



CEN/TC 212
Fireworks

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CEN TC 212 Professional REACH Guidance Fireworks V6

Document type: Other committee document

Date of document: 2016-04-26

Expected action: INFO

Background:

Please find enclosed a draft version of a guidance document concerning fireworks and REACH, as prepared by the group of experts in the task group following a decision taken on March 27th, 2015. The European Commission had planned a meeting on Monday April 25th, 2016 in Brussels for the presentation of the professional guidance. Pierre THEBAULT was invited to participate to that meeting, as well as Karsten NIELSEN (President of EUFIAS) and Fritz KELLER (EUFIAS experts who participated to the meeting of the task group of CEN/TC 212 and co-author of the professional guidance).

Committee URL: <http://cen.iso.org/livelink/livelink/open/centc212>

APPLICATION OF THE REACH REGULATION TO FIREWORKS AND THEIR COMPONENTS

Version 6 (Draft)

PROFESSIONAL GUIDANCE

The present document was prepared by a group of experts under mandate of CEN/TC 212 following a decision taken on March 27th, 2015 in relation which a special request of the European Commission

NEW VERSION	BRIEF DESCRIPTION OF THE CHANGES	DATE
A	Creation	12/03/2016

FOREWORD

The population of manufacturers and importers of fireworks which are located in the European Union is quite diverse in terms of sizes and activities of companies. Most of them have not by themselves the capacity of interpreting the various applicable European directives and regulations and determining how they must be applied to their activities. In some countries, such companies may have the opportunity of requiring the assistance and support of professional associations in that purpose and it appears necessary to develop and adopt common positions at the European level.

Considering the efficient and productive consensus that made possible the development of European harmonized standards for fireworks within the technical committee CEN/TC 212 under mandate of the European Commission, the community of manufacturers and importers of fireworks asked this committee to help them in searching such a common position regarding the European regulation REACH. During its plenary meeting of March 27th, 2015 in Berlin, CEN/TC 212 took this request into account and decided to ask the experts who participated in the writing of the harmonized standards to elaborate a professional guidance for the application of REACH to fireworks. A task Force was established to do so: the present document is the result of its work.

The topics that are presented in the present guidance include:

- the requirements which are the responsibility of the manufacturers to comply with as regards the substances that are contained in the fireworks they manufacture and place on the European market;
- the status of the various generic types of consumer and professional fireworks with respect to REACH: are they articles or associations of article and substance, with or without intended release of substances? the answers being “article without intended release” in the vast majority of cases;
- the resulting requirements that must be complied with by manufacturers or importers for the very few firework types that are articles with intended release of substances or associations of article and substance.

It concludes that:

- **If the expected function of an object is to intentionally release substances for their chemical properties, the object must be considered as “combination of article and substance” according to REACH.**
- **In all other cases, the object is an “article” according to REACH, even if reaction products are released to the environment.**

Note: “Intended release” of chemical substances without transformation as accessory function of articles may lead to the necessity of registering these substances, even if the article remains an “article” according to REACH.

The present guidance has received the agreement of the main associations of manufacturers and importers in Europe (See Annex A) and is then the reference document for the whole of the firework profession which can thus act in a coherent and cohesive manner with respect to all third party requests.

It may, if necessary, be presented as a supporting document during controls by the national Administrations of the Member States of the European Union, as well as to insurance companies and customers who request it.

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1 - The REACH regulation

REACH is the European regulation (CE) n°1907/2006 for the mandatory **R**egistration, **E**valuation, **A**uthorisation and **R**estriction of **C**hemicals. It entered into force on June 1st, 2007. It improves the former legislative framework on chemicals of the European Union (EU) and maintains the pre-existing system of restriction on use.

REACH is a regulation and not a directive. Therefore it is not directly transposed into the national laws of the Member States of the European Union. However, these Member States may need to amend their regulatory system to integrate the corresponding new measures and requirements.

REACH applies to chemical substances that are marketed, manufactured or imported in quantities of more than one tonne per year in the European Union (EU) territory extended to the European Economic Area. Articles which include such substances may also be submitted to it when their chemical composition determines their function to a greater degree than or the same degree as the special shape, surface or design they are given during production.

When the function of articles is based on the reaction of the chemical substances they contain, REACH doesn't apply to the chemical substances that are produced by such reactions.

The main aims of REACH are to ensure a high level of protection of human health and the environment from the risks that can be posed by chemicals, the promotion of alternative test methods, the free circulation of substances on the internal market and the enhancement of competitiveness and innovation.

REACH rationalizes and transforms the old regulatory framework of the European Union relating to chemicals by making all the actors in the supply chain more responsible. Consequently it makes industry responsible for assessing and managing the risks posed by chemicals and providing appropriate safety information to their users.

The downstream manufacturers, importers and users have then an obligation to manufacture, market and use substances whose hazardous effects for human health or the environment are correctly controlled. These measures are based on the precautionary principle.

The evaluation is therefore the responsibility of the concerned manufacturers and importers (and not the States¹ as under the previous system) within mandatory data **S**haring & **S**ubstance **I**nformation **E**xchange **F**orums (SIEF) to minimize the tests that are necessary to complete this evaluation.

In parallel the European Union may take additional measures (authorization or restriction of use) concerning Substances of Very High Concern (SVHC) when additional action is necessary at European level.

¹ Except when the States import directly products from outside the European Community

REACH introduces an unprecedented change in the way information on the substances is exchanged throughout the supply chain. Each economic actor must now reinforce the traceability of the substances it uses and ensure that such uses fall within the Exposure Scenarios taken into account by the suppliers.

So REACH results not only in imposing requirements but also in generating responsible behaviours of European manufacturers, importers and users of chemical substances. Its main consequence in legal terms is that it shifts the burden of proof of harmfulness of the chemical substances not to the States but to the economic actors.

"Economic actors" means not only the industrial manufacturers and the importers of chemical substances, chemical mixtures and articles but also the downstream users of these substances, their mixtures and, in some cases, the articles which contain them.

There are 3 different types of objects:

- the object which is a chemical substance or a mixture of chemical substances
- the object which is *a combination of an article (acting as container or carrier material) and of a substance or a mixture* (cf. page 9 of the ECHA Guidance, Version 2)
- the object which is *an article with an integral substance/mixture (i.e. the substance or the mixture is an integral part of the article* - cf. page 10 of ECHA Guidance, Version 2)

Among these articles, it is necessary to differentiate those which intentionally release the contained chemical substances into the environment without any chemical transformation from those which don't release the contained substances or release them with chemical transformation. This point has a peculiar importance for fireworks.

2 - Consequences of the REACH regulation

2.1 Concerning the "substances":

All chemical manufacturers and importers must identify and manage the risks of the substances they market. For substances produced or imported in quantities over 1 tonne per year and per company, they must demonstrate this in a **registration dossier** which must be submitted to the European Chemicals Agency (ECHA).

The ECHA checks that the registration dossier complies with the REACH regulation and must approve the manufacturers' test proposals and check that they are limited to what is strictly necessary and sufficient.

REACH also provides an **authorization system** to ensure that substances of very high concern, and enclosed in annex XIV of REACH, are correctly controlled and progressively replaced by appropriate substances or technologies when this is economically and technically viable.

In addition, the EU authorities can propose **restrictions** on the manufacture, use and marketing of substances causing an unacceptable risk for human health and the environment (Annex XVII of REACH which is an extension of the past restrictions of Directive 76/769/EEC).

EU Member States are responsible for **ensuring that the REACH regulation is respected** by inspections which may result in penalties in the event of unjustified non-application.

Registrations and authorizations will result in the obligation for manufacturers to produce and exchange the information required on the hazards (intrinsic or not) of the substances they market and the risks associated with the uses, based on information which they already have or which they will have to acquire from users. The acquisition of such information may lead them to perform appropriate tests.

2.2 Concerning the "articles":

According to REACH, "article" means an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition (Article 3.3). In that case the contained chemical substances are considered as integral parts of the article.

This function is associated with a specific use **and then is determined by what its producer / supplier wants it to be used for and what the person acquiring it expects it to do.** Defining clearly the function the article is intended to and designed for is a key step in the determination whether the articles is submitted to REACH or not.

For substances which are integral parts of the article, only those that are released without chemical transformation are required to be registered by the manufacturer or importer when the annual quantity manufactured or imported exceeds one tonne. This registration

obligation is not required if the substance has already been registered by a third party for this use (cf. Article 7.1 of the REACH regulation).

However, according to article 2 paragraph 7, point b of appendix V of the REACH regulation, registration is not required in the following cases:

- *Substances which result from a chemical reaction that occurs incidental to the exposure of another substance or article to environmental factors such as air, moisture, microbial organisms or sunlight.*
- *Substances which result from a chemical reaction occurring upon end use of other substances, preparations or articles and which are not themselves manufactured, imported or placed on the market.*

2.3 Concerning the "combinations of substances and article":

When the function of an object is determined by the contained chemical substances, even when these substances are transformed during the use or functioning of the object, the substances are considered by REACH to form a combination with an article acting as a container or carrier material. Each of these substances are then subject to the REACH registration obligations, if the quantities exceed one tonne/year per substance and per producer or importer.

The separation line between an "article" (which contains chemical substances) and a "combination of substances and article containing or carrying them" may in some cases be difficult to determine from the above descriptions. In such case, one must consider that the contained chemical substances are just as important for the function of the object as the shape, surface or specific design it was given when it was manufactured.

These "borderline cases" must receive a special treatment: the ECHA has published its "Guidance on requirements for substances in articles", version 2, April 2011 to help manufacturers in these cases (cf. chapter 3).

For a manufacturer or importer, determining whether its products are "combinations of substances and article" (that means substances contained or carried in an article) or "articles" (that means substances which are an integral part of the article) may have significant consequences. It must therefore be fully demonstrated and justified with respect to the aims of the REACH regulation.

This determination process is highly dependent on the main function that is declared for the object, keeping in mind that it must be "what its producer / supplier wants it to be used for and what the person acquiring it expects it to do" (as stated by the REACH regulation itself).

3 - ECHA's "Guidance on requirements for substances in articles"

Upon entry into application of REACH on June 1st 2007, the European Commission transferred to the European Chemical Agency (ECHA) the tasks of making available the information and the tools necessary for the application of the regulation by the manufacturers or importers.

Therefore, to help them to determine the status of their objects, the ECHA made available online the first version of its guidance RIP 3.8 named "Guidance on requirements for substances in articles" in May 2008.

This guidance provided tools for this determination process, particularly flow charts to deal with borderline cases, and examples of application.

The April 2011 version made significant changes, particularly concerning the flow charts which take priority and which manufacturers or importers must use to determine the classification of their products (cf. appendix 1 of the guidance called: *borderline cases of substances/mixtures in containers or on carrier materials*).

However, in the spirit of the REACH regulation, it is the manufacturers who determine this and no higher authority is mandated to approve their classifications. This is thus under their sole responsibility and it is their good faith – backed up by defensible arguments – which will be taken into account in the event of contestation.

The modified version of this guidance – like all ECHA's guidance – does not have regulatory or legal force: it is only a guidance document and a help to understand and apply the REACH regulation. It is thus only a clarification (but not necessarily by experts from all the fields covered) intended to simplify the application of REACH by manufacturers. Moreover, this guidance may be further modified.

Among the examples given in the last version of its "Guidance on requirements for substances in articles" (RIP 3.8), the ECHA mentions fireworks, considers they are articles that "explode and make colours" and, from such understanding of their function, concludes that they are associations of articles and substances. Professional experts already firmly expressed their disagreement with such inappropriate definition of the function of fireworks and, consequently, with the ECHA's conclusion. The following chapters develop their arguments and justifications on the basis:

- of proper and correct definitions of "what the manufacturers of fireworks want their products to be used for and what the persons acquiring them expect them to do"
- of the application of the flowcharts that are proposed by the ECHA in the last version of its "Guidance on requirements for substances in articles" to determine whether products containing chemicals are articles or combinations of substances and article.

4 - Fireworks and REACH

As far as the function of a product is “determined by what its producer / supplier wants it to be used for and what the person acquiring it expects it to do”, the function of a firework is undeniably to generate an artistic visual and/or aural effect in the air, on the ground, on the surface of water or underneath it, and during a given time.

The artistic visual effects are not only based on a varied set of colours, but also on the various luminous shapes which are traced either (1) by burning objects (“stars”) and incandescent slag particles ejected from the fireworks or (2) by the flames and/or showers of sparks and hot gases projected from the fireworks. In the first case, combustion is initiated inside the firework casing and proceeds outside; in the second case, combustion remains strictly internal.

If colours are undoubtedly important, it is mainly the variety of luminous shapes and modulated sounds which makes fireworks shows attractive and answers the creative needs of firers. A fireworks show which would uniquely be based on the use of coloured shells would be particularly monotonous, even with a high intensity of firings. Then, one must consider the fact that firers will first choose the fireworks for the shape and extension of the visual effects which will be traced in space and time in the air, above the ground or the surface of water.

Colours depends on the chemical formula of the pyrotechnic composition, but the shape and extension of the visual effects result from the specific design of the firework and/or the shape and surface of the pyrotechnic units (e.g. stars) contained in the firework.

Firstly, the shape (spherical, cylindrical, tubular, etc.) stars are given by their manufacturing process (rolling, pressing, casting, extrusion, etc.) allow these unitary effects to burn regularly with a stable colour and/or constant tracing tail. In the same manner, “crossette” effects are obtained by stars which are given a specific shape so that they burn and break abruptly after a few seconds into fragments which trace a cross-like figure in the air.

Without being compacted to these typical shapes, pyrotechnic compositions would exhibit a violent and erratic burning and even deflagrate in a great number of cases. Colours would quickly tend to turn white due to the high temperature of the flame which would inevitably be a consequence of the strong increase of the burning rate.

Secondly, it is the manner stars are arranged, clustered and/or disassociated inside the shells which leads to such varied shapes in the air as a dahlia, a peony, a ring, a heart, a cross, etc... or a combination of those.

Similarly, as concerns aural effects, a maroon only gives a report when its composition is kept within its casing during a sufficiently long time after ignition to reach deflagration and if its ignition charge is sufficiently powerful. A cracker only bangs when its composition is tightly confined by its cardboard casing. If not, the composition of maroons and crackers will simply make a puff and a part of it will be dispersed without being ignited.

The design is even more important for pyrotechnic whistles where the burning composition generates no sound if it is not charged into a tube in such a specific manner that it is stimulated as an organ pipe. Similar dependence on design is observed for other aural effects like humming or crackling.

More generally, colours and sounds can be generated by means of a large variety of pyrotechnic compositions the chemical formulas of which may be very different. But none of them can burn in such a way that it gives its visual or aural effect if it is not used with an appropriate design of product.

It is in fact this appropriate design which makes a shell spread its stars in multiple trajectories to trace a flower, a ring, a rainfall, etc. in the air whatever the colour and then the chemical formula of the pyrotechnic composition, and which differentiates it from a fountain, a mine, a Bengal flame, a roman candle...

It is only its design which makes a fountain throw a shower of sparks as a water fountain or waterfall does, which a shell will never do. And happily a fountain does not explode when it is correctly manufactured!

It is again because of its design a roman candle generates a sequence of varied and possibly different effects or a mine throw a powerful narrow or fan-type jet of burning stars, etc...

To conclude, it is mainly the design of fireworks which assures the variety of effects and makes possible the high number of their artistic space-time combinations which characterize fireworks shows.

All the above arguments lead to the conclusion that, in general and from the point of view of REACH, fireworks are articles (See Tables 3 and 4). This statement means they are given a specific shape, surface or design which determines their function to a greater degree than does their chemical composition.

This global conclusion is supported by the application of the ECHA's flowcharts to each generic type of fireworks as defined by the European harmonized standards for consumer and professional fireworks (See hereafter).

5 – Generic types of fireworks

The European Directive 2013/29/EU differentiates four categories of fireworks:

- category F1: fireworks which present a very low hazard and negligible noise level and which are intended for use in confined areas, including fireworks which are intended for use inside domestic buildings;
- category F2: fireworks which present a low hazard and low noise level and which are intended for outdoor use in confined areas;
- category F3: fireworks which present a medium hazard, which are intended for outdoor use in large open areas and whose noise level is not harmful to human health;
- category F4: fireworks which present a high hazard, which are intended for use only by persons with specialist knowledge (commonly known as fireworks for professional use) and whose noise level is not harmful to human health.

The EN 15947 and EN 16261 series of standards for fireworks of categories F1, F2 and F3 and for fireworks of category F4 respectively, differentiate various “generic types” of fireworks meaning “sets of articles with a common, very general, design feature and/or with a common characteristic effect”. **All the differences between generic types are based on design and performance characteristics, never on chemical formulations and peculiarities.**

As authorized by the Directive 2013/29/EU, the EC-certification process applies to families of fireworks of a given generic type provided that these articles “are similar in design, function or behaviour”. Such product families are submitted together to type-examination and testing. Colours are only considered as variants within a family, but not as a distinctive parameter influencing the safety approach required by the above-mentioned Directives.

All generic types of fireworks have then very different respective designs. These designs are unique for a given generic type; on the contrary, a given colour can be generated by various pyrotechnic compositions and their corresponding chemical formulas may highly differ. This observation reinforces the conclusion according to which the design of fireworks is more important than their chemical composition.

The following tables list the various generic types that are defined by the EN 15947 and EN 16261 series of standards.

Table 1 – Generic types of fireworks on categories F1, F2 and F3

Type name	Brief description	Principal effect(s)
aerial wheel soucoupe volante	tubes containing propellant charges and sparks-, flame- and/or noise-producing pyrotechnic compositions, the tubes being fixed to a supporting structure	rotation and ascent, with Emission of sparks and flames, producing a visual and/or aural effect in the air
banger pétard à mèche Knallkörper	non-metallic case containing black powder	report
banger: see also 'double banger', 'flash banger'	-	-
battery batterie Batterie	assembly including several elements, each of the same type and corresponding to one of the types of firework listed in this Table 1, with one or two points of ignition, which does not require external support	as for the individual elements
battery requiring external support batterie nécessitant un support externe Batterie die externe Stabilisierung erfordert	assembly including several elements, each of the same type and corresponding to one of the types of firework listed in this Table 1, with one or two points of ignition, which requires external support	as for the individual elements
Bengal flame feu de Bengale Bengalfeuer	tube containing slow-burning pyrotechnic composition	emission of coloured flame
Bengal match allumette Bengale Bengalholz	short wooden stick partially coated (along one end) with slow-burning pyrotechnic composition, with a dot of friction-sensitive pyrotechnic composition at the tip, and designed to be held in the hand	emission of coloured flame and sparks
Bengal stick baguette Bengale	wooden stick partially coated (along one end) with slow-burning pyrotechnic composition and designed to be held in the hand	emission of coloured flame and sparks
Christmas cracker christmas cracker Knallbonbon	paper or foil tube, crimped at each end, enclosing novelties and with one or more snaps running along the length of the tube	report when pulled apart and release of the novelties

Type name	Brief description	Principal effect(s)
combination combinaison Kombination	assembly including several elements, not all of the same type, each corresponding to one of the types of firework listed in this Table 1, with one or two points of ignition, which does not require external support	as for the individual elements
combination requiring external support combinaison nécessitant un support externe Kombination die externe Stabilisierung erfordert	assembly including several elements, not all of the same type, each corresponding to one of the types of firework listed in this Table 1, with one or two points of ignition, which requires external support	as for the individual elements
compound firework composition d'artifices Verbundfeuerwerk	assembly including several separately CE marked fireworks complying with EN 15947, which are securely fixed on the same base, and connected together by linking the protruding and reserve fuses of each firework, or with separately CE marked pyrotechnic cords according to EN 16265, or a mixture of both, with one or two points of ignition, which does not require external support	as for the individual articles
crackling granules crépitant Knatterartikel	bag, or other container, enclosing small granules of pyrotechnic composition	crackling
double banger pétard aérien Doppelschlag	tube containing two portions of black powder connected by a delay fuse	report, then ascent followed by second report
flash banger pétard à composition flash Blitzknallkörper	non-metallic case containing perchlorate/metal-based or nitrate/metal-based report composition	report and flash of light
flash pellet clignoteur pyrotechnique Blitztablette	pellet of intermittently-burning pyrotechnic composition	multiple flashes of light

Type name	Brief description	Principal effect(s)
fountain fontaine Fontäne	non-metallic case containing sparks- and flame- producing pyrotechnic composition and designed to be placed on the ground, or to be fixed in the ground, or to be fixed to a support, or to be held in the hand	emission of sparks and flames with aural effect other than report or without any aural effect
ground mover mobile pyrotechnique	novelty item containing non-metallic tube or tubes with gas- or sparks- or flame producing pyrotechnic composition that is designed to move on the ground	movement on the ground with emission of sparks or flames, with or without aural effects (other than report)
ground spinner tourbillon Bodenfeuerwirbel	non-metallic tube or tubes containing gas- and sparks-producing pyrotechnic composition, with or without noise-producing pyrotechnic composition	rotation on the ground and emission of sparks and/or flames with or without aural effect (other than report)
hand-held sparkler cierge magique Wunderkerze, in der Hand zu halten	rigid wire partially coated along one end with slow-burning pyrotechnic composition, with or without an ignition head and designed to be held in the hand	emission of sparks, with or without aural effect (other than report)
jumping cracker pétard sauteur Knallfrosch	paper tube containing black powder, folded back on itself several times and bound together	reports in succession, with jumping motions
jumping ground spinner tourbillon sauteur Sprungrad	non-metallic tube containing gas- and sparks-producing pyrotechnic composition, with or without whistling pyrotechnic composition	rotation on the ground frequently interrupted by a jumping motion, and emission of sparks and flames, with or without an aural effect (other than report)
mine pot à feu en mortier Feuertopf	tube containing propellant charge and pyrotechnic units and/or non-pyrotechnic objects and designed to be placed on the ground or to be fixed in the ground	ejection of the content in a single burst producing a widely dispersed visual and/or aural effect in the air
mini rocket mini fusée Mini-Rakete	tube containing pyrotechnic composition equipped with stick(s) and designed to be propelled in the air	ascent, with visual and/or aural effects, with or without production of aural effects in the air
non-hand-held sparkler cierge magique non tenu à la main Wunderkerze, nicht in der Hand zu halten	rigid wire partially coated along one end with slow-burning pyrotechnic composition, with or without an ignition head	emission of sparks, with or without aural effect (other than report)

Type name	Brief description	Principal effect(s)
novelty match allumette détonante Scherzzündholz	match with a dot of pyrotechnic composition, designed to be held in the hand	report and/or visual effect
party popper party popper Party-Knaller	device operated by a pull-string with an abrasive surface in sliding contact with a friction-sensitive pyrotechnic composition and designed to be held in the hand	report, with ejection of streamers and/or confetti
rocket fusée Rakete	tube containing pyrotechnic units and/or pyrotechnic composition with or without a bursting charge, equipped with a rocket motor and stick(s) or other means for stabilisation of flight	ascent, with or without additional visual and/or aural effects, and production of visual and/or aural effects in the air
Roman candle chandelle Romaine Römisches Licht	tube containing alternate propellant charges, pyrotechnic units and transmitting fuses	ejection of the pyrotechnic units in succession, producing a series of visual and/or aural effects in the air
serpent serpent Schlange	preformed shape of pyrotechnic composition with or without a support	generation of expanded residue
shot tube chandelle monocoup	tube containing propellant charge and a pyrotechnic unit, with or without a bursting charge	ejection of the pyrotechnic unit, producing a visual and/or aural effect in the air
sparkler: see 'hand-held sparkler' and 'non-hand-held sparkler'		
snap pétard à tirette Knallziehband	two overlapping strips of cardboard or paper, or two strings, with a friction-sensitive pyrotechnic composition in sliding contact with an abrasive surface and designed to be held in the hand NOTE A snap can be a pyrotechnic unit in a Christmas cracker.	report, when device is pulled apart
spinner tourbillon volant Wirbel	tube or tubes containing pyrotechnic composition, and with or without aerofoils attached	rotation and ascent, with emission of sparks and/or flames, with or without aural effect (other than report)
table bomb bombe de table Tischfeuerwerk	paper, cardboard or plastics tube with fixed base and closed top, containing a propellant charge and non-pyrotechnic objects	report with ejection of streamers, confetti and/or novelties

throwdown pois fulminant Knallerbse	impact-sensitive pyrotechnic composition and grains of inert material wrapped in tissue paper or foil	report, when thrown onto the ground
wheel soleil Sonne	assembly including a non-metallic tube or tubes containing pyrotechnic composition and provided with a means of attaching it to a support so that it can rotate	rotation around a fixed point or axis and emission of sparks and flames, with or without aural effect(s) (other than report)

Table 2 – Generic types of fireworks on category F4

Generic Type	Description	Comments (informative)	Principal effects
Aerial Wheel	Tubes containing propellant charges and sparks-, flame- and/or noise-producing pyrotechnic composition(s), the tubes being fixed to a supporting structure, designed to rotate and ascend into the air.	Some of the tubes (if not all) are fixed in such a way that the device ascends, in an unsupported manner, into the air.	Rotation and ascent, with emission of sparks and flames, producing a visual and/or aural effect.
Aquatic firework	A firework designed to be floated on or near the surface of water by means of a buoyancy device or by itself and to function on or below water.		Same as Bengal flames, fountains, mines, shells for example.
Combination	Assembly including several elements, of one or more types, each corresponding to one of the types of firework listed in this table, with one or more points of ignition. Compound fireworks shall not be considered as combinations.	The elements may be fused together in series or parallel, with or without delay fuses, to give their effects in a sequence or at the same time.	As for the individual elements.
Component	Article usually included in other fireworks, in most cases without lifting charge and which requires further preparation.		
Fountain	Case containing sparks- and/or flame-and/or aural effect-producing pyrotechnic composition.		Emission of sparks and flames with aural effect other than report or without any aural effect.

Generic Type	Description	Comments (informative)	Principal effects
Guided Firework	An article containing pyrotechnic composition designed to function along a rope or other guide and to produce a visual and/or aural effect.	For example, line rockets may also be used to put fire to other fireworks, generally fixed on a frame located at a distance from the firing place, e.g. at the top of a steeple or a tower.	Emission of a visual and/or aural effect.
Mine	Article which may include integral mortar, containing propellant charge and more than one pyrotechnic unit, having as main effect the discharge of all the pyrotechnic units in a single ejection.	Pyrotechnic units may be stars, bangers, butterflies, crackers, hummers, spinners/tourbillions, whistles, for example.	Ejection of all the pyrotechnic units in a single burst producing a widely dispersed visual and/or aural effect in the air.
Report	Article containing pyrotechnic composition designed to produce a bang.		Report - may also include a coloured (or other effect) delay element.
Rocket	Article containing pyrotechnic composition and/or pyrotechnic units, equipped with a launching motor and stick(s) or other means for stabilization of flight, and designed to be propelled into the air.		Ascend with visual and/or aural effect.
Roman candle	Tube containing a single charge or alternating propellant charges and pyrotechnic units as well as transmitting fuses.	The pyrotechnic units may be bombettes, comets, hummers, maroons, mini mines, stars, whistles, for example.	Ejection of the pyrotechnic units in succession, producing a series of visual and/or aural effects in the air.
Shell	A device with or without lifting charge, with one or more delays before bursting, containing pyrotechnic unit(s) or loose pyrotechnic composition and usually designed to be projected and burst at a distance from a mortar.	Pyrotechnic units may be stars, butterflies, crackers, hummers, spinners/tourbillions, whistles, etc. as well as report shells or other shells to produce multiple bursts simultaneously or sequentially.	As for the individual pyrotechnic units.

Generic Type	Description	Comments (informative)	Principal effects
Smoke/aerosol generator	Article containing smoke producing pyrotechnic composition or heat/gas generating composition to evaporate a substance or disperse hygroscopic particles and designed to function on the ground or fixed to a support.	Casing of the article may be made of different materials.	Emission of white or coloured smoke/aerosol without any aural effect.

List of subtypes and descriptions

Subtype	Description	Link to Generic Type/Comments	Principal effects
Aquatic Shell	A spherical, cylindrical or other shell designed to be floated on water by means of a buoyancy device or by itself and which is fired from a mortar.	See "Shell".	Same effects as shells.
Bag Mine	Container with propellant charge and pyrotechnic units, designed to be placed in a mortar and to function as a mine.	See "Mine". Container is typically a cloth or paper or plastic bag or cloth or paper cylinder.	Same effects as mines.
Battery	Assembly including several elements, each of the same type or sub type and corresponding to one of the types of firework listed in this standard, with one or more points of ignition.	See "Combination". The elements may be fused together in series or parallel, with or without delay fuses, to give their effects in a sequence or at the same time.	As for the individual elements.
Bengal flame	Tube containing slow-burning pyrotechnic composition.	See "Fountain". The pyrotechnic composition may be pressed or not. The tube has no choke and optionally burns away during functioning.	Emission of white or coloured flame.

Subtype	Description	Link to Generic Type/Comments	Principal effects
Complex Shell	<p>A shell composed of several discrete elements designed to be projected from a mortar with a single lifting charge and to function sequentially or simultaneously.</p> <p>This subtype include the following articles:</p> <ul style="list-style-type: none"> — Multibreak Shell: A shell with several discrete elements and with or without propellant charge, with delay fuse and bursting charge, pyrotechnic unit(s) or loose pyrotechnic composition and designed to be projected from a mortar and to function sequentially or simultaneously by the lighting of multiple internal delay fuses. — Peanut Shell: A shell with two or more spherical shells in a common wrapper propelled by the same propellant charge with independent internal delay fuses. — Repeater Shell: A shell with several discrete elements and with or without propellant charge, with delay fuse and bursting charge, pyrotechnic unit(s) or loose pyrotechnic composition and designed to be projected from a mortar and to function sequentially by the lighting of the internal delay fuses by the functioning (burst) of the previous device. — Shell of shells (spherical): A shell with or without propellant charge, with delay fuse and bursting charge, containing report or other shells as subcomponents and designed to be projected from a mortar. 	See "Shell".	As for the individual elements.
Daylight Shell	A spherical, cylindrical or other shell designed to be fired from a mortar and which contains discrete elements which are visible in the daylight and/or components which produce an aural effect.	See "Shell".	Emission of coloured light and/or smoke, and/or aural effect.

Subtype	Description	Link to Generic Type/Comments	Principal effects
Flash banger	Non-metallic case containing metal-based pyrotechnic composition.	See "Report". May be used as pyrotechnic units in fireworks (shells, Roman candles, for example).	Report and a flash of light.
Ground maroon	A maroon without propellant charge and with or without delay fuse, designed to produce its report on the	See "Report".	Production of a loud bang.
Lance	A small diameter tube containing a compacted pyrotechnic composition, burning in a cigarette way, intended to deliver a thermal output to manually ignite other fireworks or a small white or coloured flame to be used in lanceworks.	See "Fountain". The pyrotechnic composition may be pressed or simply consolidated. The tube has no choke and generally burns away during functioning.	Thermal output and/or visual effect.
Maroon	A firework containing pyrotechnic unit(s) or loose pyrotechnic composition and designed to produce a loud bang report as main effect.	See "Report". Not to be confused with bangers, as their design is similar to shells or bombettes, which is not the case of bangers.	Production of a loud bang.
Maroon Shell	A maroon with or without propellant charge and with delay fuse, designed to be projected from a mortar and to produce its report in the air.	See "Shell" and "Report". This article is strictly shell-type designed.	Production of a loud bang.
Parachute Rocket	Article containing pyrotechnic composition and/or pyrotechnic units, which contains subcomponents some or all of which will descend on parachutes and equipped with a launching motor and stick(s) or other means for stabilization of flight, and designed to be self-propelled into the air.	See "Rocket".	As for the individual subcomponents.
Parachute Shell	A spherical, cylindrical or other shell designed to be fired from a mortar and which contains sub-components some or all of which will descend on parachutes.	See "Shell".	As for the individual pyrotechnic units contained in the shell.
Preloaded mortar, shell in mortar	Assembly comprising a shell inside a mortar from which the shell is designed to be projected.	See "Shell".	As for the individual shell.

Subtype	Description	Link to Generic Type/Comments	Principal effects
Saxon	Tube intended to be attached to a support in its middle so that it can rotate and containing pyrotechnic compacted charge(s) which burn opposite and eject their combustion products sideways so that rotation is obtained.	See "Fountain". The two pyrotechnic charges may be merged in a single charge. In that case, this charge burns at its two free ends.	Rotation, with emission of sparks and/or flames, with or without aural effect.
Set Piece	Assembly including one or multiple elements which is designed not to rotate.	See "Combination". Generally these elements belong to the sub type of lances, fountains and cascades, but can also include bangers, ground maroons and/or whistles.	As for the individual elements.
Shot tube	Tube containing a single propellant charge and a pyrotechnic unit, with or without a bursting charge, with or without a transmitting fuse.	See "Roman Candle". The pyrotechnic unit may be a bombette, a comet, a hummer, a shell (including maroon shells), a whistle, for example.	Single shot effect, as for roman candles.
Signal rocket	Tube containing pyrotechnic composition and/or pyrotechnic unit(s), equipped with a stick or other means for stabilization of flight, and designed to be propelled into the air to produce predominantly an aural effect.	See "Rocket".	Constant or variable pitch sound or report.
Strobe	Tube containing an intermittently-burning pyrotechnic composition to produce long and rapid series of flashes at a constant frequency. The tube has no choke and optionally burns away during functioning.	See "Fountain". The pyrotechnic composition may be pressed or not.	Production of series of flashes.
Spinner	Tube or tubes containing pyrotechnic composition with aerofoils attached.	See "Aerial wheel".	Rotation and ascent, with emission of sparks and/or flames, with or without aural effect.
Sub aquatic fireworks	Fireworks designed to function under the water near the surface.	See "Aqua firework". These articles have the capacity to float at a few centimetres under the surface of water.	Essentially similar to Bengal flames: emission of coloured flame.

Subtype	Description	Link to Generic Type/Comments	Principal effects
Volcano	Conical device containing consolidated or pressed composition in which the effect (height or intensity) increases as the device burns.	See "Fountain".	Production of an increasing visual effect.
Waterfall	Case containing pressed or consolidated pyrotechnic composition producing sparks and flames and generally to consume the tube whilst burning.	See "Fountain". Combustion products are ejected from the flame zone at low speed, then drop downwards as water in a waterfall.	Production of a bright white or coloured "waterfall" visual effect.
Wheel	Assembly including a tube or tubes containing pyrotechnic composition and provided with a means of attaching it to a support so that it can rotate.	See "Fountain" and "Combination". This article is designed to rotate about a fixed point in either a vertical or horizontal plane.	Rotation around a fixed point or axis and emission of sparks and flames, with or without aural effect(s).

6 – Situation of the firework manufacturers and importers in relation to REACH

There are four possible situations for firework manufacturers and importers:

Case 1: The Company manufactures fireworks and supplies chemical substances from manufacturers or importers within the European Union:

It is the European manufacturer or importer of substances which must pre-register, then register the substances it places on the market. Its customers must ensure that it has carried out the pre-registrations, then the registrations and (if necessary) made the authorization requests for the substances they buy from it.

This only concerns substances whose average annual supplies over three years exceeds 1 tonne.

A non-European manufacturer of chemicals can also have its substances registered by a European "Only Representative".

Case 2: The Company manufactures fireworks and supplies chemical substances directly from manufacturers or suppliers outside the European Union:

The manufacturer is an importer and must pre-register then register the substances it directly imports into the European Union.

Similarly, this only concerns substances whose average annual supplies over three years exceeds 1 tonne.

Case 3: The Company buys the fireworks from a manufacturer or importer in the European Union:

The Company is then in a similar case than the first case.

The Company should contact its European supplier and ask for the supplier's position with respect to pre-registration, possible authorization requests as well as the possible presence of substances belonging to the candidate list of substances for authorization or appendix XIV, at contents greater than 0.1% weight/weight. In the event of any conflicting interpretation, it can always substitute itself for its supplier to pre-register then register a substance.

Case 4: The Company directly imports from non-European union companies.

The Company is then in a case similar to the second case, but only for the substances included in the fireworks which are intentionally released without chemical transformation or defined as contained into the article.

It must therefore determine the status of the firework it imports.

Whatever the case, the non-European manufacturer can also entrust the pre-registration and registration process for its substances to an "Only Representative"; the manufacturer which has to import substances (directly or via an importer) should therefore contact the supplier to know its position.

In conclusion, this analysis allows the Company:

- To provide its customers with the correct information.
- To ensure that its supplier has fulfilled its REACH obligations (if any).
- To be compliant with the requirements of the REACH regulation (if applicable).

7 - Deciding what is a firework under REACH

The diagnostic of the status of the firework in relation to REACH must be carried out professionally by the manufacturer or importer using all its expertise and intellectual integrity. It is broken down chronologically as shown in the flow diagram on the next page to answer the question "is the firework an article or not?" (Figure 2 from page 8 of ECHA's guidance version 2).

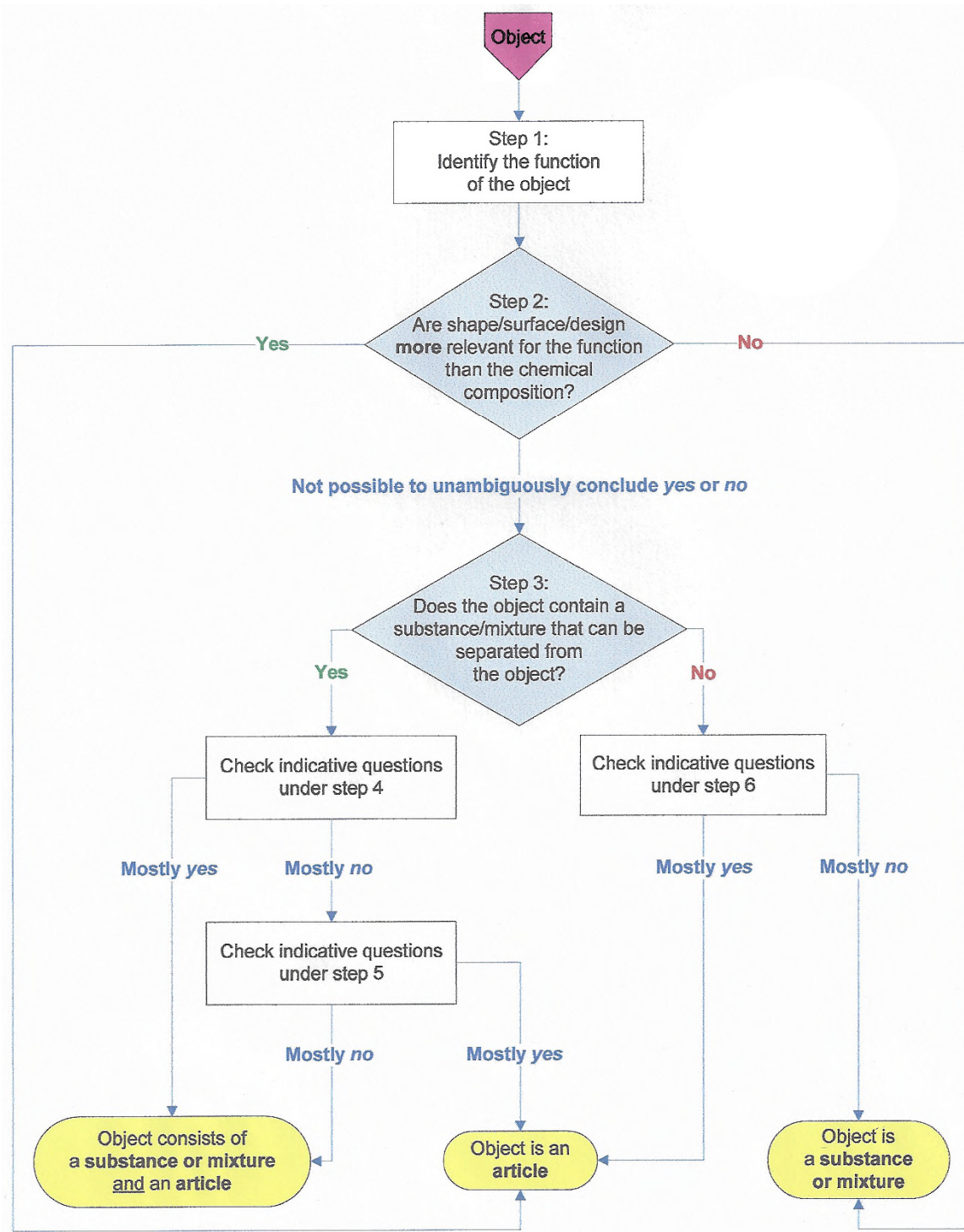


Figure 1 – ECHA's flow chart

The **first question** the company must answer is the following:

Step 1: Identify the function of the object.

Step 2: Are the shape, surface and design of the firework more relevant for the function than its chemical composition?

If yes, the object is an article

If no, the object is a substance or a mixture.

Hence the importance of firstly clearly defining the firework's function in the normal conditions of use. "Function" means what is expected of the firework – its "principal effect" or "main effect" (which it was designed for) and for what purposes – when it is used and not just a description of its technical architecture or the way it operates. The analysis of the elements providing the firework's performances may be a key element for answering the question.

If it is not possible to unambiguously conclude whether the answer is yes or no, proceed with step 3.

Step 3: Does the object contain a substance or a mixture which can be physically separated from the object (e.g. by pouring it or by extracting it)?

If yes, proceed with the questions in step 4, otherwise proceed with step 6:

Step 4:

"Question 4a: If the substance/mixture were to be removed or separated from the object and used independently from it, would the substance/mixture still be capable, in principle (though perhaps without convenience or sophistication), of carrying out the function defined in step 1?"

Question 4b: Does the object act mainly (i.e. according to the function defined under step 1) as a container or carrier for the release or controlled delivery of the substance/mixture or its reaction products?

Question 4c: Is the substance/mixture consumed (i.e. used up e.g. due to a chemical or physical modification) or eliminated (i.e. released from the object) during the use phase of the object, thereby rendering the object useless and leading to the end of its service life?

If you can answer these questions predominantly with "yes" (i.e. 2 of 3) rather than "no", then the object should be regarded as a combination of an article (functioning as a container or a carrier material) and a substance/mixture."

If not, check the questions in step 5.

Step 5:

"Question 5a: If the substance/mixture were to be removed or separated from the object, would it be unable to fulfill its intended purpose?"

Question 5b: Is the main purpose of the object other than to deliver the substance/mixture or its reaction products?"

Question 5c: Is the object normally discarded with the substance/mixture at the end of its service life, i.e. at disposal?"

If you can answer these questions predominantly with "yes", then the function of the object is likely to be determined rather by the physical properties of shape, surface and design, than by the chemical composition. The object is then regarded as an article with an integral substance/mixture (i.e. the substance/mixture forms an integral part of the article).

If you can answer "no" to most of these questions (i.e. 2 out of 3), the object is then regarded as a combination of an article (acting as a container or carrier material) and a substance/mixture.

Step 6:

"Question 6a: does the object have a function other than being further processed? If the object predominantly has other functions (i.e. end-use functions), then this may be an indication that it is an article according to the definition of REACH.

Question 6b: does the seller place the object on the market and/or is the customer mainly interested in acquiring the object because of its shape/surface/design (and less because of its chemical composition)? If the object is mainly put on the market or acquired because of its shape/surface/design, this is an indication that the object is an article.

Question 6c: when further processed, does the object undergo only "light processing", i.e. no gross changes in shape? "Light processing", such as drilling, surface grinding or coating, may improve or modify an object's shape, surface or design for carrying out a function and is thus frequently applied to objects which are already articles. Thus, if only "light processing" is applied, this is an indication that the object is an article. Processes leading to gross changes in shape, meaning changes of depth, width and height of an object, are not regarded as "light processing". These can for example be primary shaping processes (such as casting or sintering) or forming processes (such as extrusion, forging or rolling). If the object preserves at least one of its characteristic dimensions (depth, width and/or height) when further processed, the process can be regarded as "light processing".

Question 6d: when further processed, does the chemical composition of the object remain the same? A change of the chemical composition in the next processing steps may indicate the object is a mixture. However, some treatments of an object which is an article may result in a change in its overall chemical composition, but not in its status of being an article. Examples are printing onto the surface, painting, applying coatings, dyeing, etc.

Not all questions may apply to all objects and the weight of evidence of the answers to the questions may vary from case to case. However, in concluding whether or not the object is an article, the answer to several of the relevant indicative questions should be considered and not only the answer to one of them. Predominantly answering "yes" to the questions indicates that the object is an article. Predominantly answering "no" to the questions indicates that the object is a substance or mixture.

Specific case (for fireworks considered to be articles containing one or more substances/mixtures): ask yourself the following question: are substances released intentionally²?

If yes, the substance released must be pre-registered, then registered (if the annual quantity consumed exceeds 1 tonne per year per substance, and if it has not already been registered by a third party for the same use).

If no, there is no obligation for the manufacturer or importer of the article to register the substances it contains.

² INTENDED RELEASE OF SUBSTANCES BY AN ARTICLE: (§3.1 of ECHA's guidance version 2) "A release of substances from articles is intended if it fulfills an **accessory function** (to be differentiated from the main function) which is deliberately planned and would not be achieved if the substance were not released. Consequently, substances that are released because of aging of articles, because of wear and tear or as an unavoidable side-effect of the functioning of the article, are generally not intended releases, as the release as such does not provide a function in itself.

"If the release of a substance from an object fulfills the main function of the object, the release is not regarded as an "intended release" for the purpose of REACH. In this case the object usually would be considered as a combination of an article (functioning as a container or a carrier material) and a substance/mixture, and not as an article with intended release of a substance/mixture."

"An intended release of a substance from an article has furthermore to occur under (normal or reasonably foreseeable) **conditions of use**. This means that the substance release has to occur during the service life of the article. Hence, a substance release during the "production" or "disposal" phase of the article's life cycle is not an intended release."

8 – Status of the various generic types of fireworks according to REACH

The following analyzes are intended to help manufacturers and importers to determine whether the fireworks they manufacture or import are submitted to the REACH requirements and obligations.

All generic types were systematically analyzed according to steps 1 and 2 of the flow chart given in the last version of the ECHA guidance (See also Figure 1). Some of them were considered as borderline cases and the following steps of the flow chart were applied. This approach resulted in the classification shown in the following Table 3 for consumer fireworks (categories F1, F2 and F3) and Table 4 for fireworks of category 4 (for use by persons with specialist knowledge).

Table 5 gives some illustrations of the differences of designs according to the generic types of fireworks.

Table 3 – Assessment of generic types of fireworks of categories F1, F2 and F3 according to REACH (1/9)

Generic type	Aerial wheel	Banger, flash banger	Battery	Battery requiring external support
Brief description	Tubes containing propellant charges and sparks-, flame- and/or noise-producing pyrotechnic compositions, the tubes being fixed to a supporting structure	Non-metallic case containing pyrotechnic composition	Assembly including several elements, each of the same type and corresponding to one of the types of firework listed in Table 1, with one or two points of ignition, which does not require external support	Assembly including several elements, each of the same type and corresponding to one of the types of firework listed in Table 1, with one or two points of ignition, which requires external support
Principal effects	Rotation and ascent, with emission of sparks and flames, producing a visual and/or aural effect in the air	Report	As for the individual elements	As for the individual elements
Comments (informative)		See Table 5, line 1	See Table 5, line 3	See Table 5, line 3
Step 1: Main function	Rotation and ascent, with emission of sparks and flames, producing a visual and/or aural effect in the air	Providing after a defined delay time a report of defined sound level – sometimes accompanied by an emission of light/flash	Delivery of a sequence of different luminous, whistling and report effects at a certain height	Delivery of a sequence of different luminous, whistling and report effects at a certain height
Step 2: Predominant shape, surface or design?	Yes Complex internal and external design necessary do facilitate the function of the article acc. 2013/29/EU and EN 15947, contained substances and mixtures vary and are of lower significance for the function than the design.	Yes Specific internal and external design of non-metallic tube (usually paper) and delay to ensure proper sound level and minimize risk. Various pyrotechnic mixtures can be used. They are of lower significance for the function than the design.	Yes Complex internal and external design necessary do facilitate the function of the article acc. Directive 2013/29/EU and EN 15947; contained substances and mixtures vary and are of lower significance for the function than the design	Yes Complex internal and external design necessary do facilitate the function of the article acc. Directive 2013/29/EU and EN 15947; contained substances and mixtures vary and are of lower significance for the function than the design.
Step 3: Chemical content easily extractable out of the article?				
Predominant answers to indicative questions 4a, 4b, 4c				
Predominant answers to indicative questions 5a, 5b, 5c				
Predominant answers to indicative questions 6a, 6b, 6c, 6d				
Classification: Article or Combination of article and substances?	Article	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No	No

Table 3 – Assessment of generic types of fireworks of categories F1, F2 and F3 according to REACH (2/9)

Generic type	Bengal flame	Bengal match	Bengal stick	Christmas cracker
Brief description	Tube containing slow-burning pyrotechnic composition	Short wooden stick partially coated (along one end) with slow-burning pyrotechnic composition, with a dot of friction-sensitive pyrotechnic composition at the tip, and designed to be held in the hand	Wooden stick partially coated (along one end) with slow-burning pyrotechnic composition and designed to be held in the hand	Paper or foil tube, crimped at each end, enclosing novelties and with one or more snaps running along the length of the tube
Principal effects	Emission of coloured flame	Emission of coloured flame and sparks	Emission of coloured flame and sparks	Report when pulled apart and release of the novelties
Comments (informative)				
Step 1: Main function	Emission of light in a defined colour and brightness over a specified time.	Emission of light and sparks of a defined colour and brightness over a specified time.	Emission of light and sparks of a defined colour and brightness over a specified time	Emission of a report with ejection of novelties on pulling end of article.
Step 2: Predominant shape, surface or design?	Yes The pyrotechnic mixture/preparation is pressed inseparably into a cylindrical tube made of paper of defined strength, wall thickness, length, diameter and confinement. The pressing force determines the burning rate of the contained mixture. The casing must be constructed in a way that the produced gases can flow off fast enough so that the casing will not explode and the emitted light is not obstructed or changed.	Yes The emission of light and sparks is produced by a relatively slow and complete reaction of different pyrotechnic mixtures/preparation on a partially coated wooden stick (along one end), with an ignition head. It is designed to be held in hand.	Yes The emission of light and sparks is produced by a relatively slow and complete reaction of different pyrotechnic mixtures/preparation on a partially coated wooden stick (along one end), without ignition head. It is designed to be held in hand.	Yes The report and ejection is caused by a fast and complete reaction of pyrotechnic mixture in the paper or foil tube, crimped at each end. The tube is of defined strength, wall thickness, length, diameter and confinement to provide a limited and defined report and the ejection of non-pyrotechnic novelties. No chemical substances are part of the novelties..
Step 3: Chemical content easily extractable out of the article?		Yes	Yes	
Predominant answers to indicative questions 4a, 4b, 4c		No	No	
Predominant answers to indicative questions 5a, 5b, 5c		Yes	Yes	
Predominant answers to indicative questions 6a, 6b, 6c, 6d				
Classification: Article or Combination of article and substances?	Article	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No	No

Table 3 – Assessment of generic types of fireworks of categories F1, F2 and F3 according to REACH (3/9)

Generic type	Combination	Combination requiring external support	Compound firework	Crackling granules
Brief description	Assembly including several elements, not all of the same type, each corresponding to one of the types of firework listed in Table 1, with one or two points of ignition, which does not require external support	Assembly including several elements, not all of the same type, each corresponding to one of the types of firework listed in Table 1, with one or two points of ignition, which requires external support	Assembly including several separately CE marked fireworks complying with EN 15947, securely fixed on the same base, and connected together by linking the protruding and reserve fuses of each firework, or with separately CE marked pyrotechnic cords, or a mixture of both, with one or two points of ignition, which does not require external support	Bag, or other container, enclosing small granules of pyrotechnic composition
Principal effects	As for the individual elements	As for the individual elements	As for the individual elements	Crackling noise
Comments (informative)				
Step 1: Main function	Delivery of a sequence of different luminous, whistling and report effects at a certain height.	Delivery of a sequence of different luminous, whistling and report effects at a certain height.	Delivery of a sequence of different luminous, whistling and report effects at a certain height.	Delivery of a crackling sound produced by the pyrotechnic reaction of the crackling granules
Step 2: Predominant shape, surface or design?	See the individual elements	See the individual elements	See the individual elements	Yes .The granules have to be in a particular shape and casing to function; there are numerous cracking mixtures that can be used
Step 3: Chemical content easily extractable out of the article?				
Predominant answers to indicative questions 4a, 4b, 4c				
Predominant answers to indicative questions 5a, 5b, 5c				
Predominant answers to indicative questions 6a, 6b, 6c, 6d				
Classification: Article or Combination of article and substances?				Article
Intended release of component substance (main/accessory function)?				No release
Registration of substance(s) contained in the article?				No

Table 3 – Assessment of generic types of fireworks of categories F1, F2 and F3 according to REACH (4/9)

Generic type	Double banger	Flash banger	Flash pellet	Fountain
Brief description	Non-metallic case containing pyrotechnic composition	Non-metallic case containing perchlorate/metal- based or nitrate/metal-based report composition	Pellet of intermittently-burning pyrotechnic composition	Non-metallic case containing sparks- and flame- producing pyrotechnic composition and designed to be placed on the ground, or to be fixed in the ground, or to be fixed to a support, or to be held in the hand
Principal effects	Succession of reports	Report and flash of light	Multiple flashes of light	Emission of sparks and flames with aural effect other than report or without any aural effect
Comments (informative)		See also “Banger” and Table 5, line 1		See Table 5, line 2
Step 1: Main function	Providing after a defined delay time a succession of reports of defined sound level – sometimes accompanied by an emission of light/flash	Providing after a defined delay time a report of defined sound level – sometimes accompanied by an emission of light/flash	Emission of intermittent light in a defined colour and brightness over a specified time	Emission of light and sparks of a defined colour and brightness over a specified time with aural effect other than report or without any aural effect.
Step 2: Predominant shape, surface or design?	Yes Specific internal and external design of non-metallic tube (usually paper) and delay to ensure proper sound level and minimize risk. Various pyrotechnic mixtures can be used. They are of lower significance for the function than the design.	Yes Specific internal and external design of non-metallic tube (usually paper) and delay to ensure proper sound level and minimize risk. Various pyrotechnic mixtures can be used. They are of lower significance for the function than the design.	Yes The pellets have to be pressed in a particular shape to produce the expected intermittent flashes of light. Different pyrotechnic mixtures can be used.	Yes This emission is produced by a relatively slow and complete combustion of different pyrotechnic compositions in a paper tube / non-metallic casing. Fountains are designed to be placed on the ground, to be fixed into the ground, to be fixed to a support, or to be held in the hand. The pyrotechnic composition is pressed into the tubular casing and never leaves it.
Step 3: Chemical content easily extractable out of the article?				
Predominant answers to indicative questions 4a, 4b, 4c				
Predominant answers to indicative questions 5a, 5b, 5c				
Predominant answers to indicative questions 6a, 6b, 6c, 6d				
Classification: Article or Combination of article and substances?	Article	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No	No

Table 3 – Assessment of generic types of fireworks of categories F1, F2 and F3 according to REACH (5/9)

Generic type	Ground mover	Ground spinner	Jumping cracker	Jumping ground spinner
Brief description	Novelty item containing non-metallic tube or tubes with gas- or sparks- or flame producing pyrotechnic composition that is designed to move on the ground	Non-metallic tube or tubes containing gas- and sparks-producing pyrotechnic composition, with or without noise-producing pyrotechnic composition	Paper tube containing black powder, folded back on itself several times and bound together	Non-metallic tube containing gas- and sparks- producing pyrotechnic composition, with or without whistling pyrotechnic composition
Principal effects	Emission of sparks and flames, producing a visual and/or aural effect on the ground	Rotation on the ground and emission of sparks and/or flames with or without aural effect (other than report)	Succession of reports, with jumping motions	Rotation on the ground frequently interrupted by a jumping motion, and emission of sparks and flames, with or without an aural effect (other than report)
Comments (informative)				
Step 1: Main function	Emission of sparks and flames, producing a visual and/or aural effect on the ground.	Rotation on the ground and emission of sparks and flames, with or without an aural effect (other than report).	Providing after a defined delay time a succession of reports of defined sound level – sometime accompanied by an emission of light/flash	Rotation on the ground frequently interrupted by a jumping motion, and emission of sparks and flames, with or without an aural effect (other than report)
Step 2: Predominant shape, surface or design?	Yes Paper tube containing black powder or other composition, folded back on itself several times and bound together)	Yes Numerous different mixtures can be used to produce this effect; but more important is the particular internal and external design.	Yes Specific internal and external design of non-metallic tube (usually paper) and delay to ensure proper sound level and minimize risk. Various pyrotechnic mixtures can be used. They are of lower significance for the function than the design.	Yes Numerous different mixtures can be used to produce this effect; but more important is the particular internal and external design of the article. This is more important for the function than the chemical composition of the effects.
Step 3: Chemical content easily extractable out of the article?				
Predominant answers to indicative questions 4a, 4b, 4c				
Predominant answers to indicative questions 5a, 5b, 5c				
Predominant answers to indicative questions 6a, 6b, 6c, 6d				
Classification: Article or Combination of article and substances?	Article	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No	No

Table 3 – Assessment of generic types of fireworks of categories F1, F2 and F3 according to REACH (6/9)

Generic type	Mine	Mini rocket	Novelty match	Party popper
Brief description	Tube containing propellant charge and pyrotechnic units and/or non-pyrotechnic objects and designed to be placed on the ground or to be fixed in the ground	Tube containing pyrotechnic composition equipped with stick(s) and designed to be propelled in the air	Match with a dot of pyrotechnic composition, designed to be held in the hand	Device operated by a pull-string with an abrasive surface in sliding contact with a friction-sensitive pyrotechnic composition and designed to be held in the hand
Principal effects	Ejection of the content in a single burst producing a widely dispersed visual and/or aural effect in the air	Ascent, with visual and/or aural effects, with or without production of aural effects in the air	Report and/or visual effect	Report, with ejection of streamers and/or confetti
Comments (informative)		See Table 5, line 4		
Step 1: Main function	Delivery of visual and/or aural effects in the air e.g. lights, whistles and reports. These effects are ejected while burning out of a tube up to a certain height.	Ascent, with or without additional visual and/or aural effects, and production of visual and/or aural effects in the air	Production of a report on using the match	Production of a report with ejection of streamers, confetti and/or novelties after a defined delay time.
Step 2: Predominant shape, surface or design?	Yes The tube contains a propellant charge, pyrotechnic units and/or non-pyrotechnic objects and is designed to be placed on the ground or to be fixed in the ground. It has a special design, material and strength to assure a safe functioning. The effects as well must have a particular design such as external diameter, weight and length.	Yes Specific internal and external design of non-metallic tube (usually paper) and delay to ensure proper sound level and minimize risk. Various pyrotechnic mixtures can be used. They are of lower significance for the function than the design.	Yes The report is produced by striking the match head to ignite it. Different report compositions can be used but the match design is more important.	Yes The ejection is caused by a fast and complete reaction of a pyrotechnic mixture. The tube has defined strength, wall thickness, length, diameter and confinement to provide a limited and defined report and the ejection of non-pyrotechnic objects and articles. These articles act later as decoration, toys or joke articles. No substances are ejected.
Step 3: Chemical content easily extractable out of the article?				
Predominant answers to indicative questions 4a, 4b, 4c				
Predominant answers to indicative questions 5a, 5b, 5c				
Predominant answers to indicative questions 6a, 6b, 6c, 6d				
Classification: Article or Combination of article and substances?	Article	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No	No

Table 3 – Assessment of generic types of fireworks of categories F1, F2 and F3 according to REACH (7/9)

Generic type	Rocket	Roman candle	Serpent	Shot tube
Brief description	Tube containing pyrotechnic units and/or pyrotechnic composition with or without a bursting charge, equipped with a rocket motor and stick(s) or other means for stabilisation of flight	Tube containing alternate propellant charges, pyrotechnic units and transmitting fuses	Preformed shape of pyrotechnic composition with or without a support	Tube containing propellant charge and a pyrotechnic unit, with or without a bursting charge
Principal effects	Ascent, with or without additional visual and/or aural effects, and production of visual and/or aural effects in the air	Ejection of the pyrotechnic units in succession, producing a series of visual and/or aural effects in the air	Generation of expanded residue	Ejection of the pyrotechnic unit, producing a visual and/or aural effect in the air
Comments (informative)	See Table 5, line 4	See Table 5, line 5		
Step 1: Main function	Ascent, with or without additional visual and/or aural effects, and production of visual and/or aural effects in the air	Delivery of a sequence of different visual and/or aural effects in the air e.g. lights, whistles and reports which are ejected while burning out of a tube up to a certain height.	Generation of expanded residue resembling the shape of a snake	Delivery of visual and/or aural effects in the air e.g. lights, whistles and reports.
Step 2: Predominant shape, surface or design?	Yes Propulsion can only be obtained if a specific design is given to the articles: tubular casing able to withstand the internal pressure, tube choked at one end to provide a nozzle, pressed composition with a special shape to obtain the correct pressure and thrust. Various mixtures can be used, but the internal design is far more important for the principal effect	Yes The tube contains alternate propellant charges, pyrotechnic units and transmission fuses. The tube has a special design, material and strength to allow a safe functioning. The effects as well must have a particular design like external diameter, weight and length. This design is more important for the function than the chemical composition of the effects.	No	Yes Effects are ejected while burning out of a tube to a certain height. The tube contains a propellant charge, pyrotechnic units and transmission fuses. The tube has a special design, material and strength to allow a safe functioning. The effects as well must have a particular design like external diameter, weight and length. This design is more important for the function than the chemical composition of the effects.
Step 3: Chemical content easily extractable out of the article?				
Predominant answers to indicative questions 4a, 4b, 4c				
Predominant answers to indicative questions 5a, 5b, 5c				
Predominant answers to indicative questions 6a, 6b, 6c, 6d				
Classification: Article or Combination of article and substances?	Article	Article	Combination of article and substance	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	Yes	No

Table 3 – Assessment of generic types of fireworks of categories F1, F2 and F3 according to REACH (8/9)

Generic type	Snap	Spinner	Sparkler, hand-held sparkler and non-hand-held sparkler
Brief description	Two overlapping strips of cardboard or paper, or two strings, with a friction-sensitive pyrotechnic composition in sliding contact with an abrasive surface and designed to be held in the hand.	Tube or tubes containing pyrotechnic composition, and with or without airfoils attached	Rigid wire partially coated along one end with slow-burning pyrotechnic composition, with or without an ignition head, designed to be held in the hand or not to be held in hand
Principal effects	Report, when device is pulled apart	Rotation and ascent, with emission of sparks and/or flames, with or without aural effect (other than report)	Emission of sparks, with or without aural effect (other than report)
Comments (informative)	A snap can be a pyrotechnic unit in a Christmas cracker		
Step 1: Main function	Friction between the overlapping strips made of cardboard or paper ignites a friction-sensitive pyrotechnic composition that produces a report.	Rotation on the ground and ascent and emission of sparks and flames, with or without an aural effect (other than report)	Emission of light and sparks of a defined colour and brightness over a specified time resp. emission of sparks and flames with aural effect other than report or without any aural effect.
Step 2: Predominant shape, surface or design?	Yes This effect is only made possible by the above design. There are different friction-sensitive pyrotechnic compositions available for this purpose but none of them is specific.	Yes Numerous different mixtures can be used to produce this effect; but more important is the particular internal and external design of the article.	Yes The emission is produced by a relatively slow and complete reaction of different pyrotechnic compositions on a rigid wire partially coated along one end, with or without an ignition head. The pyrotechnic composition remains fixed to the wire by means of a polymer (glue, binder) also during use. Only light and sparks are emitted during functioning. The carrier wire must be designed in a way that it holds the composition safely until the end of functioning and does not interfere with the colour and brightness of the effect. The wire can have a special design to form a burning pattern like stars, hearts or letters.
Step 3: Chemical content easily extractable out of the article?			Yes
Predominant answers to indicative questions 4a, 4b, 4c			No
Predominant answers to indicative questions 5a, 5b, 5c			Yes
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No

Table 3 – Assessment of generic types of fireworks of categories F1, F2 and F3 according to REACH (9/9)

Generic type	Table bomb	Throwdown	Wheels
Brief description	Paper, cardboard or plastics tube with fixed base and closed top, containing a propellant charge and non-pyrotechnic objects	Impact-sensitive pyrotechnic composition and grains of inert material wrapped in tissue paper or foil	Assembly including a non-metallic tube or tubes containing pyrotechnic composition and provided with a means of attaching it to a support so that it can rotate
Principal effects	Report with ejection of streamers, confetti and/or novelties	Report, when thrown onto the ground	Rotation around a fixed point or axis and emission of sparks and flames, with or without aural effect(s) (other than report)
Comments (informative)	See Table 5, line 8		See Table 5, line 8
Step 1: Main function	Report with ejection of streamers, confetti and/or novelties after a defined delay time.	Report of defined sound level when thrown onto the ground	Emission of light and sparks of a defined color and brightness over a specified time with aural effect(s) other than report or without any aural effect.
Step 2: Predominant shape, surface or design?	<p>Yes</p> <p>The ejection is caused by a fast and complete reaction of pyrotechnic mixture in a paper, cardboard or plastic tube with fixed base, sabot and closed top. The tube is of defined strength, wall thickness, length, diameter and confinement to provide a limited and defined report and the ejection of non-pyrotechnic objects and articles. These articles act later as decoration, toys or joke articles. No substances are ejected.</p>	<p>Yes</p> <p>The report is produced by a fast and complete explosive conversion of different impact-sensitive substances/mixtures/preparations on grains of inert material wrapped in tissue paper or foil. The grains of inert material (usually gravel) providing the mass for throwing and the mass inertia that is converted into friction leading to the conversion of the impact-sensitive substances/mixtures/preparation</p>	<p>Yes</p> <p>The emission of light and sparks is produced by a relatively slow and complete combustion of different pyrotechnic mixtures/preparations in paper tubes / non-metallic cases. The article is designed with a means of attaching it to a support so that it can rotate around a fixed point or axis Only light and sparks together with gas (reaction products) will be emitted during functioning. Sometimes also a whistling sound is produced during the function of the article Complex internal and external design is necessary do facilitate the function of the article acc. Directive 2013/29/EU and EN 15947; contained substances and mixtures vary and are of lower significance for the function than the design.</p>
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (1/14)

Generic type	Aerial wheel	Aquatic firework	Combination
Brief description	Tubes containing propellant charges and sparks-, flame- and/or noise-producing pyrotechnic composition(s), the tubes being fixed to a supporting structure, designed to rotate and ascend into the air.	A firework designed to be floated on or near the surface of water by means of a buoyancy device or by itself and to function on or below water.	Assembly including several elements, not all of the same type, each corresponding to one of the types of firework listed in Table 2, with one or two points of ignition, which does not require external support
Principal effects	Rotation and ascent, with emission of sparks and flames, producing a visual and/or aural effect in the air		As for the individual elements
Comments (informative)			See Table 5, line 3
Step 1: Main function	Rotation and ascent, with emission of sparks and flames, producing a visual and/or aural effect in the air	Same as Bengal flames, fountains, mines, shells for example only with modified casings to exclude water contact with the pyrotechnic compositions	Delivery of a sequence of different luminous, whistling and report effects at a certain height.
Step 2: Predominant shape, surface or design?	Yes The article is designed to rotate and ascent stabilized by the rotation into the air, accompanied by sound or luminous effects in a defined manner and up to a defined height. The emission of light and sparks is produced by complete combustion of different pyrotechnic mixtures/preparations pressed in paper tubes / non-metallic cases. Various alternative compositions may be used and then their chemical content is of lower importance for the principal effect than the design.	Yes Like the individual articles but with modified and waterproof casings. Without this part of design no effect can be produced and the article would be useless.	See the individual elements
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	
Intended release of component substance (main/accessory function)?	No release	No release	
Registration of substance(s) contained in the article?	No	No	

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (2/14)

Generic type	Component	Fountain	Guided Firework
Brief description	Article usually included in other fireworks, in most cases without lifting charge and which requires further preparation.	Case with particular design containing a pyrotechnic composition and designed to be placed on the ground, to be fixed in the ground, to be fixed to a support, or to be held in the hand	An article containing pyrotechnic composition designed to function along a rope or other guide and to produce a visual and/or aural effect.
Principal effects		Emission of sparks and flames with aural effect other than report or without any aural effect	For example, line rockets may also be used to put fire to other fireworks, generally fixed on a frame located at a distance from the firing place, e.g. at the top of a steeple or a tower.
Comments (informative)		See Table 5, line 2	
Step 1: Main function	Component, article usually included in other fireworks, in most cases without lifting charge and which requires further preparation. It contains various pyrotechnic mixtures but the user is not interested in their chemical content; they remain inside the component and the article is used (inserted into other articles) for the effects they produce and are determined by the shape they have.	Providing an emission of light and sparks of a defined colour and brightness over a specified time resp. emission of sparks and flames with aural effect other than report or without any aural effect. This emission is produced by a relatively slow and complete reaction of different pyrotechnic mixtures/preparations in a paper tube / non-metallic case. It is designed to be placed on the ground, to be fixed in the ground, to be fixed to a support, or to be held in the hand. The pyrotechnic mixture/preparation is pressed into the tubing and does not leave the tube.	Emission of a visual and/or aural effect in a complex mechanical setting. Focus is the guided movement of the pyrotechnic article; mandatory is hereby much more the mechanical setup than the pyrotechnic composition.
Step 2: Predominant shape, surface or design?	Yes Various alternative pyrotechnic mixtures may be used and then user is not interested in their chemical composition, but only in the physical effects of their reaction; these pyrotechnic mixtures remain in the component. The article is used (inserted into other articles) for the effects they produce and determined by the shape they have.	Yes This emission is produced by a relatively slow and complete combustion of different pyrotechnic compositions in a paper tube / non-metallic casing. Various alternative pyrotechnic mixtures may be used and then user is not interested in their chemical composition, but only in the physical effects of their reaction. Fountains are designed to be placed on the ground, to be fixed into the ground, to be fixed to a support, or to be held in the hand. The pyrotechnic composition is pressed into the tubular casing and never leaves it.	Yes Without the complex mechanical setup the article would be useless; the pyrotechnic mixtures vary and are not expected or significant
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (3/14)

Generic type	Mine	Report (Banger)	Rocket
Brief description	Article which may include integral mortar, containing propellant charge and more than one pyrotechnic unit, having as main effect the discharge of all the pyrotechnic units in a single ejection. Pyrotechnic units may be stars, bangers, butterflies, crackers, hummers, spinners/tourbillions, whistles, for example.	Article containing pyrotechnic composition designed to produce a bang.	Tube containing pyrotechnic units and/or pyrotechnic composition with or without a bursting charge, equipped with a rocket motor and stick(s) or other means for stabilisation of flight
Principal effects	Ejection of all the pyrotechnic units in a single burst producing a widely dispersed visual and/or aural effect in the air.	Report – It may also include a coloured (or other effect) delay element.	Ascent, with or without additional visual and/or aural effects, and production of visual and/or aural effects in the air
Comments (informative)		See Table 5, line 1	
Step 1: Main function	Delivery of visual and/or aural effects in the air e.g. lights, whistles and reports. They are ejected while burning out of a tube up to a certain height. The tube is containing a propellant charge and pyrotechnic units and/or non-pyrotechnic objects and designed to be placed on the ground or to be fixed in the ground. The tube has a special design, material and strength to allow a safe function. The effects as well must have a particular design like external diameter, weight and length. This design is more important for the function than the chemical composition of the effects.	Providing, after a defined delay time, a report of defined sound level – sometime accompanied by an emission of light/flash	Ascent, with or without additional visual and/or aural effects, and production of visual and/or aural effects in the air
Step 2: Predominant shape, surface or design?	Yes The tube has a special design, material and strength to allow a safe functioning. The effects as well must have a particular design like external diameter, weight and length. This design is more important for the function than the chemical composition of the effects.	Yes Specific internal and external design of non-metallic tube (usually paper) and delay to ensure proper sound level and minimize risk. Various pyrotechnic mixtures can be used. They are of lower significance for the function than the design.	Yes Propulsion can only be obtained if a specific design is given to the articles: tubular casing able to withstand the internal pressure, tube choked at one end to provide a nozzle, pressed composition with a special shape to obtain the correct pressure and thrust. Various alternative pyrotechnic mixtures may be used, but the internal design of the article is far more important for the effect
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (4/14)

Generic type	Roman candle	Shell	Smoke/aerosol generator	
Brief description	Tube containing a single charge or alternating propellant charges and pyrotechnic units as well as transmitting fuses. The pyrotechnic units may be bombettes, comets, hummers, maroons, mini mines, stars, whistles, for example.	A device with or without lifting charge, with one or more delays before bursting, containing pyrotechnic unit(s) or loose pyrotechnic composition and usually designed to be projected and burst at a distance from a mortar.	Article containing smoke producing pyrotechnic composition or heat/gas generating composition to evaporate a substance or disperse hygroscopic particles and designed to function on the ground or fixed to a support.	
Principal effects	Ejection of the pyrotechnic units in succession, producing a series of visual and/or aural effects in the air.	Ascent with or without tail and burst on trajectory after combustion of a delay fuse. Pyrotechnic units are thrown in various patterns and may be stars, butterflies, crackers, hummers, spinners/tourbillions, whistles, etc. as well as report shells or other shells to produce multiple bursts simultaneously or sequentially	Emission of smoke or aerosol without any aural effect. Smoke may be coloured or not by means of a dye included in the smoke composition and is sublimated during its combustion.	
Comments (informative)	See Table 5, line 5	See Table 5, line 6 and 7		
Step 1: Main function	Delivery of a sequence of different visual and/or aural effects in the air e.g. lights, whistles and reports are ejected while burning out of a tube up to a certain height.	Ascent with or without tail and burst on trajectory after combustion of a delay fuse, dispersion of pyrotechnic units in predetermined patterns.	Emission of coloured or non-coloured smoke/aerosol without any aural effect	
Step 2: Predominant shape, surface or design?	Yes The tube contains alternate propellant charges, pyrotechnic units and transmitting fuses. The tube has a special design, material and strength to allow a safe functioning. The effects as well must have a particular design like external diameter, weight and length. This design is more important for the function than the chemical composition of the effects.	Yes Shells have a very specific design including a lift charge, a burst charge and pyrotechnic units. They can be of different shape: mainly spherical or cylindrical or combinations, and deliver simple or multiple effects. The shell must be designed in a way to withstand the acceleration in mortar, wind along trajectory and to burst properly without premature breaking. The outer diameter of the shell must be made in the correct tolerance relative to the mortar to obtain the correct internal and external ballistics.	Yes The emission of smoke is produced by a relatively slow and complete combustion of different pyrotechnic mixtures acting as smoke producing pyrotechnic composition or heat/gas generating composition to evaporate a substance in a casing of particular design and materials. The smoke or the evaporated mixture may be cooled either by turbulent mixing with air or a cooling unit to avoid complete oxidation of the coloured smoke/aerosol.	
Step 3: Chemical content easily extractable out of the article?				
Predominant answers to indicative questions 4a, 4b, 4c				
Predominant answers to indicative questions 5a, 5b, 5c				
Predominant answers to indicative questions 6a, 6b, 6c, 6d				
Classification: Article or Combination of article and substances?	Article	Article	Article	
Intended release of component substance (main/accessory function)?	No release	No release	No release of a sublimated dye	Intended release of the sublimated dye or aerosol substance
Registration of substance(s) contained in the article?	No	No	No	Yes, the released untransformed substances have to be registered.

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (5/14)

Generic type	Aquatic Shell	Bag Mine	Battery
Brief description	A spherical, cylindrical or other shell designed to be floated on water by means of a buoyancy device or by itself and which is fired from a mortar.	Container with propellant charge and pyrotechnic units, designed to be placed in a mortar and to function as a mine..	Assembly including several elements, each of the same type or sub type and corresponding to one of the types of firework listed in this standard, with one or more points of ignition.
Principal effects	Ascent with or without tail and burst on trajectory after combustion of a delay fuse. Pyrotechnic units are thrown in various patterns and may be stars, butterflies, crackers, hummers, spinners/tourbillions, whistles, etc. as well as report shells or other shells to produce multiple bursts simultaneously or sequentially	Container is typically a cloth or paper or plastic bag or cloth or paper cylinder. Ejection of all the pyrotechnic units in a single burst producing a widely dispersed visual and/or aural effect in the air.	As for the individual elements
Comments (informative)	See also "Shell"	See also "Mine"	See also "Combination". The elements may be fused together in series or parallel, with or without delay fuses, to give their effects in a sequence or at the same time. See Table 5, line 3
Step 1: Main function	Same effects as shells: Ascent with or without tail and burst on trajectory after combustion of a delay fuse, dispersion of pyrotechnic units in predetermined patterns.	Delivery of visual and/or aural effects in the air e.g. lights, whistles and reports. They are ejected burning out of a tube to a certain height. The tube is containing a propellant charge and pyrotechnic units and/or non-pyrotechnic objects	Delivery of a sequence of different luminous, whistling and report effects at a certain height
Step 2: Predominant shape, surface or design?	Yes Shells have a very specific design including a lift charge, a burst charge and pyrotechnic units. They can be of different shape: mainly spherical or cylindrical or combinations, and deliver simple or multiple effects. The aquatic shell must additionally to the "shell" be specially designed to withstand impact on water and water resistant. The external diameter of the shell must be made in the correct tolerance relative to the mortar to obtain the correct internal and external ballistics.	Yes The bag and the pyrotechnic items within it have a special design, material and strength to allow a safe functioning. The effects as well must have a particular design like external diameter, weight and length. This design is more important for the function than the chemical composition of the effects that is variable.	Yes Complex internal and external design necessary do facilitate the function of the article acc. Directive 2013/29/EU and EN 15947; contained substances and mixtures vary and are of lower significance for the function than the design.
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (6/14)

Generic type	Bengal flame	Complex Shell / Multibreak Shell	Complex Shell / Peanut Shell
Brief description	Tube containing slow-burning pyrotechnic composition	A shell with several discrete elements and with or without propellant charge, with delay fuse and bursting charge, pyrotechnic unit(s) or loose pyrotechnic composition and designed to be projected from a mortar and to function sequentially or simultaneously by the lighting of multiple internal delay fuses.	A shell with two or more spherical shells in a common wrapper propelled by the same propellant charge with independent internal delay fuses.
Principal effects	Emission of white or coloured flame, See "Fountain". The pyrotechnic composition may be pressed or not. The tube has no choke and optionally burns away during	Ascent with or without tail and burst on trajectory after combustion of a delay fuse. Pyrotechnic units are thrown in various patterns and may be stars, butterflies, crackers, hummers, spinners/tourbillions, whistles, etc. as well as report shells or other shells to produce multiple bursts. Effects as for the individual elements.	Ascent with or without tail and burst on trajectory after combustion of a delay fuse. Pyrotechnic units are thrown in various patterns and may be stars, butterflies, crackers, hummers, spinners/tourbillions, whistles, etc. as well as report shells or other shells to produce multiple bursts. Effects as for the individual elements.
Comments (informative)		See also "Shell". See Table 5, line 6	See also "Shell", See Table 5, line 6
Step 1: Main function	Emission of light in a defined colour and brightness over a specified time.	Ascent with or without tail and burst on trajectory after combustion of a delay fuse, dispersion of pyrotechnic units in predetermined	Ascent with or without tail and burst on trajectory after combustion of a delay fuse, dispersion of pyrotechnic units in predetermined
Step 2: Predominant shape, surface or design?	Yes The pyrotechnic mixture/preparation is pressed inseparably into a cylindrical tube out of paper of defined strength, wall thickness, length, diameter and confinement. The pressing force determines the burning rate of the contained mixture. The casing must be constructed in a way that the produced gases can flow of fast enough so that the casing will not explode and the emitted light is not obstructed or changed.	Yes Shells have a very specific design including a lift charge, a burst charge and pyrotechnic units. They can be of different shape: mainly spherical or cylindrical or combinations, and deliver simple or multiple effects. The shell must be designed in a way to withstand the acceleration in mortar, wind along trajectory and to burst properly without premature breaking. The external diameter of the shell must be made in the correct tolerance relative to the mortar to obtain the correct internal and external ballistics.	Yes Shells have a very specific design including a lift charge, a burst charge and pyrotechnic units. They can be of different shape: mainly spherical or cylindrical or combinations, and deliver simple or multiple effects. The shell must be designed in a way to withstand the acceleration in mortar, wind along trajectory and to burst properly without premature breaking. The external diameter of the shell must be made in the correct tolerance relative to the mortar to obtain the correct internal and external ballistics.
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (7/14)

Generic type	Complex Shell / Repeater Shell	Complex Shell / Shell of shells (spherical)	Flash banger
Brief description	A shell with several discrete elements and with or without propellant charge, with delay fuse and bursting charge, pyrotechnic unit(s) or loose pyrotechnic composition and designed to be projected from a mortar and to function sequentially by the lighting of the internal delay fuses by the functioning (burst) of the previous device.	A shell with or without propellant charge, with delay fuse and bursting charge, containing report or other shells as subcomponents and designed to be projected from a mortar.	Non-metallic case containing pyrotechnic composition
Principal effects	Ascent with or without tail and burst on trajectory after combustion of a delay fuse. Pyrotechnic units are thrown in various patterns and may be stars, butterflies, crackers, hummers, spinners/tourbillions, whistles, etc. as well as report shells or other shells to produce multiple bursts. Effects as for the individual elements.	Ascent with or without tail and burst on trajectory after combustion of a delay fuse. Pyrotechnic units are thrown in various patterns and may be stars, butterflies, crackers, hummers, spinners/tourbillions, whistles, etc. as well as report shells or other shells to produce multiple bursts. Effects as for the individual elements.	Report
Comments (informative)	See also "Shell", See Table 5, line .7	See also "Shell", See Table 5, line 7	See also Banger, See Table 5, line 1
Step 1: Main function	Ascent with or without tail and burst on trajectory after combustion of a delay fuse, dispersion of pyrotechnic units in predetermined	Ascent with or without tail and burst on trajectory after combustion of a delay fuse, dispersion of pyrotechnic units in predetermined	Providing after a defined delay time a report of defined sound level – sometimes accompanied by an emission of light/flash
Step 2: Predominant shape, surface or design?	Yes Shells have a very specific design including a lift charge, a burst charge and pyrotechnic units. They can be of different shape: mainly spherical or cylindrical or combinations, and deliver simple or multiple effects. The shell must be designed in a way to withstand the acceleration in mortar, wind along trajectory and to burst properly without premature breaking. The outer diameter of the shell must be made in the correct tolerance relative to the mortar to obtain the correct internal and external ballistics.	Yes Shells have a very specific design including a lift charge, a burst charge and pyrotechnic units. They can be of different shape: mainly spherical or cylindrical or combinations, and deliver simple or multiple effects. The shell must be designed in a way to withstand the acceleration in mortar, wind along trajectory and to burst properly without premature breaking. The external diameter of the shell must be made in the correct tolerance relative to the mortar to obtain the correct internal and external ballistics.	Yes Specific internal and external design of non-metallic tube (usually paper) and delay to ensure proper sound level and minimize risk. Various pyrotechnic mixtures can be used. They are of lower significance for the function than the design.
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (8/14)

Generic type	Daylight Shell		Ground maroon
	report	coloured smoke/smoke	
Brief description	A spherical, cylindrical or other shell designed to be fired from a mortar and which contains discrete elements which are visible in the daylight and/or components which produce an aural effect.		A maroon without propellant charge and with or without delay fuse, designed to produce its report on the ground.
Principal effects	Emission of aural effects.	Emission of colored light and/or smoke	Production of a loud bang/report
Comments (informative)			See Table 5, line 1
Step 1: Main function	Pyrotechnic units may be crackers, hummers, spinners/tourbillions, whistles, etc. as well as report shells or other shells to produce multiple bursts simultaneously	Pyrotechnic units may be crackers, hummers, spinners/tourbillions, whistles, etc. as well as report shells or other shells to produce multiple bursts simultaneously and colored light and/or smoke	Providing, after a defined delay time, a report of defined sound level – sometimes accompanied by an emission of light/flash
Step 2: Predominant shape, surface or design?	Yes Shells have a very specific design including a lift charge, a burst charge and pyrotechnic units. They can be of different shape: mainly spherical or cylindrical or combinations, and deliver simple or multiple effects. The shell must be designed in a way to withstand the acceleration in mortar, wind along trajectory and to burst properly without premature breaking. The external diameter of the shell must be made in the correct tolerance relative to the mortar to obtain the correct internal and external ballistics.	Yes The emission of smoke is produced by a relatively slow and complete combustion of different pyrotechnic mixtures acting as smoke producing pyrotechnic composition or heat/gas generating composition to evaporate a substance in a casing of particular design and materials. The smoke or the evaporated mixture may be cooled either by turbulent mixing with air or a cooling unit to avoid complete oxidation of the coloured smoke/aerosol.	Yes Specific internal and external design of non-metallic tube (usually paper) and delay to ensure proper sound level and minimize risk. Various pyrotechnic mixtures can be used. They are of lower significance for the function as the design.
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release of sublimated dye or other untransformed substances	Intended release of the sublimated dye or aerosol substance
Registration of substance(s) contained in the article?	No	No	Yes, the released untransformed substances have to be registered.

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (9/14)

Generic type	Lance	Maroon	Maroon Shell
Brief description	A small diameter tube containing a compacted pyrotechnic composition, burning in a cigarette way, intended to deliver a thermal output to manually ignite other fireworks or a small white or coloured flame to be used in lanceworks.	A firework containing pyrotechnic unit(s) or loose pyrotechnic composition and designed to produce a loud bang report as main effect.	A maroon with or without propellant charge and with delay fuse, designed to be projected from a mortar and to produce its report in the air.
Principal effects	Emission of white or coloured flame. The pyrotechnic composition may be pressed or simply consolidated. The tube has no choke and generally burns away during functioning.	Providing after a defined delay time a report of defined sound level – sometime accompanied by an emission of light/flash	See "Shell" and "Maroon".
Comments (informative)	See "Fountain"	Not to be confused with bangers, as their design is similar to shells or bombettes, which is not the case of bangers	Providing after a defined delay time a report of defined sound level
Step 1: Main function	Emission of light in a defined colour and brightness over a specified time, resp. thermal output and/or visual effect.	Providing after a defined delay time a report of defined sound level	Ascent and burst on trajectory after combustion of a delay fuse, production of a report of defined sound level.
Step 2: Predominant shape, surface or design?	Yes The pyrotechnic mixture/preparation is pressed inseparably into a cylindrical tube out of paper of defined strength, wall thickness, length, diameter and confinement. The pressing force determines the burning rate of the contained mixture. The casing must be constructed in a way that the produced gases can flow off fast enough so that the casing will not explode and the emitted light is not obstructed or changed	Yes Specific internal and external design of non-metallic tube (usually paper) and delay to ensure proper sound level and minimize risk. Various pyrotechnic mixtures can be used. They are of lower significance for the function as the design.	Yes Shells have a very specific design including a lift charge and a burst charge. They can be of different shape: mainly spherical or cylindrical or combinations. The shell must be designed in a way to withstand the acceleration in mortar, wind along trajectory and to burst properly without premature breaking. The external diameter of the shell must be made in the correct tolerance relative to the mortar to obtain the correct internal and external ballistics.
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (10/14)

Generic type	Parachute Rocket	Parachute Shell	Preloaded mortar, Shell in mortar
Brief description	Article containing pyrotechnic composition and/or pyrotechnic units, which contains subcomponents some or all of which will descend on parachutes and equipped with a launching motor and stick(s) or other means for stabilization of flight, and designed to be self-propelled into the air.	A spherical, cylindrical or other shell designed to be fired from a mortar and which contains sub-components some or all of which will descend on parachutes.	Assembly comprising a shell inside a mortar from which the shell is designed to be projected.
Principal effects	Ascent, with or without additional visual and/or aural effects, and production of visual and/or aural effects in the air.	Ascent with or without tail and burst on trajectory after combustion of a delay fuse. Pyrotechnic units producing visual and/or aural effects in the air are thrown out and some or all of which will descend on parachutes. See also "Shell".	See "Shell".
Comments (informative)	As for the individual subcomponents. See also "Rocket".	As for the individual pyrotechnic units contained in the shell.	As for the individual shell.
Step 1: Main function	Ascent, with or without additional visual and/or aural effects, and production of visual and/or aural effects in the air	Ascent with or without tail and burst on trajectory after combustion of a delay fuse. Pyrotechnic units producing visual and/or aural effects in the air are thrown out and some or all of which will descend on parachutes.	
Step 2: Predominant shape, surface or design?	Yes Propulsion can only be obtained if a specific design is given to the articles: tubular casing able to withstand the internal pressure, tube choked at one end to provide a nozzle, pressed composition with a special shape to obtain the correct pressure. Complex internal design to enable function. Special design is necessary to enable function of parachute. Various pyrotechnical mixtures can be used, none of them being mandatory.	Yes Parachute shells have a very specific design including a lift charge and a burst charge. They can be of different shape: mainly spherical or cylindrical or combinations. The shell must be designed in a way to withstand the acceleration in mortar, wind along trajectory and to burst properly without premature breaking. The external diameter of the shell must be made in the correct tolerance relative to the mortar to obtain the correct internal and external ballistics. Special design is necessary to enable function of parachute. Various pyrotechnical mixtures can be used, none of them being mandatory.	
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	
Intended release of component substance (main/accessory function)?	No release	No release	
Registration of substance(s) contained in the article?	No	No	

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (11/14)

Generic type	Saxon	Set Piece	Shot tube
Brief description	Tube intended to be attached to a support in its middle so that it can rotate and containing pyrotechnic compacted charge(s) which burn opposite and eject their combustion products sideways so that rotation is obtained.	Assembly including one or multiple elements which is designed not to rotate.	Tube containing propellant charge and a pyrotechnic unit, with or without a bursting charge
Principal effects	See "Fountain". The two pyrotechnic charges may be merged in a single charge. In that case, this charge burns at its two free ends.	See "Combination". Generally these elements belong to the sub type of lances, fountains and cascades, but can also include bangers, ground maroons and/or whistles.	Ejection of the pyrotechnic unit, producing a visual and/or aural effect in the air, see also "Roman Candle". The pyrotechnic unit may be a bombette, a comet, a hummer, a shell (including maroon shells), a whistle, for example.
Comments (informative)	Rotation, with emission of sparks and/or flames, with or without aural effect.	As for the individual elements.	
Step 1: Main function	Emission of light and sparks of a defined colour and brightness over a specified time with aural effect other than report or without any aural effect in a rotating manner.		Delivery of visual and/or aural effects in the air e.g. lights, whistles and reports.
Step 2: Predominant shape, surface or design?	Yes This emission is produced by a relatively slow and complete combustion of different pyrotechnic compositions in a paper tube / non-metallic casing. The pyrotechnic composition is pressed into the tubular casing and never leaves it. Saxons are designed to be fixed to a support. Various mixtures can be used for this purpose, none of them is specific and then the design is dominant for the effect.		Yes Effects are ejected while burning out of a tube up to a certain height. The tube contains a propellant charge, pyrotechnic units and transmission fuses. The tube has a special design, material and strength to allow a safe functioning. The effects as well must have a particular design like external diameter, weight and length. This design is more important for the function than the chemical composition of the effects.
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article		Article
Intended release of component substance (main/accessory function)?	No release		No release
Registration of substance(s) contained in the article?	No		No

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (12/14)

Generic type	Signal rocket	Strobe (see flash pellet)	Spinner
Brief description	Tube containing pyrotechnic composition and/or pyrotechnic unit(s), equipped with a stick or other means for stabilization of flight, and designed to be propelled into the air to produce predominantly an aural effect.	Tube containing an intermittently- burning pyrotechnic composition to produce long and rapid series of flashes at a constant frequency. The tube has no choke and optionally burns away during functioning.	Tubes containing propellant charges and sparks-, flame- and/or noise-producing pyrotechnic composition(s), tube or tubes containing pyrotechnic composition with aerofoils attached.
Principal effects	Ascent, with or without additional visual and/or aural effects, and production of visual and/or aural effects in the air.	Multiple flashes of light	Rotation and ascent, with emission of sparks and flames, producing a visual and/or aural effect in the air.
Comments (informative)	See also "Rocket".		See also "Aerial wheel".
Step 1: Main function	Ascent, with or without additional visual and/or aural effects, and production of visual and/or aural effects in the air. Constant or variable pitch sound or report.	Emission of intermittent light in a defined colour and brightness over a specified time	Rotation and ascent, with emission of sparks and/or flames, with or without aural effect.
Step 2: Predominant shape, surface or design?	Yes Propulsion can only be obtained if a specific design is given to the articles: tubular casing able to withstand the internal pressure, tube choked at one end to provide a nozzle, pressed composition with a special shape to obtain the correct pressure. Complex internal design to enable function. Various pyrotechnical mixtures can be used; none of them is then mandatory.	Yes The pellets have to be in a particular shape to produce the expected intermittent flashed of light. The shape/diameter of the compressed pellet will determine the function more than the different pyrotechnic mixtures that can be used for this purpose.	Yes The emission of light and sparks is produced by a complete combustion of different pyrotechnic mixtures/preparations pressed in paper tubes / non-metallic cases. Their chemical composition has no interest for the user, but only the physical effects of their reaction. The article is designed to rotate and ascent stabilized by the rotation into the air, accompanied by sound or luminous effects in a defined manner and up a defined height.
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No

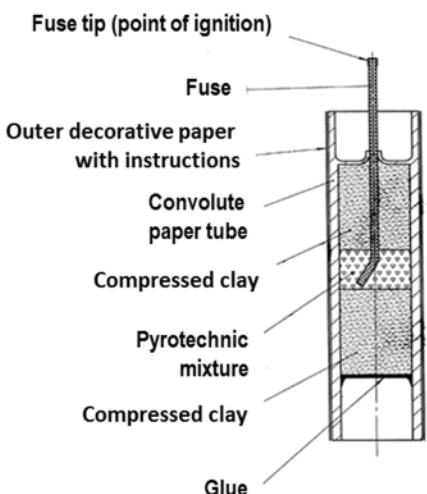


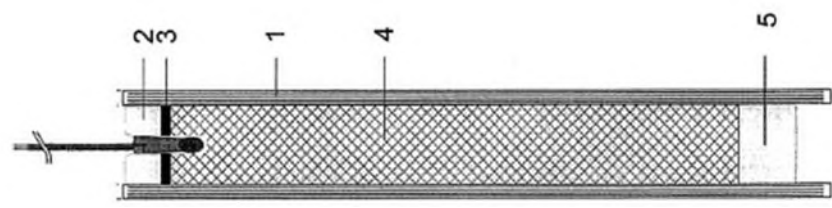


Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (13/14)

Generic type	Sub aquatic fireworks	Volcano	Waterfall
Brief description	Fireworks designed to function under the water near the surface.	Conical device containing consolidated or pressed composition in which the effect (height or intensity) increases as the device burns.	Case containing pressed or consolidated pyrotechnic composition producing sparks and flames and generally to consume the tube whilst burning.
Principal effects	See "Aqua firework". These articles have the capacity to float at a few centimetres under the surface of water.	Emission of sparks and flames with aural effect other than report or without any aural effect, see also "Fountain".	See "Fountain". Combustion products are ejected from the flame zone at low speed, then drop downwards as water in a waterfall.
Comments (informative)	Essentially similar to Bengal flames: emission of coloured flame.	Production of an increasing visual effect.	
Step 1: Main function	Emission of light in a defined colour and brightness over a specified time under the water near the surface	Emission of light and sparks of a defined colour and brightness over a specified time with aural effect other than report or without any aural effect.	Emission of light and sparks of a defined colour and brightness over a specified time with aural effect or without any aural effect. Production of a bright white or coloured "waterfall" visual effect.
Step 2: Predominant shape, surface or design?	Yes The pyrotechnic mixture/preparation is pressed inseparably into a cylindrical tube made of paper of defined strength, wall thickness, length, diameter and confinement. The pressing force determines the burning rate of the contained mixture. The casing must be constructed in a way that the produced gases can flow off fast enough so that the casing will not explode and the emitted light is not obstructed or changed and it must be waterproof to withstand under water for a long time.	Yes This emission is produced by a relatively slow and complete combustion of different pyrotechnic compositions in a paper tube / non-metallic casing. Volcanoes are designed to be placed on the ground, to be fixed into the ground, to be fixed to a support. The pyrotechnic composition is pressed into the conical casing and does not leave it. The conical design is far more important for the increasing visual effect than the various mixtures that can be used for this device	Yes This emission is produced by a relatively slow and complete combustion of different pyrotechnic compositions in a paper tube / non-metallic casing. Waterfalls are designed to be hung between two poles and fixed to a cable or supporting structure. The pyrotechnic composition is pressed into the casing and does not leave it. The tube design and the setup is far more important for the visual effect than the various mixtures that can be used for this device
Step 3: Chemical content easily extractable out of the article?			
Predominant answers to indicative questions 4a, 4b, 4c			
Predominant answers to indicative questions 5a, 5b, 5c			
Predominant answers to indicative questions 6a, 6b, 6c, 6d			
Classification: Article or Combination of article and substances?	Article	Article	Article
Intended release of component substance (main/accessory function)?	No release	No release	No release
Registration of substance(s) contained in the article?	No	No	No

Table 4 – Assessment of generic types of fireworks of category F4 according to REACH (14/14)

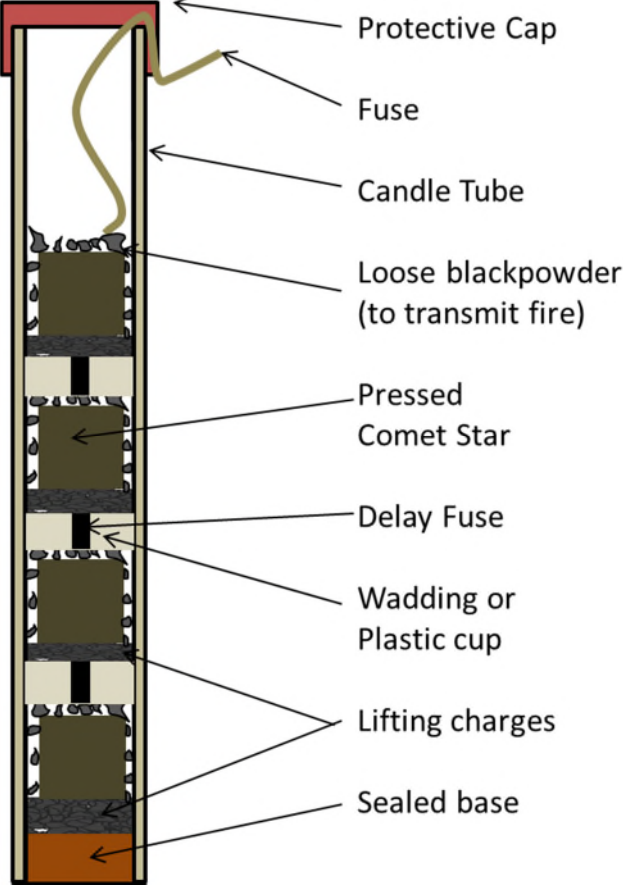


Generic type	Wheel
Brief description	Assembly including a tube or tubes containing pyrotechnic composition and provided with a means of attaching it to a support so that it can rotate.
Principal effects	This article is designed to rotate about a fixed point or axis in either a vertical or horizontal plane. This article is designed to rotate about a fixed point in either a vertical or horizontal plane. Emission of sparks and flames, with or without aural effect(s) (other than report)
Comments (informative)	See "Fountain" and "Combination". See Table 5, line 9
Step 1: Main function	Emission of light and sparks of a defined color and brightness over a specified time with aural effect(s) other than report or without any aural effect and rotation.
Step 2: Predominant shape, surface or design?	Yes The emission of light and sparks is produced by a relatively slow and complete combustion of different pyrotechnic mixtures/preparations in paper tubes / non-metallic cases. The article is designed with a means of attaching it to a support so that it can rotate around a fixed point or axis. It generally exhibits a very complex technical design according the pattern of emission of light and sparks that is expected by the user. Only light and sparks together with gas (reaction products) will be emitted during functioning. Sometimes also a whistling sound is produced during the function of the article
Step 3: Chemical content easily extractable out of the article?	
Predominant answers to indicative questions 4a, 4b, 4c	
Predominant answers to indicative questions 5a, 5b, 5c	
Predominant answers to indicative questions 6a, 6b, 6c, 6d	
Classification: Article or Combination of article and substances?	Article
Intended release of component substance (main/accessory function)?	No release
Registration of substance(s) contained in the article?	No

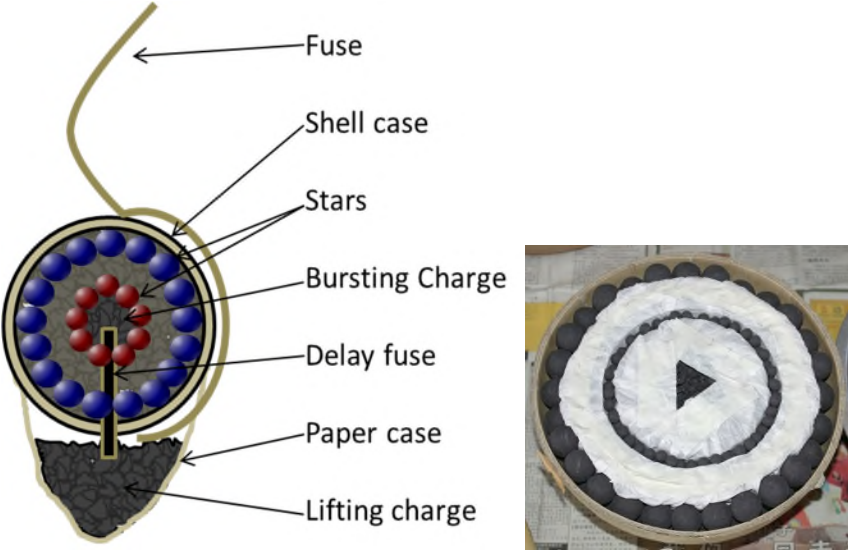


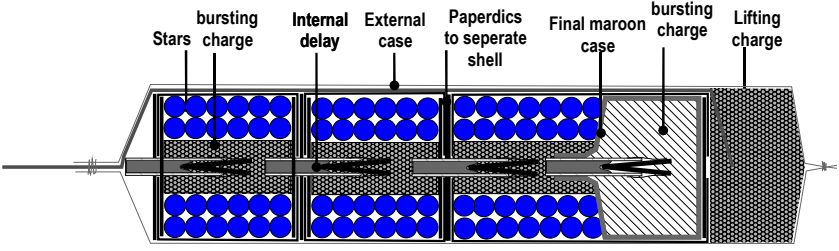


Table 5 – Illustrative and explanatory examples of generic types of fireworks according to the European Directive 2013/29/EU

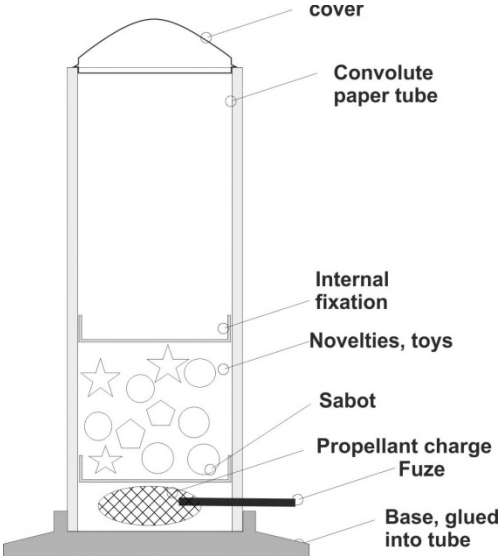


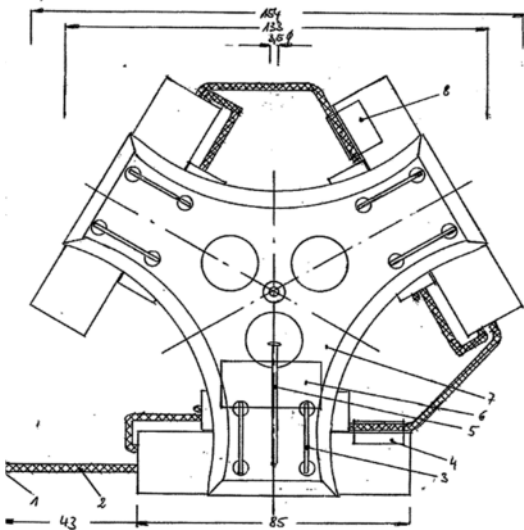


No.	Type name	Representative drawing	General view	Principal effect(s)
1	Banger			
2	Fountain	 <ol style="list-style-type: none"> 1. Convolute paper tube 2. Pressed clay nozzle/choke (here with an electric igniter) 3. Metal disc with central hole (not always used) 4. Pyrotechnic mixture: flame or spark producing, slow burning 5. Bottom closure, e.g. pressed clay, gypsum, wood, paper 		

No.	Type name	Representative drawing	General view	Principal effect(s)
3	Battery / Combination			

No.	Type name	Representative drawing	General view	Principal effect(s)
4	Rocket			

No.	Type name	Representative drawing	General view	Principal effect(s)
5	Roman candle	 <p>Protective Cap</p> <p>Fuse</p> <p>Candle Tube</p> <p>Loose blackpowder (to transmit fire)</p> <p>Pressed Comet Star</p> <p>Delay Fuse</p> <p>Wadding or Plastic cup</p> <p>Lifting charges</p> <p>Sealed base</p>		

No.	Type name	Representative drawing	General view	Principal effect(s)
6	<p>Shell (Spherical)</p>	 <p>Sketch and internal photo of a spherical shell with two concentric layers of stars</p>		
7	<p>Shell (Cylindrical)</p>	 <p>Cylindrical multi break shell</p>		

No.	Type name	Representative drawing	General view	Principal effect(s)
8	Table Bomb	 <p>cover</p> <p>Convolute paper tube</p> <p>Internal fixation</p> <p>Novelties, toys</p> <p>Sabot</p> <p>Propellant charge</p> <p>Fuze</p> <p>Base, glued into tube</p>		
9	Wheel			

Annex A

List of professional associations and bodies which contributed and agree to the conclusions of the present guidance (as of December 31st, 2015)

CEN/TC 212

EUFIAS (European Fireworks Association)

GERMANY: BAM (Bundesanstalt für Materialforschung und –prüfung)

DENMARK: FYRVAERKERIBRANCHEFORENINGEN representing 7 companies

FRANCE: SFEPA (Syndicat des Fabricants d'Explosifs, de Pyrotechnie et d'Artifices)
representing 28 companies

GERMANY: VPI (Verband Pyrotechnische Industrie) representing 18 companies

ITALY: ANISP (Associazione Nazionale Imprese Spettacoli Pirotecnici) representing 82
companies

NORWAY: NORSK PYROTEKNISK BRANSJERÅD representing 5 companies

SPAIN: AFAPE (Asociacion Espanola de Fabricantes de Fuegos Artificiales) representing 30
companies

SWEDEN: Sveriges Fyrverkeribranschförbund representing 6 companies

UNITED KINGDOM: EIG (Explosives Industry Group) representing 126 companies

UNITED KINGDOM: BPA (British Pyrotechnists Association) representing 56 companies

UNITED KINGDOM: BFA (British Firework Association) representing 16 companies

BIBLIOGRAPHY

- [1] *Directive 2013/29/EU of the European Parliament and of the Council of 12 June 2013 on the harmonization of the laws of the Member States relating to the making available on the market of pyrotechnic articles (recast)*, OJL 178; 28.6.2013, available from:
<http://eur-lex.europa.eu/LexUriServ.do?uri=OJ:L:2013:178:0027:0065:en:PDF>
- [2] *European Chemical Agency - Guidance on requirements for substances in articles*, available from
<http://www.echa.europa.eu/guidance-documents/guidance-on-reach>
<<http://www.echa.europa.eu/guidance-documents/guidance-on-reach>
- [3] EN 15947-1:2010, *Pyrotechnic articles — Fireworks, Categories 1, 2 and 3 — Part 1: Terminology*³
- [4] EN 15947-2:2010, *Pyrotechnic articles — Fireworks, Categories 1, 2 and 3 — Part 2: Categories and types of firework*
- [5] EN 15947-3:2010, *Pyrotechnic articles — Fireworks, Categories 1, 2 and 3 — Part 3: Minimum labelling requirements*
- [6] EN 15947-4:2010, *Pyrotechnic articles — Fireworks, Categories 1, 2 and 3 — Part 4: Test methods*
- [7] EN 15947-5:2010, *Pyrotechnic articles — Fireworks, Categories 1, 2 and 3 — Part 5: Requirements for construction and performance*
- [8] EN 16261-1:2012, *Pyrotechnic articles — Fireworks, category 4 — Part 1: Terminology*;
- [9] EN 16261-2:2012, *Pyrotechnic articles — Fireworks, category 4 — Part 2: Requirements*;
- [10] EN 16261-3:2012, *Pyrotechnic articles — Fireworks, category 4 — Part 3: Test methods*;
- [11] EN 16261-4:2012, *Pyrotechnic articles — Fireworks, category 4 — Part 4: Minimum labelling requirements and instructions for use*.

³ Revised versions of the EN 15947 are to be published at the end of 2015 or beginning of 2016. Modifications included in these revised versions were taken into account in Tables 1 and 3 of the present guidance.