

Pyrotechnic Families Guidance – Category 4 fireworks

Guidance on grouping Category 4 fireworks into families for CE certification is outlined below. Annex 1 provides examples of variants that can and cannot be grouped into a family

The minimum Type Test requirements must be achieved in order for the families grouping guidance to be applied.

1. Requirements for grouping variants into a family

All variants of a family:

1. shall be of the same generic type
2. shall be of similar subtype, if applicable
3. shall have similar relevant performance parameters, e.g. as described in prEN 16261-4, table A.1¹.
4. can have variations in the number of pyrotechnic units (e.g. number of shots)²
5. can have variations in calibre, with the exception of mines, Roman candles (incl. shot tubes), shells, corresponding aquatic fireworks, and combinations of these types.

2. Testing criteria

Due to the limitation in the number of samples required by EN 16261:2013 and the similarity in design, function or behaviour of Category 4 fireworks of one generic type or sub-type, not all variants within a family need to be tested.

It should be noted that this guidance indicates the MINIMUM sampling regime and that larger numbers of items may be tested if a Notified Body considers this necessary.

As a minimum, 9 samples from each family shall be tested, 3 as received, 3 after thermal conditioning and 3 after mechanical conditioning. For each testing condition (as received, mechanical conditioning and thermal conditioning) the Notified Body can choose samples from the same or different variants.

The necessity for testing of variants that are to be added to an existing family will be at the discretion of the Notified Body and will be decided on a case-by-case basis.

¹ At least all applicable mandatory parameters

² In case of large variations, e.g., the minimum and maximum (or most hazardous) shall be tested.

Annex 1: Examples showing whether family grouping is allowed

General remark: if similarity in performance parameters (e.g. burst height) between the variants of a family is not given, the benefit of not testing all variants of a family in type and batch tests is lost (since all variants must be tested in order to assure the tolerances as given in clause 7.2.4 of prEN 16261-2)

No.	Description	Can they be considered within the same family?
1	Roman Candle and a Shell	No, violation of no. 1 (generic type)
2	Gerb and Waterfall	No, violation of no. 2 (significantly different subtypes)
3	Combination A (consisting of fountains, mines and shot tubes with single green stars) and combination B (consisting of only shot tubes with single red stars), both having the same calibre, number of elements and similar effect heights	Yes, similar subtype battery of generic type combination (and similar performance parameters)
4	Combination A (consisting of fountains, mines and shot tubes with single stars) and combination B (consisting of only shot tubes with report bombettes), both having the same calibre, number of elements and similar effect heights	No, violation of no. 3 (different relevant mandatory performance parameters: sound pressure only for combination B)
5	Bengal Flame and Portfire	Yes (similar subtypes of generic type Fountain)
6	Roman Candle A (green stars) and Roman Candle B (report bombette), both having the same calibre, the same number of shots and similar effect heights	No, violation of no. 3 (different relevant mandatory performance parameters: sound pressure only for Roman Candle B)
7	Roman Candle A (green stars, report bombette) and Roman Candle B (report bombette), both having the same calibre, the same number of shots and similar effect heights	Yes
8	Roman Candle A (green stars) and Roman Candle B (crackling crossette), both having the same calibre, the same number of shots and similar effect heights	Yes, crackling is not considered as a specific aural effect according to 7.2.5 of prEN 16261-2:2011)
9	Shell A (deep falling golden willow) and Shell B (peony effect), both having the same calibre	No, violation of no. 3 (different relevant mandatory performance parameters: due to high likelihood of burning matter on ground for Shell A)
10	Shell A (burst height 90 m) and Shell B (burst height 100 m), both having the same calibre and effects	Yes, similar performance parameter burst height
11	Shell A (burst height 80 m) and Shell B (burst height 140 m), both having the	No, violation of no. 3 (not similar performance parameter burst

No.	Description	Can they be considered within the same family?
	same calibre and effects	height)
12	Combination A (shot tube 49 shots) and combination B (shot tube 64 shots), both having same effects and identical calibres	Yes
13	Combination A (shot tube 16 shots) and combination B (shot tube 150 shots), both having same effects and identical calibres	Yes, see footnote of no. 4
14	Combination A (shot tube 16 shots) and combination B (shot tube 1000 shots), both having same effects and identical calibres	Yes, see footnote of no. 4
15	Shell A (calibre 75 mm) and Shell B (calibre 100 mm), both having the same effect	No, violation of no. 5 and 3.
16	Shell A (calibre 75 mm) and Shell B (calibre 150 mm), both having the same effect	No, violation of no. 5 and 3.
17	Fountain A (effect height 3 m) and Fountain B (effect height 5 m), both having the same effect	No, violation of no. 3
18	Fountain A (effect height 3 m) and Fountain B (effect height 20 m), both having the same effect	No, violation of no. 3
19	Roman Candle A (green stars) and Roman Candle B (blue stars), both having the same calibre, the same number of shots and similar effect heights	Yes
20	Combination A (shot tube 49 shots) and combination B (shot tube 49 shots, but angled), both having same effects and identical calibres	Yes (if the most hazardous combination is tested, here combination B), see footnote to no. 4