

SECTION 23 - FURTHER INFORMATION

Glossary of Firework Terms

Acronyms and Abbreviations

Definitions and examples

GLOSSARY OF FIREWORK TERMS

Topic	Description
1.1G (0333)	The UN classification of fireworks packaged for transport that pose a mass-explosion (detonation) hazard
1.2G (0334)	The UN classification of fireworks packaged for transport that pose a projectile hazard
1.3G (0335)	The UN classification of fireworks packaged for transport that pose a fiery projectile or thermal radiation hazard
1.4G (0336)	The UN classification of fireworks packaged for transport that pose a limited hazard
1.4S (0337)	The UN classification of fireworks packaged for transport that pose a very limited hazard, the effects of accidental ignition are confined within the package itself.
Aerial bomb	Preferred term:- Aerial shell
Aerial firework	In general a firework which functions above the immediate area of the ground - i.e. rockets, shells, roman candles and mines.
Aerial shell	A shell designed to function at high altitude. cf. water shell
Alloy	A combination, usually of 2 metals, which takes on some of the characteristics of its components. Alloys cannot be separated into their constituent parts by normal physical methods.
Aqueous	Pertaining to water. In fireworks, aqueous usually refers to solutions used for damping stars in manufacture. Cf organic
Atomic pattern	In a shell burst, usually taken to be three contiguous circles representing the orbits off electrons around a central nucleus (rather than the atomic "hazard" symbol)
Bag mine	A mine without a rigid case that is fired from a mortar. The advantage of bag mines is their very low debris pattern, although their performance is rarely as good as mines similar mines with a rigid case.
Banger	Usually a complete firework, designed to produce a loud ban, rather than a component of a larger firework (e.g. a mine) - which are better referred to as crackers.
Bare match	Black match without a sleeve, preferred term:- Black match
Barrage	A combination of several fireworks, most usually Roman candles and/or mines, designed to be fired with a single ignition
Battery	In fireworks a combination of, say Roman candles, fused together for increased effect and/or duration.
Battle in the clouds	A shell producing a series of salutes after bursting.
Bengal	A pyrotechnic coloured flare
Bickford fuse	A slow burning fuse used either for preparation of internal shell delays, or for timing sequential firings
Black match	Usually a cotton thread coated with blackpowder, in its raw state. Black match contains within a paper tube is usually referred to as piped match.
Black shell	Preferred term:- Blind shell

Blackpowder	A composition, comprising Potassium Nitrate, Sulphur and Charcoal in the ration 75:15:10 widely used in fireworks manufacture as a propellant and as the basis for compositions containing metal powders. It is considered by most people that blackpowder does not detonate on ignition, but merely burs extremely fast!
Blasting powder	Blasting powder may be made with either Potassium Nitrate (type A) or Sodium Nitrate (type B) as the oxidant.
Blind shell	A shell that fails to bust, having been successfully launched from its mortar. Potentially very dangerous.
Blinker	An effect of periodic burning giving the effect of a flashing composition or strobe.
Bomb	Inappropriate term for shell
Bombardo racks	Usually a bottom fused multiple firing assembly.
Bombette	In essence a mini shell, usually found as a component of a Roman candle, and less often as a component of a mine or even as a sub component of a shell.
Bottom fused	The normal method of fusing of a shell, where the shell delay is ignited by the lifting charge of the shell. Also, for cakes where fusing is at the base of each tube.
Bottom shot	Typically a maroon as the last shot of a multibreak shell
Bounce	A charge of blackpowder at the base of a gerb - used to give an audible “crack” at the end of the burning of the gerb, and to enhance the effect.
Boxed finale	A rapid firing array, usually of shells, with a single point of ignition. Physically they comprise a number of pre-loaded mortars, very often with titanium salute shells.
BPA	British Pyrotechnics Association - a trade association concerned with all aspects of fireworks safety and use in the UK. Recently split into Retail and Display sections.
Break	A normal shells is referred to as “single break”. In a multibreak shell there are many sequential bursts, each a separate entity (cf shell of shells for instance).
British standard	Prepared in the late 1980’s for consumer fireworks. The standard sets performance, labelling and constructional requirements for a variety of consumer fireworks available to the public in the UK and also prescribes test regimes and methods for compliance.
Brocade	Long burning star similar to but brighter and shorter burning than a kamuro star
Burning	Typically an exothermic oxidation/reduction reaction. For fireworks the oxidant is usually a solid oxygen-rich ionic salt such as Potassium Nitrate.
Bursting charge	The internal charge in a shell designed to break the shell at the predetermined time, spreading and igniting the contents of the shell. Bursting charges are typically made of blackpowder (for effects shells) or flash powder (for colour shells).
Butterfly burst	A bust of a cylindrical tube from a central point, thus producing an effect akin to the wings of a butterfly. The term is also used for the more complicated burst pattern of a “butterfly” shell, although in many ways the theory of action is similar.
Cake	Colloquial term for a multishot battery, arising from the outward appearance of many of the smaller items (e.g. 90 shot cakes).
Calibre	In firework terms usually the inside diameter of the firing tube, although strictly the diameter of the projectile.
Candle	Abbreviated term for Roman candle
Cannonade	Usually an aerial shell containing several shots fused to explode at the same time after the shell bursts. Also a popular generic name for a multishot battery from China.

Capping	Usually a rolled kraft paper tube used to connect several fuses together in a spark-proof join.
Case	Typically the tube containing the pyrotechnic composition of the firework.
Category 1 firework	Indoor firework as defined by British standard 7114; part 2
Category 2 firework	Garden firework as defined by British standard 7114; part 2
Category 3 firework	Display firework as defined by British standard 7114; part 2
Category 4 firework	Fireworks defined in the British Standard as being not suitable for sale to the general public. Generally, but erroneously, taken to mean larger display fireworks.
Catherine wheel	The traditional name for the generic wheel. The name derives from St. Catherine ...
Celebration cracker	Usually a roll of many hundreds or thousands of individual cracker units designed to be unrolled and hung from a solid object prior to lighting. These items, traditionally part of Chinese New year celebrations are now widespread, however recent legislation has banned their sale in the UK.
Chain fused	A method of fusing several elements, particularly in a finale box or shell sequence.
Changing Relay	A low light intensity composition used, particularly in Japanese shell manufacture, to accentuate and regularise the colour change in stars of a chrysanthemum or Peony shell.
Charging	Usually the process of filling a tube with composition or units (e.g a gerb or Roman candle)
Cherry bomb	A small powerful banger containing flash powder now banned in the US. The item was usually covered in red paper - hence "cherry".
Chinese cracker	syn. Celebration cracker
Choke	The narrowing of a tube, most often associated with fountains and rockets. Chokes may be made by physically distorting the tube, by means of an end piece, or by clay or other material.
Chrysanthemum shell	A spherical burst, typically Japanese, in which the stars leave a visible trail. Cf Peony shell.
Chuffing	The sound produced by the unstable burning of some rocket motors - usually a sign of instability.
Class B firework	The US categorisation for Display fireworks
Class C firework	The US categorisation for Consumer fireworks
Closed circuit	A complete electric circuit, usually in the context of a circuit ready to fire.
Coconut shell	Usually a shell containing large comets (gold, silver or crackle) which produce a typical coconut palm type effect on bursting. Typically the shell will also be fitted with a complementary colour rising tail.
Colour enhancing agent	Usually a chlorine donor such as PVC or Cerechlor added to a colour composition to enhance the intensity of the colour. The chlorine forms metal-Cl species in the flame which emit strongly in the visible part of the spectrum. It is thought that potassium chlorate/perchlorate may play a similar, though diminished, role.
Comet	Usually a solid cylinder of composition, manufactured in a mould by hand or by machine. The effect is that of a large star rising (from say a Roman candle). The comet is completely self consuming and thus particularly suitable for sites where debris is a problem.
Comet pump	A larger version of a star pump typically used to make Roman candle stars and splitting comets
Composition	The generic and widely used term for all pyrotechnic mixtures. More specifically composition is taken to mean the list of ingredients in a particular pyrotechnic mixture. All compositions contain at least an oxidant and a fuel, together with additional ingredients for colour/effect production etc.

Cone	A specialised type of fountain in the shape of a cone. The advantages of a cone are predominantly ease of filling, and the fact that the burning area increases as the fireworks proceeds, thus compensating for the increase in diameter of the choke.
Confinement	The process by which some explosives, e.g blackpowder, can change from extremely rapid burning to something approaching detonation. For instance, blackpowder confined in a tube will produce a loud report when lit, whilst blackpowder burning loose does not.
Continuity	An electric circuit is said to be continuous when it is complete - thus a continuity check of a circuit is carried out to ensure that the circuit is not open.
Convoluted wound tube	A tube wound from a piece of paper the same width as the tube is long. Convoluted tubes tend to be stronger than spiral wound tubes, although they are also more expensive to produce.
Covalent bond	A type of chemical bond in which electrons are shared by the participating atoms. This type of bond typically occurs between nonmetallic elements. In fireworks the important occurrence is in high energy species in the flame producing colours.
Cracker	A better term, and less emotive, than banger. Also an assembly of many crackers often referred to as a "Chinese cracker". A novelty cracker, commonly used at Christmas in the UK is another use of the term.
Crackle	A relatively recent effect comprising many small sharp bangs, thrown from a relatively low intensity comet. Chemically, most crackle compositions contain either lead or Bismuth oxides.
Croaker	Syn. Screecher
Cross match	Typically a piece of thin raw match used to facilitate ignition of a shell's internal time fuse. Generally made by either splitting or punching the time fuse.
Crossette	The American term for a splitting comet.
Crossing stars	Typically a pyrotechnic effect formed by fitting two stars together in a tube with a central bursting charge. Also known as French Splits.
Crown	As in "Crown Chrysanthemum" shell - syn. Kamuro
Crown chrysanthemum	syn. Diadem chrysanthemum. Typically a chrysanthemum like shell bursts with longer burning stars that continue to fall to the ground after the normal maximum burst diameter. Very often the stars have a colour change at the end of their flight.
Crown wheel	syn. Flying saucer
Cut star	A star, usually cuboid in form, prepared from a rolled sheet of composition.
Cylinder shell	An aerial shell of typically European manufacture which is cylindrical in form. Very often a "stack" of cylinder shells is combined, with suitable modification, to produce a typical multibreak shell. Cylinder shells are usually "spiked" to produce a harder burst.
Dahlia shell	A spherical shell burst, similar to a peony, but usually with fewer, brighter, stars.
Dark fire	In Roman candle terminology the low light-emitting composition applied to the surface of Roman candle stars acting as a sort of prime. The term has also been applied to the composition applied between colours in colour changing stars.
Daylight shell	A shell designed to be fired in daylight and thus incorporating one or more of the following effects:- noise units (crackers, whistles etc.), smoke, magnesium stars.
Deflagration	A particular type of explosive propagation in which propagation is faster than mere burning, but is not detonation.

Delay	Usually a pyrotechnic composition that burns at a predetermined rate and used for timing either within a firework assembly (e.g a Roman candle) or between firework elements (e.g in a shell sequence).
Delay fuse	A pyrotechnic composition designed to give a delay before functioning the next device in the explosive train. The most common use for a delay fuse is to provide a number of seconds for the operator to retire from the device before it functions. Also the internal delay within a shell used to ignite the bursting charge.
Detonating cord	A high powered explosive material encased in a plastic or cloth sleeve that burns by propagation of a detonating shock wave (typically 5000-7000 metres/sec)
Detonation	An exothermic chemical reaction in which the propagating front travels at supersonic speeds and thus an explosion always results.
Detonator	Not to be confused with a firework igniter, or squib, a detonator is used to initiate high explosives. As such, detonators are security attractive items and their possession is controlled in many countries.
Display area	Usually the area in which the rigging of the display takes place (syn. firing area), but more generally the entire area encompassing spectator area, firing area, safety area and fallout area..
Display firework	Usually a large firework intended for use at large public/private displays. In the US it is erroneously synonymous with UN 0335 (1.3G) fireworks.
DOT	Abbreviation for the US Department of Transportation. In the UK the similar department is now called the Department of Environment and the Regions (Abbr. DETR)
DOT classification	The assigning of fireworks by the US DOT into one of three classes.
Double base propellant	Homogeneous propellants which usually contain nitrocellulose in nitroglycerine and typically used in small arms ammunition and military rockets but rarely in fireworks.
Draw-out shell	A two break shell in which the first burst is usually colour, the second colour and report.
Driver	A specialised gerb, usually more powerful than a gerb used on a static set piece, whose primary purpose is in turning a wheel or similar item. In the past turning cases were invariably gold, usually made with neat blackpowder with the addition of charcoal, and produced very few sparks. Modern drivers often include titanium for additional visual effect.
DTI	In the UK the Department of Trade and Industry, responsible for aspects of the sale of fireworks to the general public.
EIG	The Explosive Industry Group of the British Confederation of British Industry. The EIG is not a trade organisation and as such does not actively promote the firework industry. Its primary purpose is liaison with Government on safety and legislative matters.
Electric firing	The process of firing a display electrically. Many varied systems have been developed ranging from simple "nail boards" to automatic, computer controlled systems.
Electric igniter	The preferred term for the device used to ignite pyrotechnics electrically.
Electric match	syn. Electric igniter
Electrostatic Sensitivity	The tendency of a composition to ignite (usually accidentally) from the energy supplied by an electric spark.
European standard	A proposed standard (CEN 212) for consumer fireworks in the EU The standard is due to come into force in 1999.
Explosive	technically - any material that is capable of undergoing a self-contained and self-sustained exothermic chemical reaction at a rate that is sufficient to produce substantial pressures on their surroundings thus causing physical damage. ALL fireworks are classified as explosives.

Explosive train	The progress of fire from one explosive element to another. For instance within a hand-lit shell the train is Delay Fuse->shell leader->lifting charge->shell delay->bursting charge->star prime->star
Fallout area	The area designated for debris to fall at a firework display. Obviously the position and size of the fallout area are critically dependent on the wind direction and strength at the time of the display. Careful planning at the design stage must allow for variations in the fallout area and position.
Ferro-Titanium	An alloy of Iron and Titanium which is finding increasing use in firework manufacture. Different ratios of Fe:Ti are available although generally all burn with a much more silver flame than Fe alone.
Finale barrage	A rapid firing, pre-fused, sequence (usually of aerial fireworks) that is typically fired at the end of a display.
Firecracker	syn. Cracker
Firework	Technically an explosive assigned one of five UN numbers (0333->0337). For our purposes a device which is designed for entertainment and that comprises pyrotechnic composition.
Firing area	The best term for the actual area of firing (rather than display area)
Firing current	The current that is applied to an electric igniter that causes it to function.
First fire	A composition used, particularly in gerbs, to initiate the explosive train. It is not synonymous with prime.
Fix	Old English term for a gerb that is not a turning case. Very often these gerbs had a "bounce".
Flanked	Usually applied to racks or mortars or Roman candles on a frame in which 3 tubes are angled to produce a dispersed effect.
Flare	A pyrotechnic device used to produce coloured light when ignited. In the US this is typically a tube, similar to a large lance. In the UK the term is often applied to distress signals.
Flash paper	A form of nitrocellulose, easily ignited and used to produce a puff of flame.
Flash powder	An extremely powerful pyrotechnic composition, typically made from Potassium perchlorate (or rarely pot. chlorate) and powdered aluminium (or magnesium). In fireworks flash powder is often used for powerful maroon shells, and for bursting colour shells.
Flash rocket	A rocket that usually only contains flash powder as its payload and thus functions with a loud report and a flash. Flash rockets should never be fired in multiples from cones for risk of detonation. Flash rockets find much use for bird scaring.
Flight rocket	Usually a small calibre (approx. 14mm) rocket fired in a large number simultaneously from a rocket cone or rocket frame to produce a characteristic fan-like effect.
Flitter	A spark effect (usually silver/gold) produced by the incorporation of relatively coarse metal powders (usually aluminium). the glitter effect is similar but distinct.
Flower pot	A shell malfunction in which the shell bursts within the mortar propelling the shell contents upwards as if from a mine. Cf Muzzle break
Flying saucer	An unusual firework device, usually constructed from a ring of plastic or wood, with turning cases and lifting cases. The functioning of the device usually involves rotation around a vertical axis, followed by ascent into the air. "Double acting" saucers fall and then reascend to the crowd's delight!
Flying squib	A toy firework of erratic flight now banned in many countries. Not to be confused with the electrical squib.
Fountain	A device comprising pyrotechnic composition charged into a tube which may or may not be choked. The composition may be hand charged, or more commonly nowadays, machine charged.

Friction Sensitivity	The tendency for a composition to ignite as the result of frictional energy (i.e. rubbing).
Front	Usually an arrangement of fountains, mines, set pieces or Roman candles along a line parallel to the spectators and fired simultaneously.
Fuel	In a pyrotechnic composition that which the oxidant oxidises. Common fuels include charcoal, sulphur, aluminium and magnalium. All common pyrotechnic compositions contain at least an oxidant and a fuel.
Funnel and wire	One method of charging tubes with firework composition.
Fuse	The generic term for the means of transferring fire to a firework, or from one part of a firework to another.
Fuse cover	The protective cover for the initial fuse of a firework. Often coloured to aid identification in the dark.
Fusee	A long duration flare, usually red, which may be used as a warning flare on the highway or railway. Fusees may also be used to light fireworks. Cf Portfire
Garden firework	A firework, usually of limited power and composition weight, intended to be used in restricted areas outdoors.
Gerb	Usually a relatively thick-walled tube filled with composition and having a choke. A gerb functions by throwing out a shower of sparks. From French - gerb - sheaf of corn
Girandole	syn. Flying saucer
Glitter	An effect that produces drossy droplets of molten composition which reach with the air to produce a sparkling or glittering effect that is not as distinct as a strobe effect. Similar but distinct from flitter.
Glutinous rice starch	A binding agent much favoured by Japanese star makers
Greek fire	Used in combat, Greek fire was an early use of pyrotechny. It comprised sticky long-burning composition usually fired from catapults.
Green man	The symbol of the Pyrotechnics Guild International depicting the
Ground burst	A low level burst of a shell and potentially very dangerous.
Ground firework	A firework designed to function at ground level.
Ground maroon	A single powerful cracker designed to produce a loud report and a flash.
Ground salute	syn. Ground maroon
GRP mortar	Glass Reinforced Plastic - a relatively recent addition to the design of mortars. GRP mortars, usually spirally wound, are light, cheap and extremely strong. However some there is some doubts as to their suitability for cylinder shells especially in larger calibres.
Gums	Usually applied to binding agents soluble in water
Gun	A poor term for mortar
Gunpowder	Fireworkers prefer the term Blackpowder although chemically and physically the two are the same.
Hammer shell	A shell, typically multibreak, comprising colour breaks and reports timed to break in alternation.
Hanabi	Japanese word for Fireworks, roughly translated as "flowers of fire"
Hang fire	A fuse or pyrotechnic composition that continues to burn very slowly, often almost invisibly, rather than at it's design speed. As such a hangfire presents a serious danger to firers.
HDPE mortar	High Density PolyEthylene - an extremely useful material for mortars. Belling rather than fragmentation of HDPE mortars tends to occur with failure of normal (not salute) shells.

High explosive	An explosive that is capable of detonating when unconfined.
HSE	The British Health and Safety Executive - the legislative and enforcement body in the UK
Hummer	A device that produces a humming sound, usually made from a thick walled tube filled with composition, sealed at both ends, and pierced tangentially to the inner diameter. The sound is made as the device spins rapidly in flight.
Hygroscopic	The property of a material that causes it to absorb and retain moisture from the air. As such, Hygroscopic compounds find only limited use in firework manufacture.
Igniter	Shortened term for Electric igniter
Igniter cord	Also, more properly, called Plastic Igniter Cord generally made for the blasting industries in several speeds. The slow cord finds use in fireworks manufacture, particularly for fitting of delay fuses.
Ignition	The initiation of burning of a pyrotechnic material
Indoor firework	In terms of the British and European standards devices of very limited power suitable for use indoors. Types include sparklers, snakes and other novelty items.
Ionic bond	A type of chemical bond characterised by transfer of electrons from one atom to another. Thus common salt is written Na^+Cl^- . Most oxidants and colouring agents for firework compositions are ionic compounds.
Japanese style shell	The ultimate spherical burst shell. The Japanese strive to produce perfect symmetry and patterns in their shells. Japanese shells are also noted for the contrasting coloured pistils that form part of the burst of many effects.
Kamuro	A long burning star, usually silver or gold, that falls a substantial distance from the shell burst before, perhaps, changing colour at the end of its flight.
Kraft paper	A strong paper used for pasting shells and for capping.
Lance	Usually a small, thin walled, tube containing coloured composition used to make lancework.
Lancework	Usually a message, logo, or design made on a wooden lattice work frame comprising many lances fused together
Leader	The initial fuse of a shell that transfers fire from the delay fuse (if any) to the lifting charge of the shell. For small calibre shells the leader may be used to lower the shell to the bottom of the mortar tube, but this is not good practise with larger calibre shells.
Lifting charge	The charge beneath an aerial shell (or Roman candle unit) which propels the unit into the air. The lifting charge almost universally used in firework manufacture is granulated blackpowder.
Line	In electrical firing one "line" is a single circuit, perhaps comprising many individual ignitions, that are fired simultaneously.
Line rocket	A rocket designed to travel along a wire or rope.
Low explosive	An explosive that burns or deflagrates on ignition rather than detonating. Almost all pyrotechnic compositions are low explosives.
M-80	A type of small, but powerful, device containing flash powder. M-80s are now banned from sale in the US.
Machine	A construction, commonly used in the 19th and early 20th Centuries, to "enhance" the spectacle of fireworks display. Great efforts were made to disguise the presence of fireworks within statues and ornaments, which would then be ignited to produce the intended, but concealed, firework effect.
Magnalium	The most commonly used alloy in firework making. Magnalium is usually a 1:1 mixture of magnesium and aluminium and is described chemically as a eutectic mixture of Al_2Mg_3 in Mg_2Al_3 .

Manufacture	The process of making fireworks from the raw materials. The term is more generally applied to any manipulation of firework components (e.g fusing shells).
Maroon	An exploding device that produces a loud bang. Aerial maroons are the most common, the composition being wither blackpowder or flashpowder. From French - marron - chestnut (from the noise they make in a fire)
Match	The generic term for quickmatch, black match etc
Meal powder	Finely divided blackpowder available in several grades.
Mesh size	The designation of the number of wires of standard thickness per inch used to make a sieve. For instance a 60 mesh sieve has a screen size of 250 microns.
Metal salt	The combination of an electropositive metal ion with an electronegative anion. For instance Potassium Nitrate.
MIDI	A method of computer control of firework displays in which cues are programmed like notes on a score. MIDI is an internationally recognised coding standard usually used for composing music.
Mine	Typically a complete with firing tube, but generally the firework itself.
Mine bag	syn. mortar mine.
Mini mine	A Roman candle in which each shot produces a mine effect many stars, rather than the more typical single star per shot.
Misfire	In general any failure of a firework to function as predicted. Modern usage restricts the term to the failure of a firework fuse.
Mixture	Usually synonymous with "composition", but may mean the list of ingredients of a composition.
Mortar	The tube used to fire an aerial shell, or mine. Mortars can be constructed from paper, plastic, GRP or metal.
Mortar mine	A mine fired from a mortar.
Mosaic	The French term for splitting comet
Multibreak shell	An aerial shell comprising more than one section producing a separate effect in sequence and ignited by the bursting of the preceding section. The public may incorrectly refer to a "shell of shells" as a multibreak effect.
Multishot battery	The generic term for a collection of pyrotechnic pieces lit at a single ignition point, but often used exclusively for items referred to as "cakes"
Muzzle break	A malfunction of a shell where the bursting charge operates just as the shell leaves the mortar. This is a common point of shell failure as the pressure changes that act on the shell are great at this point.
Niagara falls	Brocks often fitted Niagara falls with a loud whistle accompanying the visual effect.
No-fire current	The upper limit for a current that will not fire an igniter, and thus the upper limit for a test current for electrical circuits.
Noise mine	A mine in which the principle effect is ejection of pyrotechnic noise units (e.g crackers or whistles)
Nomatch	A specialised system for igniting fireworks using a shock tube. The advantage of Nomatch is the extremely high speed of propagation leading to almost simultaneous ignition of several pieces at great distances.
Ohm meter	A device for measuring the resistance of a circuit, and typically build into electrical firing panels. The current applied by the Ohm meter must be less that the no-fire current!

Open circuit	An electric circuit that is not complete - i.e will not fire when a current is applied.
Orange book	The United Nations book on the Classification and Testing of Dangerous Goods
Organic	In our terms a solvent that is not based on water (e.g Acetone or Cyclohexanone)
Oxidant	The component of a firework composition that supplies the oxygen to the reaction (e.g Potassium Nitrate)
Oxidising agent	In firework compositions syn. Oxidant
Palm burst	The central burst, similar to a coconut shell, of a colour shell. For instance a "Red peony with palm core"
Parallel circuit	An electrical circuit in which the current is divided to pass through several igniters. Parallel circuits are less easy to test for line breaks and short circuits than series circuits.
Paste	The most common usage is that referring to the pasting of aerial shells to enhance the burst of the shells.
Pattern shell	A shell, usually with many fewer stars than a chrysanthemum shell of the same calibre, whose burst patten in such that a pattern rather than a sphere of stars is produces. Pattern shells come in many levels of complexity, but perhaps the most pleasing is the simple single circle.
Pellet	An alternative term for a star, usually restricted to pumped, cylindrical form, stars.
Peony shell	A typical Japanese style of shell in which the stars do not leave a trail of sparks.
PGI	The American "Pyrotechnics Guild International"
PIC	Plastic Igniter Cord
Pigeon	A specialised type of novelty firework in which a rocket motor is forced to run horizontally along a wire or rope, usually accompanied by a whistling effect. Often, the pigeon will make the journey several times, first in one direction, then the other.
Pillbox star	A star made from pressing (usually by hand) composition into a small thin-walled cardboard tube. Pill box stars are rarely made nowadays, but their effect can be dramatically different to round or pumped stars. Pill box stars usually have a longer burning duration that pumped or round stars.
Piped match	Raw match enclosed in, usually, a paper tube used for transferring fire from one firework to another. Piped match also forms the leader of a shell.
Pistil	In typical Japanese shells a central core to the burst of a contrasting or complementary colour to the main burst.
Plug	Typically the closure of a mortar tube, but more generally the closure of any tube (e.g a Roman candle tube)
Poka shell	A weak busting shell of Japanese design commonly used for deploying parachutes or tissue-paper flags.
Polverone	syn. Pulverone
Portfire	Usually a thin-walled tube filled with slow burning composition used to ignite other fireworks. It is similar to a fusee, but its flame is usually less fierce and usually burns white. A test for a good portfire is that it should continue to burn after being dropped vertically onto its lit end at arm's length!
Post	A geographical position on a firing site used to identify the layout of the site. For instance, there may be 3 posts of Roman candles spread along the front of a site.
Press	A machine used to fill composition into tubes (e.g gerb press), or for making fireworks (e.g Roman candle press).

Prime	Often a slurry of blackpowder, a binder and water occasionally with added ingredients (e.g silicon) to increase the burning temperature used for ensuring ignition of reluctant compositions.
Priming	A process carried out to ensure ignition of a pyrotechnic composition when the composition itself is difficult to ignite. For instance, round stars are often primed for use in shells where the ignition time is short, whereas the same stars may be used without priming in a mine where the ignition time is longer.
Propellant	A composition used, typically, in a rocket motor to provide force. In more general terms any composition used to propel a firework into the air.
Pulverone	Granulated rough powder (usually of the same composition as blackpowder) used as the bursting charge of a shell.
Pumped star	A star produced by compressing composition in a mould. Pumped stars are usually cylindrical in form.
Punk	A wick for lighting small fireworks.
PVC	Poly Vinyl Chloride - one of many chlorine donors used as colour enhancing agents in firework compositions.
Pyrotechnic	The generic term for any item (or composition) which reacts in a self-sustaining chemical reaction and is generally produces an effect of light, smoke, noise or heat. Pyrotechnic articles are classified differently to fireworks and the term is usually restricted to theatrical effects and specialised items such as mole smokes or thermite charges.
Quickmatch	syn. Piped match
Rack	An apparatus, usually for firing rockets. The term may also be applied to "racks" of mortars.
Rain	Usually Silver rain or Gold Rain, in modern fireworks the long lasting stars from a shell or rocket that fall all the way to the ground. Care must be taken in the use of rain shells. In older terminology a "Golden Rain" was a particularly attractive type of hand held fountain.
Ram	The rod which is used to compress powder within a tube. The ram is usually quite a tight fit to the tube (cf funnel and wire)
Ramming	The process of filling a firework case with composition. Ramming is usually applied to a mechanical process rather than to a manual process.
Raw match	Blackpowder coated thread used for linking fireworks.
Reducing agent	The chemical role of a fuel in a firework composition. As the oxidising agent oxidises the fuel, the fuel can be said to reduce the oxidant.
Repeater shell	Usually a cylinder shells with several timed colour bursts at regular intervals. Repeater shells are often fired in sequence - 1 break, 2 break, 3 break, 4 break etc. Cf Multibreak shell
Resins	Usually applied to binding agents soluble in organic solvents e.g Accaroid resin
Resistance	The property of a material which acts to impede the flow of electrical current. In electrical firing of fireworks the resistance of a line is measure to prevent accidental "open" or "short" circuits.
Ring shell	An aerial shell that produces a symmetric ring of stars on bursting. Ring shells often are stabilised in flight with a rope "tail" to control the orientation of burst.
Rising effect	Often synonymous with "tail effect", but may also be applied to shells in which, for instance, whistles or small shells (rising flowers) have been attached and which function on the shell's ascent.
Rocket	A aerial device propelled into the air by a motor (cf shell). many of the public will describe any aerial firework as a "rocket".

Rocket cone	A device for firing flight rockets usually made from sheet steel curved into the characteristic cone shape.
Rocket motor	The power unit of a rocket, typically manufactured nowadays by pressing blackpowder into a choked tube without a spindle. Rocket motors occasionally find other uses in pyrotechnics - as wheel drivers, and as short duration fountains,
Rocket rack	A rack, usually made of wood or metal, for mounting many rockets prior to firing.
Rocket spindle	The spike (usually metal) used to form the older type of rocket motor with a central cavity for increased burning pressure.
Roman candle	A tube, usually cardboard, in which several charges are loaded, each with their own delay fuse and lifting charge, which function in a sequential manner.
Round shell	An aerial shell in the form of a sphere. Round shells usually contain coloured stars.
Round star	A star prepared by rolling, thus applying layer upon layer of composition onto a central core.
Roundel shell	An aerial shells comprising several maroons that burst in a ring pattern one after another
Safe current	The current level that it is safe to test an electric igniter without ignition.
Safety area	The area around a display site, usually not including the fall out area which is considered separately.
Safety cap	syn. Fuse cover
Safety fuse	A specialised fuse, designed for commercial blasting of construction similar to Bickford fuse but with a heavy waterproof coating.
Salute	American term for maroon.
Saturn pattern	Usually refers to a "Chrysanthemum in Circle" type shell rather than an "Atomic" pattern shell.
Scratch mix	A coarsely sieved mixture of Potassium Nitrate, Charcoal and Sulphur primarily used as a prime for stars.
Screecher	Physically a whistle with a hole through it, producing a much more "rasping" sound. In a screecher the instability arising from the oscillations of burning interfere with each other almost to the point of causing the resulting firework to detonate.
Senko hanabi	A delicate pyrotechnic sparking effect, commonly produced in Japan, produced from the burning of a sulphur-rich blackpowder composition. When burned, the droplets of molten composition that form react further with air to produce attractive branching sparks.
Sensitivity	The ease of ignition of a firework composition. Highly sensitive compositions (e.g flash powder) require extremely careful handling.
Sequence	Usually refers to the pattern of firing of a section of a display. For instance a sequence could comprise 10 x 3" gold shells followed by 10 x 4" gold shells followed by 5 x 5" gold shells.
Sequencer	An electrical firing system used to send regular electric pulses to fire a number of fireworks in a very accurately controlled manner.
Series circuit	The preferred method of linking multiple electric igniters. Series circuits are arranged so that the current runs through each igniter in a sequential way. Series circuits are much easier to test for continuity and correct wiring than parallel circuits.
Serpent	Usually a small tube filled with composition and possibly a report charge, that is fired en masse from shells, mines, or rarely Roman candles. The serpents fly about in a random fashion prior to bursting with a report or stars.

Set piece	A generic term for a ground firework but usually distinguished from Lancework. The set piece may be static or revolving and is made up from gerbs and/or noise and colour units.
Shell	The most spectacular of fireworks comprising a lifting charge (to propel the shell into the air) and a bursting charge to eject stars or subassemblies in the air after a predetermined delay. Shells are fired from mortars.
Shell delay	A more precise term than delay fuse, this refers to the internal delay within a shell to permit it to ascent to its desired height before igniting the bursting charge. Shell delays are commonly made from composition pressed into a card tube (for cylinder shells, especially those with plastic moulded cases) and variations of Bickford fuse.
Shell of shells	An aerial display shell that contains internal shells that are ignited when the main shell bursts, and subsequently produce secondary bursts.
Short circuit	Usually the accidental completion of an electrical circuit which causes the current not to flow through the electric igniters and thus leads to line failure. Short circuits can usually be discovered readily in series circuits by electrical testing of the circuit with an ohmmeter.
Shot	Usually refers to the single functioning of, say, a Roman Candle. Thus typically Roman candles are referred to as "8 shots".
Siatene shell	An aerial shells comprising several maroons that burst in a ring pattern at the same time.
Sieve size	The size of the hole in a sieve.
Smoke	An air suspension of particles usually from incomplete combustion of a composition.
Smokeless powder	A pyrotechnic mixture containing nitrocellulose and nitroglycerine so called because, unlike blackpowder, it does not produce much smoke on burning. In this way it found favour as a propellant in small arms devices, although its use in fireworks is rare.
Spark	The typical effect caused by incandescent particles ejected from the burning surface of a composition.
Sparkler	Usually a wire coated with pyrotechnic composition that gives off small sparks when burnt. Sparklers, although considered safe, are the cause of the greatest number of hospitalised accidents in the UK each season.
Spider shell	An aerial shell having a small number of relatively large stars producing an asymmetric break. Spider shells having 24 large comets are sometimes called Octopus shells.
Spiking	syn. stringing.
Spiking horse	The device used to facilitate the spiking, or stringing, of shells.
Spiral wound tube	A paper tube wound from several narrow paper strips at an angle. Roman candles made with spiral tubes are prone to failure if fire can be transferred by loose composition trapped in the spiral winding.
Splitting comet	A comet in which there is an internal charge (usually of flash powder) which when ignited splits the comet into several pieces. The effect is of a comet that travels for some period and then fragments. Splitting comet stars are typically found in shells, mines, and especially Roman candles. syn. Crossette
Spolette	A shell or Roman candle delay fuse usually made from pressing blackpowder into a small bore tube.
Squib	syn. Electric igniter
Star	Pellets of composition (usually cylinders, cubes or spheres) used in mines, shells, roman candles, rockets and occasionally gerbs.

Star mine	A mine in which the projection of coloured stars is the principle effect.
Steel mortar	A mortar made from steel tube, usually with a welded steel base. Steel mortars are increasingly rarely used due to worries about their fragmentation should a powerful shell burst within the tube. However, for some shells (particularly cylinder shells) they are still the material of choice for most people.
Storage	The holding of fireworks prior to their use. In most countries storage of fireworks above a certain quantity requires a licence.
Stringing	syn. Spiking. the process of winding a strong string around the outer surface of a shell to produce a more regular bursting pattern.
Strobe	The effect of a strobe is the regular pulsing "on-off-on-off" of light as a firework composition burns. There are several proposed explanations of this effect. Strobe effects are most often seen in ground fireworks (strobe pots) or as stars in an aerial shell or rocket.
Tail effect	Usually a term applied to a shell in which a star (comet) has been attached to the outside and which produces a rising column of sparks on the shell's ascent. "Tail" may also be applied to rockets, Roman candle stars or even whistle units where a persistent (usually silver) spark follows the flight of the device.
Temple	syn. Machine
Thermal stability	The tendency for a composition to ignite from the energy applied by heat. Thermal stability testing is routinely carried out as part of the authorisation procedure for fireworks in many countries.
Thermite	A mixture of aluminium and iron oxide (Fe_3O_4) still used for in situ welding of railway tracks.
Thunderflash	A generic term for a report with flash.
Tiger tail shell	Usually a solid sphere of composition fired in exactly the same manner as a shell. The effect produced is of an extremely thick rising comet. Optionally there is a small shell burst at the apex of its flight.
Titanium	A silver metal much used for producing brilliant white sparks (e.g in a maroon or gerb). Titanium does not corrode (cf aluminium), but is extremely hard and may increase the friction sensitivity of a firework composition.
TNT equivalent	A measure of explosive strength used as a comparison to TNT, usually for determining safe loading of buildings.
Top fused	Usually an aerial shell in which the time fuse (shell delay) for the functioning of the bursting charge is physically at the top of the shell and lit independently to the lifting charge.
Torbillion	Also Tourbillion. Either very similar to a serpent unit, or a larger aerial firework comprised of a saxon and wing, designed to rise into the air on ignition.
Torch	syn. flare
Torpedo	A flying squib or throwdown.
Transportation	The process of consigning a load of fireworks, usually taken to apply once the consignment has left the factory gates. Transportation of fireworks is subject to heavy legislative control.
Trunk	The rising effect seen on willow shells, and increasingly on many other shells.
Turning case	A specialised type of gerb used for driving wheels. Typically turning cases are made from composition containing a larger proportion of blackpowder than the equivalent gerb.
UN classification	The assignment of a packaged firework into one of the UN's 5 classes for fireworks

UN compatibility group	The "G" of 1.3G. The compatibility group, largely irrelevant for most firework usage, prescribes which explosives may be transported with which others. For instance detonators should not be transported with primary explosives, explosives containing toxic agents should not be transported AT ALL!
UN hazard code	syn. UN number
UN mark	A complicated index assigned to the PACKAGING of a dangerous good. (Cf UN number)
UN number	A four digit number assigned to any hazardous goods after classification in its TRANSPORT PACKAGING according the methods prescribed in the "orange book". For fireworks the relevant numbers are 0333 (1.1G), 0334 (1.2G), 0335 (1.3G), 0336 (1.4G) and 0337 (1.4S). The UN number should always be quoted as it uniquely identifies an item AND its hazard.
Visco fuse	A fuse, commonly used on consumer fireworks as the delay fuse, which is usually made by wrapping a core of blackpowder with thread and lacquer.
Volley	A term usually applied to a mass firing or rockets.
Warimono shell	A Japanese term for the type of shell that produces a spherical burst of stars. Most shells are of this type. Cf Poka shell.
Water firework	The generic term for any firework fired on the surface of water to maximise the visual effect of its reflections.
Water gerb	Usually a gerb or fountain weighted at one end and attached to a piece of cork designed to function on the surface of water. A water gerb may be lit by hand and thrown onto the water's surface, or fired like a shell from a mortar (in each case with a suitable delay fuse).
Water shell	A shell designed to function on the surface of water (e.g a lake) producing a hemisphere of stars. Water shells may be fired from mortars angled at a low angle, or may be set up on the water's surface prior to the star to the display.
Waterfall	Usually an extended curtain of silver sparks form vertical or horizontally burning tubes filled with a composition containing aluminium. Waterfall shells produce the same effect and are best fired en masse to produce a spectacle.
Weeping willow shell	Syn. Willow shell
Wheel	A rotating set piece, usually powered by gerbs or turning cases, and most often rotating in a vertical plane.
Whistle	Usually a tube containing a composition made using potassium benzoate, potassium salicylate, or rarely nowadays, potassium picrate. On burning the composition burs in a rapidly oscillating manner, and the resulting pressure waves are amplified by the tube in a manner similar to an organ pipe.
Whizzer	American alternative name for hummer
Willow shell	An extremely attractive shell comprising stars made with a high percentage of charcoal. the effect is of long-burning golden stars which often (but undesirably) fall all the way to the ground. The shell may optionally be fitted with a "trunk".

ABBREVIATIONS AND ACRONYMS

ACDS	Advisory Committee on Dangerous Substances
ALARPAs	Low As is Reasonably Practical
BATNEEC	Best Available Technology not Entailing Excessive Costs
CDGRR	Carriage of Dangerous Goods by Road and Rail Regulations
CER	Carriage of Explosives by Road Regulations
CLER	Classification and Labelling of Explosives Regulations 1983
COMAH	Control of Major Accident Hazard Regulations 1999
EA75	The Explosives Acts 1875
ES	Exposed Site
ESTC	Explosive Safety and Transport Committee (MOD)
FMEA	Failure Modes and Effects Analysis
HAZOP	Hazard and Operability study
HD	Hazard Division (Classification for Transport)
HSC	Health & Safety Commission
HSE	Health & Safety Executive (based at Bootle)
HSL	Health & Safety laboratories (based at Buxton)
HT	Hazard Type
MAH	Major Accident Hazard
MANC	Major Accident Notification Cascade
MAPP	Major Accident Prevention Policy
MSER	Manufacture and Storage of Explosives Regulations
PEC	Packaging of Explosives for Carriage Regulations 1991
PES	Potential Explosion Site
QD	Quantity/Distance relationships
QRA	Quantified Risk Assessment
R2P2	Reducing Risks, Protecting People - HSE's overall strategy for risk enforcement
RA	Risk Assessment
SFAIRP	So Far As is Reasonably Practical
SMS	Safety Management System
SRAG	Safety Report Assessment Guide
SRAM	Safety Report Assessment Manual
TOR	Tolerability of Risk - the framework of risk management adopted by HSE
XI	HSE's Explosive Inspectorate

DEFINITIONS

Firer

A person who has experience in rigging and firing Category 4 fireworks at professionally organised displays

Assistants on large displays

Under the supervision of a Senior firer on large displays

Knowledge of how to do things, but not necessarily the theory or law behind them

Senior Firer

A person who has extensive knowledge and experience in rigging and firing Category 4 fireworks at complex professionally organised displays and who maintains this knowledge and experience through continuing professional development

Successfully completed Firers Level

Has knowledge of why you are doing what you do!

Examples of other names used:

Role	Description
Display Manager	Often a single person within the display company – usually carries out site visits – but cannot attend every display
Display Company	The professional firework display company setting up and firing the display
Crew Leader	Person responsible for the supervision and management of crews
Client	The person/company paying for the event
Event Organiser	Maybe the client, or may be a third party organisation
Enforcer	Local Authority or HSE inspector with authority to attend the display