

WORK HEALTH AND SAFETY (MINES AND PETROLEUM SITES) REGULATION 2022

Registration of Detonators Design Order 2022

I, **Garvin Burns**, Chief Inspector, with the delegated authority of the Secretary, Regional NSW, pursuant to section 187(5) of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2022, make the following Order.

Dated this 29th day of August 2022

Garvin Burns
Chief Inspector
Regional NSW

1. Name of Order

This Order is the *Registration of Detonators Design Order 2022*.

2. Commencement

This Order commences on the day it is published in the NSW Government Gazette.

3. Interpretation

In this Order:

HSE is a reference to the Health and Safety Executive, United Kingdom.

4. Revocation

The *Registration of Detonators Design Order 2018* published in the NSW Government Gazette No.119 of 9 November 2018 at pages 8460-8461 is revoked.

5. Design requirements

5.1. Except as provided in paragraphs 5.2 and 5.3, all detonators used in underground coal mines must be designed to meet the design requirements of paragraphs 5.1 (a) – (c):

- (a) all detonators used in underground coal mines must be copper-cased with leading wires of copper complying with HSE Testing Memorandum No 13 (TM13) Conditions of Test and Approval of Electric Detonators, Appendix 'C' excluded as amended from time to time.

- (b) all detonators, including its associated components, must be designed so that the detonator is capable of satisfactorily initiating detonation in the explosive or explosives in which it is intended to be used, without itself being an effective ignition source of a methane-enriched atmosphere.
 - (c) the detonator must be of such character as not to be liable to deteriorate or to become dangerous under conditions of storage or use.
- 5.2. Where a design does not fully comply with the requirements in paragraph 5.1, the designer must specify the published technical standards or the engineering principles used to identify controls, in accordance with the hierarchy of risk control measures in Part 3.1 of the Work Health and Safety Regulation 2017, that have been incorporated in the design to achieve at least an equivalent level of safety as the requirements of paragraph 5.1.
- 5.3. If the design of a detonator that is registered under Part 5.3 of the Work Health and Safety Regulation 2017 is altered and the alteration may affect health or safety:
- (a) the altered parts of the detonator must be designed to comply with the design requirements in paragraphs 5.1 – 5.2 of this Order
 - (b) an assessment must be undertaken, and documented, by the designer to assess the impact that the design alteration has on unaltered parts of the detonator.
 - (c) where the assessment undertaken in paragraph 5.3(b) shows there has been a reduction in the effectiveness of existing control measures of any other parts of the detonator, that is, there has been a detrimental effect on health and safety caused by the alteration, these parts must comply with the design requirements in paragraphs 5.1 – 5.2 of this Order.
 - (d) any parts of the detonator which are not affected by the alteration must continue to comply with the design requirements of the design order that was in effect on the date that the registration for the design of the detonator was granted.

6. Testing and performance requirements

- 6.1. Except as provided in paragraph 6.2, all detonators used in underground coal mines must be tested and meet the relevant performance requirements specified in paragraphs 6.1(a) – (b):
- (a) when tested, the design of the detonator must provide evidence that it is capable of satisfactorily initiating detonation in the explosive or explosives in which it is intended to be used.
 - (b) all detonators must pass the following performance requirements:

- (i) **fusehead resistance:** the electrical resistance of the fusehead must be not less than 0.9 ohms and not greater than 1.8 ohms.
- (ii) **firing current:** with a current of 0.6 ampere d.c. applied for 50 milliseconds, the probability of a misfire must not exceed 1 in 10 000.
- (iii) **no-fire current:** with a current of 0.25 ampere d.c., applied for 5 seconds, the probability of a detonator firing must not exceed 1 in 10 000.
- (iv) **detonator resistance:** not more than 2% of the detonators of any one type must have a total resistance, inclusive of the leading wires, of more than 2.2 ohms. In addition, for delay detonators, the mean delay time for each delay number should correspond approximately to the nominal delay time. And the tolerance on the delay time should be such that the probability of the delay time of a detonator taken at random from one delay number in series overlapping the delay time of a detonator similarly taken from an adjacent delay number must not exceed 1 in 20 (i.e. an overlap probability less than 0.05).
- (v) **detonator series firing:** when a current of 1.25 amperes d.c. is applied for 4 milliseconds there shall be no failure in 20 consecutive rounds each of 10 detonators connected in series.
- (vi) **detonator incendivity tests:** when fired in the presence of a methane-air mixture containing 9% methane, in a steel lined chamber of approximate dimensions 710mm x 265mm x 50mm sealed along the top by polythene film, using a current of 1.25 amperes d.c. applied for 4 milliseconds, the probability of ignition must be such that not more than 14 ignitions in 200 tests are produced.

6.2. If the design of a detonator that is registered under Part 5.3 of the Work Health and Safety Regulation 2017 is altered, and the alteration may affect health or safety, the altered parts of the detonator, including those parts that may have been redesigned due to detrimental effects identified in the assessment undertaken in paragraph 5.3(b) above, must be tested and meet the performance requirements in paragraph 6.1 of this Order.

6.3. Any parts of the detonator which are not affected by the alteration must continue to comply with the performance requirements of the design order that was in effect on the date that the registration for the design of the detonator was granted.

7. Test facility

7.1. The test facility must be carried out by:

- (a) Health and Safety Laboratory, United Kingdom, or

- (b) a suitably qualified and experienced independent laboratory conducting testing to an equivalent standard.

8. Determination of applications for registration of design made before commencement of this Order

If an application for the registration of design of detonator made in accordance with clause 250 of the Work Health and Safety Regulation 2017 to which the standards specified in the *Registration of Detonators Design Order 2018* applies is made before the commencement of this Order, and the application has not been finally determined before that commencement, the application is to be determined as if this Order had not commenced.