



Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

Sub-Committee of Experts on the Transport of Dangerous Goods

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Item 2 (c) of the provisional agenda

**Explosives and related matters:
electronic detonators**

New UN entries for electronic detonators

**Transmitted by the Australian Explosives Industry and Safety Group
(AEISG)***

Introduction

1. The current edition of the Model Regulations contains the following entries for detonators, other than those used in ammunition:

<i>Name and description</i>	<i>Class</i>	<i>UN Number</i>
DETONATORS, NON-ELECTRIC for blasting	1.1B	0029
	1.4B	0267
	1.4S	0455
DETONATORS, ELECTRIC for blasting	1.1B	0030
	1.4B	0255
	1.4S	0456
DETONATOR ASSEMBLIES, NON-ELECTRIC for blasting	1.1B	0360
	1.4B	0361
	1.4S	0500

* In accordance with the programme of work of the Sub-Committee for 2017–2018 approved by the Committee at its eighth session (see ST/SG/AC.10/C.3/100, paragraph 98 and ST/SG/AC.10/44, paragraph 14).

2. At the fifty-first session in July 2017, AEISG submitted a proposal for a new entry in the Model Regulations for electronic detonators ST/SG/AC.10/C.3/2017/14. In response, an informal document from Sweden on this subject INF.33 suggested the existing entry for electric detonators could be reworded to include electronic detonators.
3. Electronic detonators should not be confused with electric detonators, having significantly different design characteristics, and improved safety and security benefits:
 - (a) Electronic detonators, as defined, cannot be fired electrically without pre-programming and communication via associated relevant electronic blasting firing devices;
 - (b) Electronic detonator wire leads do not attach directly to a match head or bridge wire as in electric detonators;
 - (c) Electronic detonators are resistant to extraneous/stray/induced currents or static discharges;
 - (d) Communication between electronic detonators and firing device prior to use ensures continuity and minimizes the potential for misfires;
 - (e) Electronic firing systems enable operators to limit firing to authorised operators and minimises potential for misuse.
4. The Working Group on Explosives of the Sub-Committee of Experts on the Transport of Dangerous Goods considered the proposal from AEISG and the comments from Sweden and agreed that electronic detonators must be distinguished from electric detonators but could not reach consensus on the preferred way forward (INF.38, 51st session).
5. The Working Group on Explosives noted the safety issues involved, not so much for transport safety, but for downstream uses (e.g. storage, handling, use) where current labelling requirements (as electric detonators) and regulation by UN number in some jurisdictions, cause significant confusion. Further, the Working Group suggested the consideration of alternative naming to assist differentiation between the terms 'electric' and 'electronic', which because of the similarity could cause confusion particularly in various translations.
6. AEISG agreed to take account of the concerns and comments of the working group and return with an updated proposal.
7. While the safety of transporting electronic detonators might not be significantly different from other detonator types, the precedent of single entries in the Model Regulations for different detonator types has been set as outlined in 2.0.2.2 and not as generic entries.
8. The secretariat has confirmed that there is no restriction or limitation on the number of entries in the Model Regulations and no implied desire to do so. Hence there is no need at this stage to attempt the grouping of different detonator types without proper review.
9. Electronic detonators are programmable post manufacture and it is proposed to include the term 'programmable' in the entry definition to further assist clear distinguishing from electric detonators.
10. Electronic detonators cannot reasonably or legitimately be included within the existing single entries for different detonator types and, as with other explosives, the proper classification of these devices will depend on packaging. Hence new entries would need to include all possible classifications.

Proposal

11. It is proposed that new UN entries be included in Chapter 3.2 of the Model Regulations for electronic detonators as follows:

UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	Packing instruction	Special packing provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5/4.3.2	4.2.5
05XX	DETONATORS, ELECTRONIC programmable for blasting†	1.1B				0	E0	P131			
05XX	DETONATORS, ELECTRONIC programmable for blasting†	1.4B				0	E0	P131			
05XX	DETONATORS, ELECTRONIC programmable for blasting†	1.4S			347	0	E0	P131			

12. It is also proposed that consequential amendments be made to the Glossary of Terms in Appendix B of the Model Regulations as follows (new text is underlined; deleted text is ~~crossed out~~):

- (a) Amend the explanation of “Detonators” as follows:

“Detonators

Articles consisting of a small metal or plastics tube containing explosives such as lead azide, PETN or combinations of explosives. They are designed to start a detonation train. They may be constructed to detonate instantaneously, or may contain a delay element. The term includes:

DETONATORS FOR AMMUNITION and
DETONATORS for blasting, ~~both ELECTRIC, and NON-ELECTRIC and~~ ELECTRONIC programmable.

Detonating relays without flexible detonating cord are included.”

- (b) Add a new explanation for “DETONATORS, ELECTRONIC programmable for blasting” to read as follows:

“DETONATORS, ELECTRONIC programmable for blasting

Detonators utilizing electronic components, such as an integrated circuit and/or micro processing technology to provide communications, an energy control and storage capability, timing delay information and validated commands in order to send a firing signal to the initiating charge.”