



# FIREWORKS

## Test and Inspection

The requirements of this technical note are placed as conditions of licence on holders of a licence to manufacture explosives (fireworks), import explosives (fireworks) or a Pyrotechnic Sales Business Licence, under the Explosives Act 1936. These conditions form part of the licence and must be complied with.

Manufactured fireworks are pyrotechnic items that meet the performance criteria and prescribed criteria of Technical Note 54 and comply with the requirements of this Technical Note. A firework item that does not meet these requirements is not an authorised manufactured firework and must be individually authorised prior to its import. Each batch of fireworks imported must be tested prior to any sale. The test results must be recorded in a formal report and kept. They must be made available for inspection if requested by an Inspector of Explosives.

### INSPECTION

All fireworks must be inspected for deterioration or damage prior to sale. There must be no escape of explosives composition from the firework item.

The pyrotechnic composition of a firework must not contain any mixture of an unstable, toxic or highly sensitive nature which may result in an unsafe firework, including:-

- The test results must be available for inspection.
- The testing may be conducted by or on behalf of the manufacturer, importer or seller.

### PERFORMANCE

A firework on functioning must not project items, embers, sparks or debris in a manner likely to injure a pyrotechnician or a member of the audience. It must not project itself or any part of itself through the air in an erratic or unpredictable manner. If designed to explode, the construction must be paper or cardboard, there must be no component of wood, cork or other material liable to be projected without disintegration by the explosion.

- mixtures of chlorates with sulphur, a sulphide, phosphorus, acids, metal powders (eg aluminium, magnesium) or any ammonium salts;
- mixtures containing arsenic, arsenic compounds or other highly toxic ingredients, such as lead compounds, white phosphorus or mercury compounds;
- mixtures of picric acid or its salts with chlorates or salts of heavy metals; and
- mixtures of ammonium picrate with chlorates or nitrites.

### TESTING

When initiating fireworks for testing purposes, there shall be at least two adults present at any one time. Individuals shall be competent and have due regard for the safety of the public and property of others. Children will not participate in the testing of fireworks.

Testing of fireworks should be conducted in an area where there is no combustible material for a radius of 50 metres from the point of initiation of the firework to be tested. Testing should not be conducted during the fire danger period.

A firework item must be so constructed that the firework composition is retained within the designed containment of the item, during normal conditions of its transport, storage, handling and use.

The following fire fighting equipment shall be available in the immediate vicinity of the testing area; a water hose shall be connected and ready for use; a 10 litre bucket of water (which may be used to immerse unexploded defective items); a 10 litre bucket of sand (which may be used to stabilise fireworks items); a suitable fire extinguisher (at least 60B rating).

### COMPOSITION

A statement of composition and the composition weight for each firework item imported for sale must be obtained from the manufacturer.

### TEST FREQUENCY

- Each batch of fireworks imported must be tested prior to being released for sale to the user.
- Where a batch of fireworks are kept for greater than 12 months, they must be retested.

Testing should not be conducted on days of high wind velocity. Protective safety apparel shall be worn ie overalls, hat and safety glasses.

Debris from the functioning of the item should be collected and its distance of travel recorded, to ensure there is no projection of dangerous debris to a distance that could endanger an audience.

#### **HAZARD LEVELS (HL)**

After testing each firework must be categorised into one of four Hazard Levels. Details of what constitutes each Hazard Level are found in Technical Note 54.

Testing must include a method of determining the height and width of any projection of debris, sparks and burning composition.

#### **TEST REPORT**

After testing the fireworks, results must be documented in the form of a report detailing the time, date and place of testing. The witness and person testing must be listed, and the report signed by the person testing, who will accept responsibility for the accuracy of the results. This report will be available for inspection on request by an inspector of explosives.

The test report must include the following items:-

**Import Details** The details of the size of the batch imported and the number and types of each firework item must be recorded.

The manufacturer of each type of item must be recorded.

**Type and size of item** Each firework must fall within one of the types of firework as listed in the Tables in Technical Note 54.

The size of item must be recorded; eg 10 cm wheel, 2 cm fountain etc

**Sample Size** The number of items of each firework type taken for testing must be recorded, plus the number of firework items of that type in the batch.

**Labelling** Each item must be labelled In English, with instructions for safe use and a description of functioning of the item, or the manufacturers instructions for the safe use must be supplied with the firework.

**Packaging** The firework and its packaging must be examined for escape of composition. There must be no escape of explosive composition from the item.

#### **Construction**

The report must record the construction details of the item. These must be obtained from the manufacturer.

**NOTE:** There must be no dismantling of any firework device except at a laboratory holding a licence to manufacture explosives and approved for fireworks manufacture.

#### **Height and width of Projections**

The height and width of the effect must be recorded.

**Projection of Debris.** The projection of any dangerous debris must be recorded.

#### **Burning/incandescent Debris**

Fireworks must not project burning debris that continues to burn after reaching the ground, regardless of where the debris falls.

**Ease of ignition** Each item designed for manual ignition must be easily lit with a portfire.

**Burn time** Each item must function between 5 and 15 seconds after ignition of the wick. There must be no more than a 5 second delay between tubes during functioning of a multi-tube item.

#### **Erratic, Unsafe, Exploding items**

Any article that functions in an erratic or unsafe manner, or explodes, must be reported to the Department.

Any article that projects embers, debris or incandescent items likely to be carried by wind must be recorded.

**Failures** All items tested that fail must be included in the report with the reasons for failure.

**Stability** The physical stability of each item as intended for use must be recorded (eg does it have a flat base, does it sit on the ground as intended?).

**Performance** A description of the functioning of the item must be recorded, eg

- emits incandescent silver sparks
- emits flitter sparks
- spins on axis, emits golden sparks
- ends in loud report
- emits flaming balls
- emits flaming balls, in between emitting green sparks
- emits white sparks and produces a noise as a siren
- emits green flame followed by white sparks
- emits coloured stars sequentially
- the type and duration of sound a firework may emit should be recorded. Items with extremes in pitch and long duration may not be suitable in all circumstances.