Joint Market Surveillance Action on Harmonised Products JAHARP2021-08

On Pyrotechnic articles

Layman's report

JAHARP MNIBUS 2021

PROSAFE Joint Actions Best Practice

Co-funded by the European Union

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Table of contents

List of abbreviations

ADCO	Administrative Cooperation Group
CE	European Conformity (Conformitè Europëenne)
DG GROW	Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
EEA	European Economic Area
EISMEA	European Innovation Council and SMEs Executive Agency
EMSA	European Maritime Safety Agency
EN	European Standards
EU	European Union
GA	Grant Agreement
ICSMS	Information and Communication System for Market Surveillance
IMO	International Maritime Organisation, Specialised Agency of the United Nations (UN)
ISO	International Organization for Standardization
MED	Marine Equipment Directive 2014/90/EU
MS	Member State
MSA	Market Surveillance Authority
NOBO	Notified Body
OJ	Official Journal of the European Union
PYRO	Directive 2013/29/EU on Pyrotechnic articles

Glossary

CE MARKING: CE stands for "Conformité Européenne", the French term for “European Conformity”. The CE mark means that the manufacturer takes responsibility and declares that a product sold in the European Economic Area (EEA) has been assessed to meet all applicable safety, health, performance, and environmental requirements.

EU DECLARATION OF CONFORMITY: At the end of the conformity assessment process the manufacturer confirms compliance by drawing up an EU Declaration of Conformity (or ‘Declaration of Conformity’ or ‘DoC’) and affixing the CE marking on the product. The EU declaration of conformity is a mandatory document signed by the manufacturer or authorised representative of a product to declare that the product complies with all applicable safety, health, performance, and environmental requirements. The EU Declaration of Conformity must be issued before the product is placed on the EU market.

ECONOMIC OPERATOR: the manufacturer, authorised representative, importer, distributor, fulfilment service provider, or any other natural or legal person who is subject to obligations in relation to the manufacture of products, making them available on the market or putting them into service in accordance with the relevant Union legislation.

CONFORMITY ASSESSMENT: A manufacturer can only place a product on the EU market when it meets all the applicable requirements. The conformity assessment procedure is carried out before the product can be sold.

CORRECTIVE ACTIONS: any action taken by an economic operator to bring any non-compliance to an end where required by a market surveillance authority or on the economic operator's own initiative.

HARMONISED STANDARD: a European standard developed by a recognised European Standardsisation Organisation defining the technical specifications used to assess/verify that a product complies with the mandatory requirements.

ICSMS DATABASE: The Information and Communication System on Market Surveillance (ICSMS - webgate.ec.europa.eu/icsms/) is an IT platform set up and managed by the European Commission which enables the exchange of

information between EU-27 market surveillance authorities on non-food product inspections and their results. ICSMS has an internal and a public area. Consumers can access ICSMS' public area to check whether a product model has been inspected and if it is compliant.

INSPECTION: any market surveillance activity aimed at verifying the compliance of products against the requirements and conditions as defined in the legislation and standards.

LABORATORY VERIFICATION TESTING: testing of products in a laboratory according to the verification procedure set out in the product specific Regulations and following the applicable harmonised standards, transitional methods, or testing conditions described in the Regulations.

MARKET SURVEILLANCE: the activities carried out and measures taken by market surveillance authorities to ensure that products comply with the requirements set out in Union legislation.

MARKET SURVEILLANCE AUTHORITY: an authority designated by an EU Member State as responsible for carrying out market surveillance in the territory of that Member State.

MODEL: a version of a product of which all units share the same technical characteristics relevant for the label and the product information sheet and the same model identifier.

NON-COMPLIANCE: any failure to comply with any requirement under the Union legislation.

NOTIFIED BODY: An organisation designated by an EU country to assess the conformity of certain products before being placed on the market. These bodies carry out tasks related to conformity assessment procedures set out in the applicable legislation, when a third party is required.

PRODUCT: a type or sub-type of a product within a product group/class. For example, ctric or gas-fuelled local space heaters are sub-types of the local space heaters family product group.

PRODUCT DOCUMENTATION: any type of (mandatory and/or non-mandatory) documentation made available in any form by the manufacturer/supplier of a product model and accompanying that model.

PRODUCT INFORMATION SHEET: a standard document containing information relating to a product, in printed or electronic form.

PRODUCT PAGE: a product page is a page on a retailer or manufacturer website where potential customers learn about a product's features, pricing, and other product-related information, and through which they can buy the product.

RECALL: Any measure aimed at achieving the return of a product that has already been made available to the end user

RISK-BASED APPROACH/SAMPLING: the most common approach among market surveillance authorities, used to focus/optimise their limited resources on those products and models considered most likely to pose a risk of non-compliance.

SAFETY GATE: The EU rapid alert system for dangerous non-food products. The Safety Gate system enables that information on measures taken against non-food dangerous products is circulated quickly among the national authorities responsible for product safety in the Single Market countries.

SAMPLES: Different units of the same model. For example, in order to verify the compliance of a model, market surveillance authorities can test three (3) samples/units belonging to that model in a laboratory (what is known as "triple-testing").

TECHNICAL DOCUMENTATION: mandatory documentation compiled by the manufacturer that enables market surveillance authorities to assess the conformity of a product with the applicable requirements. A technical documentation file contains specific product information including, for example, a description of the product and its intended use, the results of relevant environmental assessment studies carried out by the manufacturer, information and elements of the product design specification relating to environmental design aspects of the product, the results of measurements on the requirements carried out.

VOLUNTARY MEASURE: A corrective action where not required by a market surveillance authority.

WITHDRAWAL: Any measure aimed at preventing a product in the supply chain from being made available on the market.

Executive summary

Scope and objectives of JAHARP2021-08

The JAHARP2021-08 project on Pyrotechnic articles was a pan-European Joint Action coordinated by PROSAFE, which started in June 2022 and ended in July 2024. It focused on two main product categories: consumer fireworks, falling within the scope of Directive 2013/29/EU[1] on pyrotechnics articles, and marine distress signals and rescue products, falling under the scope of Directive 2014/90/EU[2] on marine equipment.

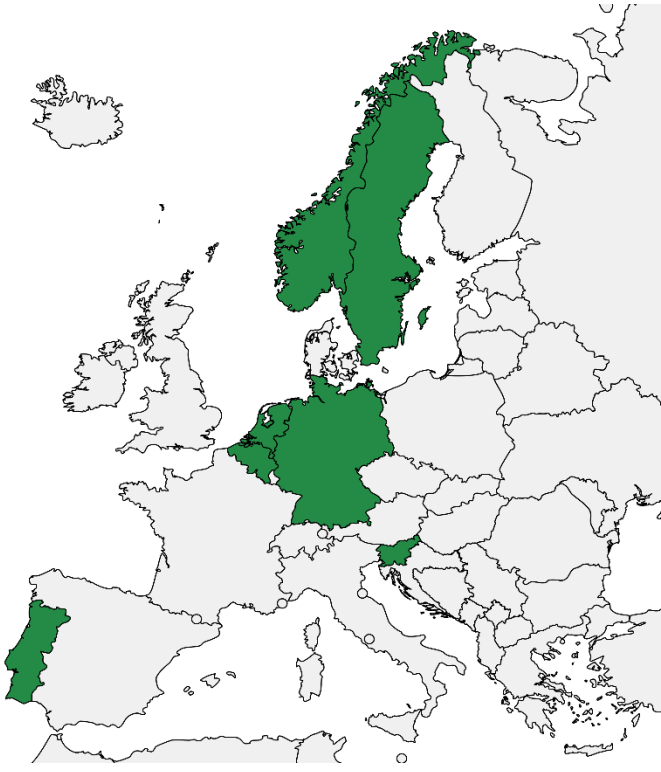
The Market Surveillance Authorities (MSAs) participating in this Joint Action aimed at verifying compliance of the products available on the single market with EU legislation. They conducted documentation checks on 114 consumer fireworks and 28 marine distress signals and rescue products. In addition, 64 consumer fireworks and 17 marine pyrotechnics were subjected to laboratory verification testing.

The non-compliance rate of consumer fireworks observed during this Joint Action was of 27% for the tests conducted in the laboratory, and 63% for documentation checks. This was in line with the MSAs expectations based on previous national campaigns and Joint Actions. This implies that the safety of the products circulating on the single market has not improved in the past few years and that further work should be conducted in this area.

Concerning marine distress signal and rescue products, we observed a very high rate of non-compliance both after documentation checks (89%) and after laboratory verification testing (88%). These results are particularly alarming, also given to the type of malfunctions observed. In fact, based on our tests, the products do not only fail in their main purpose of announcing a crew's need of rescue, but they also actively endanger the life of the user further, by exploding too soon and too close to the boat, or by breaking down into fragments.

Geographical scope

9 Market Surveillance Authorities (MSAs) from the following 7 Countries have participated in this Joint Action coordinated by PROSAFE: Belgium, Germany, The Netherlands, Norway, Portugal, Slovenia, and Sweden.



[1] Directive 2013/29/EU of the European Parliament and of the Council of 12 June 2013 on the harmonisation of the laws of the Member States relating to the making available on the market of pyrotechnic articles (recast) Text with EEA relevance

[2] Directive 2014/90/EU of the European Parliament and of the Council of 23 July 2014 on marine equipment and repealing Council Directive 96/98/EC Text

Highlights and key results

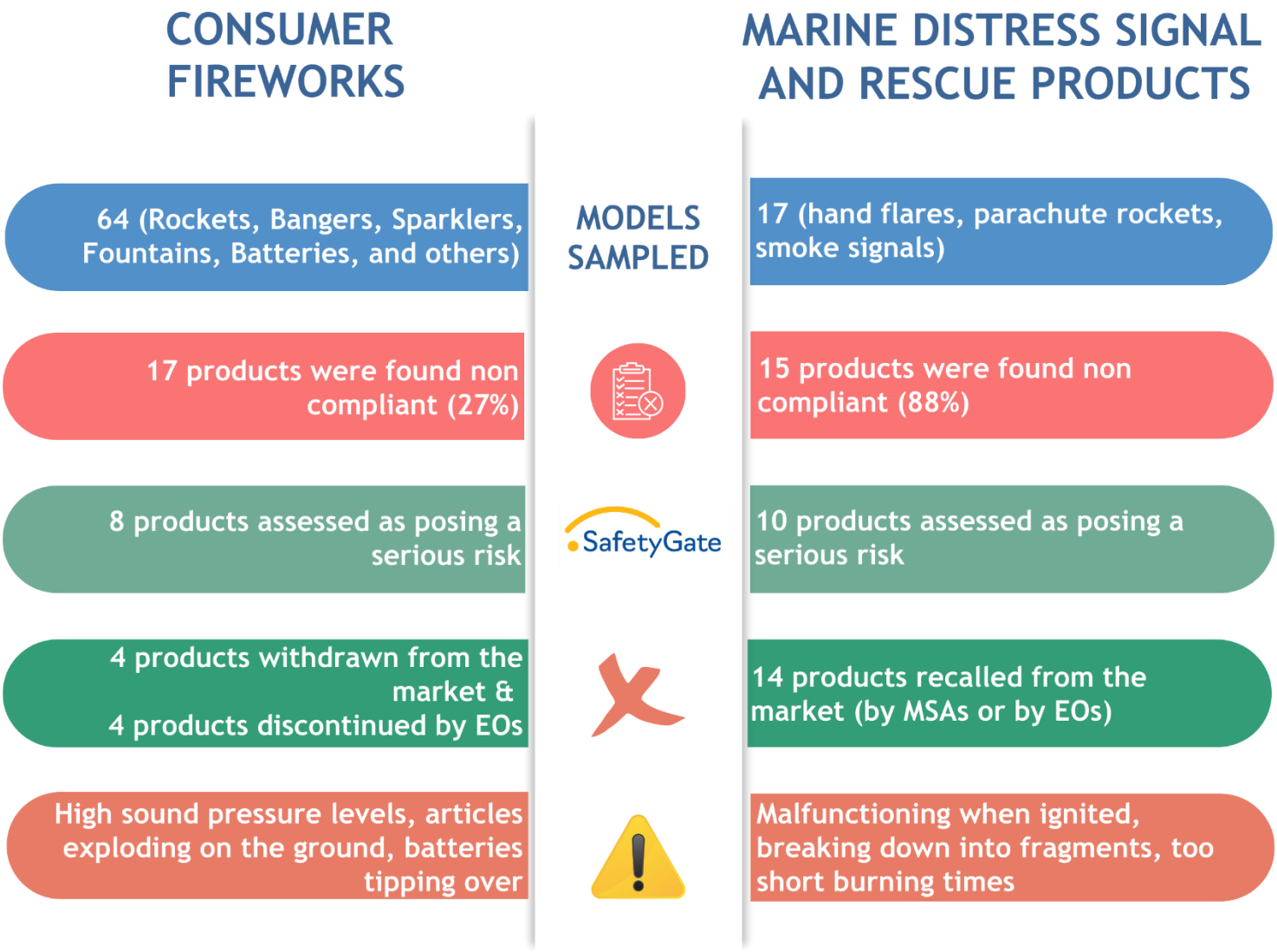


Figure 1 Highlights and key results of JAHARP2021-08

CAUTION!

These results are based on samples of products collected from the European market. As in most market surveillance activities, the results represent **the targeted efforts that authorities undertook to identify non-compliant products.** Because of that, **the results of this joint action do not present a statistically valid picture of the situation of the entire market.** The samples were tested in qualified or accredited laboratories and the testing focused on the safety requirements considered to have the largest impact on consumer safety.

Tips for consumers and EOs

Figure 2 Tips for consumers and EOs

The JAHARP2021-08 Project

JAHARP2021-08 on pyrotechnic articles was divided in two Work Packages, respectively focusing on **consumer fireworks** and on **marine distress signals and rescue products**.

Consumer fireworks are pyrotechnic articles presenting a low to medium hazard, intended for use by non-professionals. Market surveillance of fireworks is particularly challenging because they are **seasonal products** with a very short life cycle. In fact, fireworks are usually ordered in spring by suppliers and transported to Europe in the fourth quarter of the year to be mainly used during New Years Eve celebrations. For this reason, MSAs need to sample and test them in a very short time to be able to react before the sales to consumers start.

Marine pyrotechnics are distress signals used to indicate that a person or a group of people on a watercraft is threatened by a serious or imminent danger and requires immediate assistance. MSAs face issues related to the **difficulty of sampling these products from businesses located outside the EU**, as they often sell them directly to European flagged vessels when they call on harbours in the far East or South America. The products therefore hardly cross EU coastal territory, making it very difficult for MSAs to intervene in the supply chain.

In addition, testing of both types of pyrotechnic articles is noisy and expensive because of the potential risks associated with non-compliant products.

JAHARP2021-08 aimed at verifying the status of compliance on the single market of these two products and working towards common and harmonised methodologies for market surveillance in the field of pyrotechnics, in order to ensure a safer environment for consumers.

Figure 3 Project Timeline

Methodology

As a first step, the participating **MSAs investigated the market in the EU for consumer fireworks and marine distress signals and rescue products**. They identified the various types of pyrotechnics present in their local markets and their associated risks.

They then agreed on a **Common Code of Practice**, establishing criteria for the selection of products to be subjected to documentation checks and prepared a **checklist for conformity checks** which was used during the assessment.

The MSAs then identified products for laboratory testing and launched a **tender procedure for the selection of test labs**.

Tests were conducted according to the relevant standards in two different laboratories in Europe.

An analysis of the results and an **assessment of the risks** was then conducted, to which **enforcement actions** followed. MSAs informed Economic Operators (EOs) of the results and appropriate measures were taken when applicable.

The tests to these products are destructive, therefore the remains of the tested products were then **disposed of** in accordance with EU rules.

Consumer fireworks

Background information

Consumer fireworks fall under the scope of the **Pyrotechnic Directive 2013/29/EU**. This directive defines the essential safety requirements for pyrotechnic articles in Annex I. All types of pyrotechnic articles must fulfil these essential requirements to be legally placed on the market.

According to the Directive, such articles are categorised according to their type of use and level of hazard. Fireworks are categorised in four categories:

- **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.
- **F2:** Fireworks which present a low hazard and low noise level, and which are intended for outdoor use in confined areas.
- **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.
- **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 activities of the Work Package on consumer fireworks focused on the three first categories, F1, F2 and F3. Some examples of products falling under these categories are shown in the pictures below:

Example of F1 fireworks:

Crackling granules, Icefountains, Sparklers.

Example of F2 fireworks:

Rockets, Bangers, Fountains.

Example of F3 fireworks:

Batt, Rockets, Shot tubes

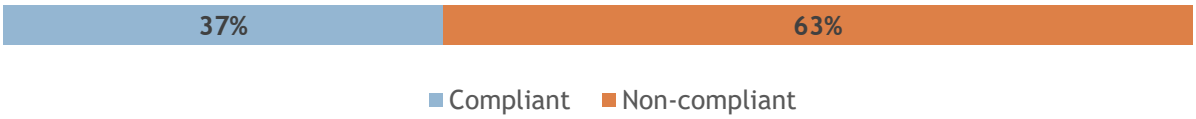
Safety of fireworks is a constant issue, with **a high number of related accidents happening every year**. Even though many of these are due to improper or wrong use of the products, several accidents are caused by non-compliant fireworks, for instance articles with a too short fuse burning time (meaning that they begin to function before the user have had time to move away to a safe distance) or batteries that topple over during use, so the effects are fired horizontally towards the public. The statistics show that accidents caused by fireworks can be very severe, as for example **loss of sight on one or both eyes**, **partial or complete loss of hearing**, and **severe burns**.

Documentation Checks

The compliance of fireworks must be assured by the manufacturer as for any other product, but the Pyrotechnics Directive makes it compulsory for the manufacturer to involve a **Notified Body** in the conformity assessment and production control. The Notified Body must type approve the article and issue a type-approval certificate. Moreover, the directive stipulate that the manufacturer must have a production control scheme in place which must be monitored by a Notified Body.

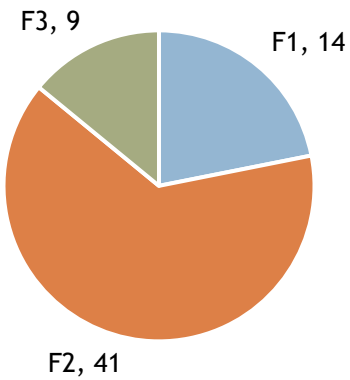
The work group inspected the technical documentation for **114 articles** and found non-compliances in 72 cases, corresponding to a **non-conformity rate of 63%.** The failure rate in the Declaration of Conformities inspected was 55%, while the type-approval certificates were compliant in the 86% of investigated cases. The most common non-compliances were incorrect signature and errors in the identification of the Notified Body and its intervention.

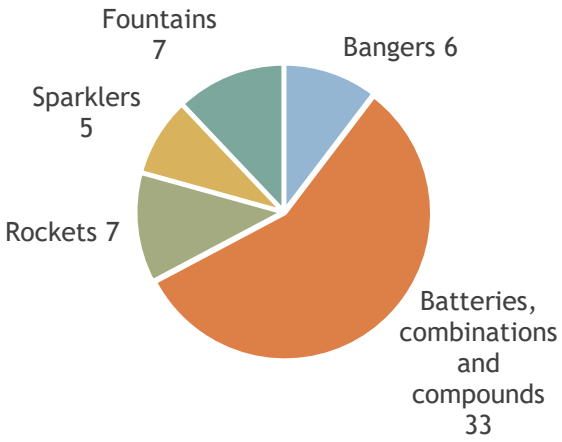
It was nonetheless reassuring to see that almost all economic operators were able to produce the technical documentation upon request.



Laboratory Tests

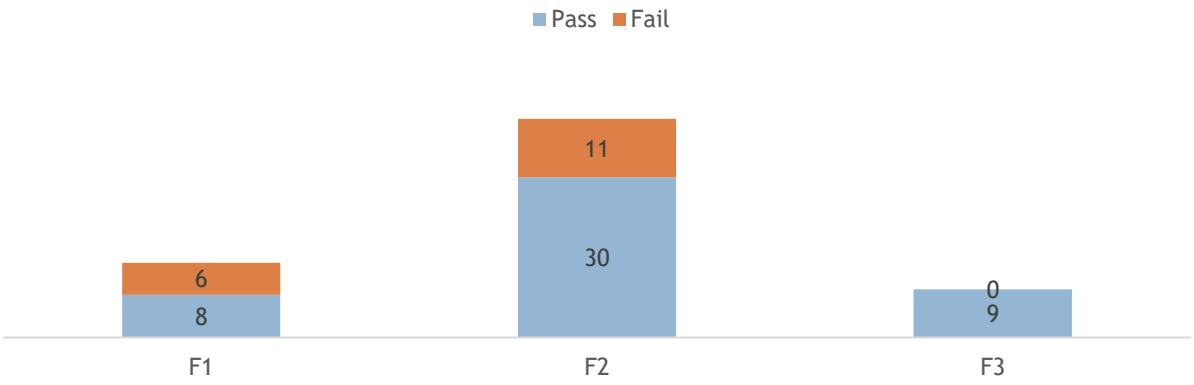
The MSAs sampled and tested **64 firework articles** spread on all three categories, F1, F2 and F3, and on 11 generic types. The biggest group of articles were batteries, combinations and compounds that accounted for 33 articles – a little more than half of the products tested.





The result was that 17 of the 64 articles (27%) failed in the test.

The graph below shows the compliance rate for the different categories of fireworks tested:



The category F3 fireworks tested were all compliant, which might be an indication of higher quality for these articles, given that they are the heaviest and the most expensive ones on the market. Moreover, they are only allowed to be used by professionals in many Member States as part of display shows, implying that they are mostly used by people with a deeper knowledge of the subject.

The most common non-compliances were:

- **Too high sound pressure level** (11 of the 17 non-compliant articles).
- **Projected debris** (7 of the 17 non-compliant articles).
- **Incomplete functioning** (5 of 17 non-compliant articles).

Risk Assessment and Follow up measures

All these non-compliances may cause **severe injuries**.

Too high sound pressure level may cause **temporary or permanent damages to the hearing**.

Projected debris may **put fire** to something in the surroundings or **cause burns** if it lands on a person.

Incomplete functioning articles are risky because the person igniting the fireworks may try to re-ignite the article, or children may find the remains and attempt to ignite them.

This can cause **severe injuries** because the ignition will not use the normal fuse, but rather internal connections from one tube to another. These connections will often burn very fast meaning that the person attempting to ignite the article doesn't have time to escape before the article starts.

These errors are dangerous for the person igniting the fireworks, but also for spectators and other people passing nearby when the fireworks are functioning.

The participants assessed the risk and found that **8 of the articles presented a serious risk** to the consumers.

These articles have been withdrawn from the market or their production had been discontinued.

Marine distress signals and rescue products

Background information

Marine distress signals fall under the scope of the Marine Equipment Directive 2014/90/EU. They are mainly products for professional use sold on a business-to-business market. They are installed on vessels, mainly larger vessels, in accordance with international rules issued by the International Maritime Organisation (IMO).

The Commission Implementing Regulation (EU) 2024/1975[3] that lays down rules for the application of Directive 2014/90/EU as regards design, construction and performance requirements and testing standards for marine equipment defines three types of maritime distress signals:

- **MED/1.8 Rocket parachute flares**, rockets that are launched by the operator and rise to an altitude of at least 300 m, where a clearly visible red flare is ignited and stays on for at least 45 second while slowly descending.
- **MED/1.9 Hand flares**, flares that are ignited and held by the operator while emitting a strong red light for at least 60 seconds.
- **MED/1.10 Buoyant smoke signals**, signals that are ignited by the operator and held or left in the water where they will emit clearly visible oranges smoke for at least 3 minutes.

Some examples of products falling under these categories are shown in the pictures below:

Example of Rocket parachute flare

Example of Hand flare

Example of smoke signal

The European Maritime Safety Agency (EMSA) operates a database for marine equipment including maritime distress signals. The database is public and can be accessed, subject to registration, via this link: EMSA MED Portal.

As per consumer fireworks, these products need to be assessed by Notified Bodies, who are then supposed to register the products that they approve in this database. **This Joint Action came across a few products that were not registered in the database**. These may supposedly be products that have been approved outside the EU without the assistance of a Notified Body.

Legislation defines that a ship that flies the flag of an EEA country is EEA territory. Thus, **these articles are considered to be placed on the EU market when they are installed on the EU flagged vessel**. "Placing on the market" can take place anywhere in the world where the articles are brought on board the vessel.

The articles will most often be left untouched where they are installed until they reach their declared lifetime and are replaced by new articles. They will only be used if a vessel ends up in an emergency

3 Commission Implementing Regulation (EU) 2024/1975 of 19 July 2024 laying down rules for the application of Directive 2014/90/EU of the European Parliament and of the Council, as regards design, construction and performance requirements and testing standards for marine equipment and repealing Commission Implementing Regulation (EU) 2023/1667

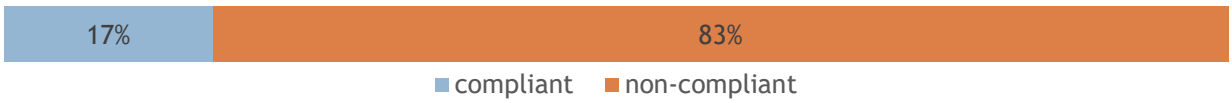
situation that puts the crew and any passengers in danger. If such situation occurs, it is important that the articles function properly as the finding of the victims may depend fully on the distress signals. It is also important that their use is simple and intuitive as the vessel crew will be under extreme stress and possibly in very poor weather conditions and could not be expected to be able to follow complex instructions. And finally, the articles shall not be dangerous to use.

These pyrotechnic articles can present two kinds of risk to the user: they will put the user at risk if the performance is lower than expected, e.g. a rocket that ejects at too low altitude or a flare that extinguishes too soon, because it will **decrease the probability that the user will be found and rescued** compared to a situation where all articles would work as anticipated. They may also malfunction in a way that **puts the user at immediate risk** if, for instance, rockets do not launch properly, but **explode in the life-raft**, or if **hand flares catch fire while the user is holding them**. The articles shouldn't project burning debris either as this may **ignite fuel or other flammable substances** that have spread on the surface of the sea during the shipwreck.

Documentation checks

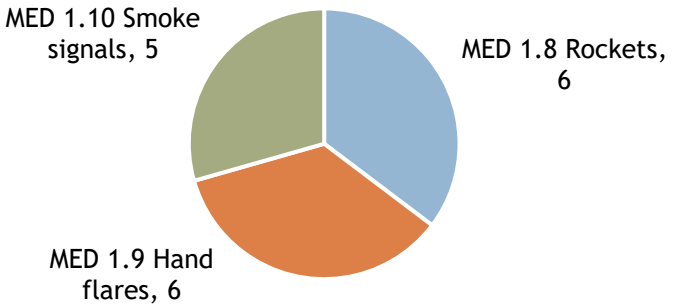
As mentioned in the previous section and considering that the safety and the proper functioning of these articles can mean the difference between life and death of the user, the Marine Equipment Directive requires that the manufacturer involves an independent third party, a Notified Body (NoBo), in the conformity assessment of the products. In a similar manner as with consumer fireworks, the directive also stipulates that the manufacturer must have a production control scheme in place which must be monitored by a Notified Body.

The participants inspected the Declaration of Conformity and the type-approval certificate for **30 products** and found that **25 did not comply (83%)** either in relation to one or both documents.

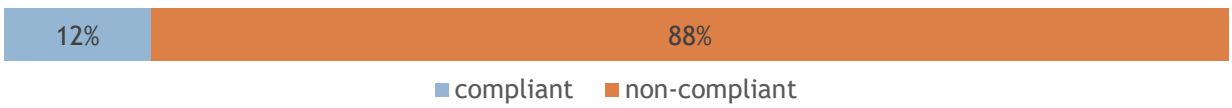


Laboratory Tests

The participating MSAs sampled **17 marine distress signals**, which corresponded to almost all the articles that were placed on the market by actors based in the EU. In fact, it turned out to be very difficult to acquire samples from manufacturers based outside the EU, and only one product manufactured in a third country was tested under this project.



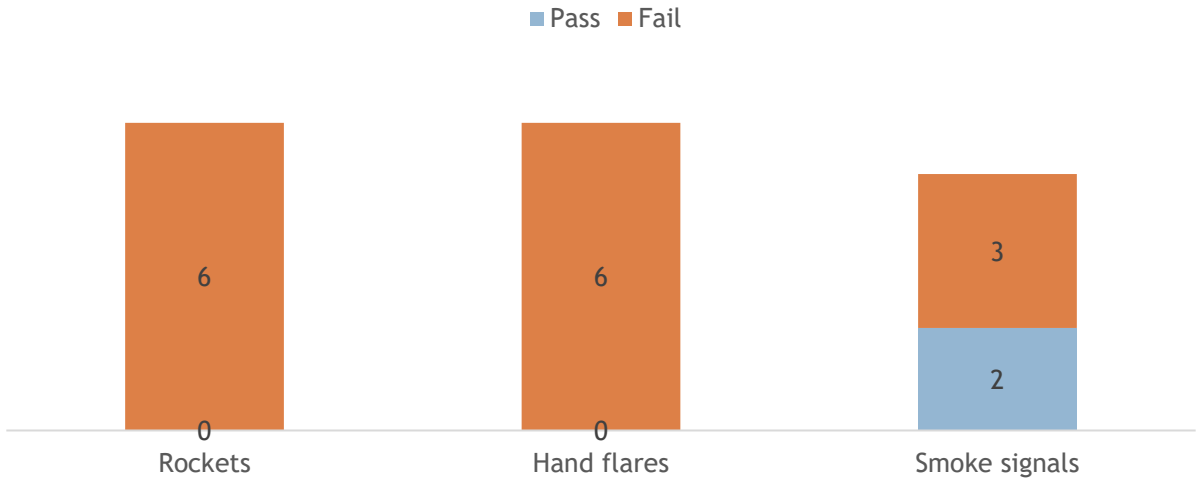
The result of the test was that **15 of the 17 articles failed (88%)**.



The test revealed that the articles presented a number of non-conformities. The most relevant ones were:

- **Hand flares:** Malfunctioning when ignited, handle catching fire during operation, too short burning times, too short time delays before ignition, failure of the heptane test.
- **Smoke signals:** Too short burning times, broken initiation key or failure to ignite.
- **Parachute rockets:** Inability to reach required altitude, rocket disintegrated when ignition was attempted, unpredictable flight, too rapid descent, burning debris reaching the ground.

The graph below shows the compliance rate for the different categories of fireworks tested:



Risk Assessment and Follow-up measures

The risk assessment conducted by the participating MSAs confirmed that the situation is alarming, as **more than half of the tested products (10)** were found to represent a serious risk.

Apart from not functioning properly, these products **put the user in additional peril** because they presented dangerous non-conformities such as ejecting parts that would injure the user or emitting sparks that could ignite flammable substances in the vicinity.

As a result of this action, **14 products are expected to be recalled for the market, either through MSA enforcement or via the manufacturers' own initiative.**

Conclusions

The 9 MSAs participating in this Joint Action brought home several lessons learnt which they are now sharing with all their European counterparts through this report and presentations at ADCO and EUPCN meetings.

Concerning consumer fireworks, even though the number of investigated products was high compared to previous market surveillance campaigns, this Joint Action merely scratched the surface of the market. In fact, this market is big, and sales are carried out only a few days of the year whereas stocking of the products takes place during the autumn. All articles are consumed (and thereby destroyed) in a few hours around midnight on New Year's Eve.

This means that the MSAs only have **little time to intervene**, sample products, test them, and discuss measures with the economic operators. Therefore, the Joint Action has shown that it would be beneficial to have a "good practice guideline" for undertaking market surveillance of fireworks.

All in all, the activity demonstrated that it is **important to continuously run market surveillance campaigns on consumer fireworks** preferably involving many more Member States. A Joint Action is a good vehicle for this as it allows MSAs to cooperate and benefit from each other's experiences.

Concerning marine distress signals and rescue products, the **overall quality of the products on the market was significantly worse than what should be expected** for a product whose manufacturer's production control is monitored and which is type approved by an independent third party. The efficiency of the certification scheme including the implementation of the type tests and quality inspections must be scrutinized.

MSAs face similar issues with marine pyrotechnics as with consumer fireworks: they are expensive to test, there are only few test facilities in Europe, and transportation is expensive and complicated. The biggest difference is that the market for marine pyrotechnics shows no particular season. Moreover, the models are not renewed as frequently as consumer fireworks, which makes it easier for the MSAs to check products and follow up on non-compliances.

At the same time, the participating MSAs found it difficult to sample marine distress signals manufactured outside of the EU, which means that the compliance of a relevant segment of products in use also on EU-flagged vessels could not be verified.

More Joint Actions would be necessary in this filed to ensure that safety of pyrotechnic articles is monitored, and Economic Operators are informed and can act on the problems encountered.

PROSAFE is coordinating a number of other projects and Joint Actions with the aim of contributing to the implementation of Regulation (EU) 2019/1020, together with other regulations concerning products' safety and energy efficiency. We will continue working with market surveillance authorities, consumer and business associations to ensure that products comply to EU Safety and Environmental Regulations.

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