

Australian/New Zealand Standard®

Safes and strongrooms—Methods of test

Method 3: Test for explosive resistance

1 SCOPE This Standard sets out the method to be applied when testing secure storage units for explosive designation (EX). This is an optional test.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard.

- AS/NZS 3809 Safes and strongrooms
- 3810 Safes and strongrooms—Methods of test
- 3810.1 Method 1: Test for physical attack

3 PRINCIPLE The test is done for the purpose of determining the resistance against attacks with explosives.

An explosive charge is detonated. A physical attack test is then made to measure the remaining resistance value. The physical attack is done in accordance with AS/NZS 3810.1

4 TEST SPECIMEN The test specimen shall be the same design as that used in the physical attack test (see AS/NZS 3810.1), preferably, an undamaged empty test specimen should be used. A test specimen which has previously been subjected to the physical attack test (see AS/NZS 3810.1) may be used if that test will not influence the result of the explosive test.

The internal capacity of safes to be tested shall be in the range of 0.3 m³ (300 L) to 0.4 m³ (400 L). If no safe in a model series will reach such a volume the nearest existing size shall be chosen.

5 EXPLOSIVES The charge shall be of pentaerythrit trinitrate (PETN) with the following properties:

- (a) Density (1500 ±50) kg/m³.
- (b) Specific energy (5000 ±500) J/g.
- (c) Detonation velocity (7000 ±500) m/s.

6 DETERMINATION OF EXPLOSIVE CHARGE MASS The mass of the explosives charge shall be in accordance with Table 1.



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TABLE 1
EXPLOSIVE CHARGE MASS FOR RESISTANCE
GRADES II TO XIII

Resistance grade	Explosive charge mass, g (Tolerance ± 1 g)	
	Safes	Strongroom doors and strongrooms
XI, XII & XIII	—	375
VIII, IX & X	200	250
V, VI & VII	100	125
II, III & IV	70	70

7 CONDITIONS FOR EXPLOSIVE ATTACK TEST

7.1 Safes Position the explosive charge in a compact shape at the geometric centre of the storage volume of the safe. Close and lock the door and detonate the charge.

After detonation the physical attack shall be continued until the complete access, or the required post detonation resistance value (see Table 2) has been reached. These remaining physical attacks are recorded as post detonation physical attack.

NOTE: Refer to AS/NZS 3809 for definition of complete access.

This post-detonation physical attack is limited to the use of attack tool categories A, B, C and D. Any post detonation physical attack shall be continued until no more information necessary for determining the post-detonation resistance value can be reasonably expected.

TABLE 2
POST-DETONATION RESISTANCE
VALUES FOR SAFES

Resistance grade	Post-detonation resistance value RU
X	68
IX	53
VIII	41
VII	30
VI	20
V	14
IV	9
III	6
II	4

7.2 Strongrooms doors and strongrooms Preparatory physical attacks may be undertaken and shall follow the physical attack test (see AS/NZS 3810.1) to create holes into which the explosive charge can be placed. This preparatory work is limited to the resistance values given in Table 3 and limited to the use of attack tool categories A, B, C and D. The calculation of the resistance value for this preparatory work shall be done in accordance with the following equation:

$$\text{Resistance value} = (\Sigma t \times C) + \Sigma BV$$

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