boosters and packaged explosives. Refer to the relevant Technical Data Sheets for details.

Technical Properties

Product	Exel™ MS
Shock tube	Exel™ 3L or 3L XU (orange, or yellow)
Outer diameter (mm)	3.0 ± 0.2
Nominal tensile strength (min)	300 N at +20 °C
Length (m)	3.6 – 45.0
Shock wave propagation (m/s)	2000 ±100
Detonator	
Initiating capability	REF. DET. #3
PETN/RDX Base charge (mg)	650
Shell material	Al
Hydrostatic pressure resistance	3 bar for 7 days

Delay Range

Delay #	Nominal Delay Time* (ms)	Max. Std. Deviation (ms)	Delay #	Nominal Delay Time (ms)	Max. Std. Deviation (ms)
1	25	8.3	12	300	8.3
2	50		13	325	
3	75		14	350	
4	100		15	375	
5	125		16	400	
6	150		17	425	
7	175		18	450	
8	200		19	475	
9	225		20	500	
10	250				
11	275				
			40	1000	10.0**

*including 6 m shock tube

**rk according to EN 13763-16

Recommendations for Use

Exel™ MS detonator 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:

- Other Orica surface delay systems e.g. Exel™ Connectadet™ SL.
- Detonating cord with a core load of approx. 5.0 g/m.

Packaging

Exel™ MS detonators are packed into plastic or aluminum bags inside cardboard cases. All units within a case have the same tube length and delay. Red is the standard tube colour.

Tube length (m)	Qty per bag (1.1B)	Qty per box (1.1B)	Delay numbers
3.6	10	100	# 1-20
4.8	10	100	# 1-20
6.0	10	100	# 1-20
7.8	10	100	# 1-20, (20,40)*
9.0	10	70	# 19-20
10.2	10	70	# 18-20, 40, (20)*
12.0	10	50	# 1-20, (40)*
15.0	10	50	# 18-20, 40
18.0	5	40	# 18-20
21.0	5	30	# 18-20, 40, (19)*
24.0	5	30	# 18-20, 40
27.0	5	25	# 18-20, 40
30.0	4	20	# 19-20
36.0	4	20	# 1-20, 40
45.0	2	10	# 1-20

*delays in brackets are available with yellow shock tube 1.4S packaging is available to special order. Other tube lengths, delay numbers or detonator assemblies with clips maybe available upon request.

Please ask your local Orica representative for further information.

Storage and Handling

Product Classification

Authorized Name: Exel™ MS
 Proper Shipping Name: Detonator assemblies, non-electric
 UN No: 0360 0500
 Classification: 1.1B 1.4S
 EC Type Certificate: 0589.EXP.2783/18

Storage

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.

Exel™ MS detonators have a shelf life of 3 years.

Disposal

Disposal of explosive materials can be hazardous. Methods for safe disposal of explosives may vary depending on the user's situation. Please contact a DEXPLOC representative for information on safe practices.

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, electrical stray currents and radio frequency transmissions. However, they contain sensitive explosives, which can initiate under intense impact, friction or heat. As with all explosives these detonators must be handled and stored with care.

Training

This Technical Data Sheet is for information only. The Exel™ system including the Exel™ MS should only be used by personnel who have been properly trained to use this system.

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