
**Fireworks — Test methods for
determination of specific chemical
substances —**

**Part 1:
General**

*Artifices de divertissement — Méthodes d'essai pour la détermination
de substances chimiques spécifiques —*

Partie 1: Généralités

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 264, *Fireworks*.

A list of all the parts in the ISO 22863 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Fireworks — Test methods for determination of specific chemical substances —

Part 1: General

1 Scope

This document specifies the preparation methods of the test samples for the qualitative and quantitative analysis of specific chemical substances in fireworks.

The document applies to the following substances to be tested using ISO 22863 (all parts):

- hexachlorobenzene;
- lead and lead compounds;
- arsenic or arsenic compounds;
- mercury compounds;
- chlorates;
- white phosphorus;
- picrates or picric acid;
- zirconium with a particle size of less than 40 µm;

— content of nitrogen in nitrocellulose. <https://standards.iteh.ai/ISO-22863-1:2020>

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

qualitative analysis

method used to determine whether samples contain certain specific chemical substances through chemical analysis

3.2 quantitative analysis

method used to measure the content of certain specific chemical substances in samples through chemical analysis

4 Apparatus

4.1 General. The apparatus used in the different test methods are specific and defined in the corresponding parts of ISO 22863.

4.2 Test sieves, antistatic and spark free, mesh size 250 µm, in conformance with ISO 3310-1.

4.3 Test sieves, antistatic and spark free, mesh size 40 µm, in conformance with ISO 3310-1.

4.4 Temperature chamber, water bath or oil bath, capable of $(50 \pm 2,5)$ °C.

4.5 Desiccator, equipped with the appropriate desiccant (e.g. silica-based desiccant, such as “silica gel” or “silica xerogel”).

5 Test procedure

5.1 General

Before the experiment, manufacturers or importers shall provide the operator with information about the design and pyrotechnic content of the fireworks to be analysed.

All actions should be implemented at ambient temperature of between 15 °C and 25 °C and ambient moisture between 40 % and 80 %.

WARNING — For all operations of 5.2 to 5.5, it must be reminded that pyrotechnic compositions are flammable and explosive dangerous goods, sensible to impact, friction and electrostatic discharge. Therefore, appropriate safety and protective measures should be established, and a suitable management system should be used with this document in its scope. Operators shall wear appropriate personal protective equipment, use appropriate spark-free tools and explosion-proof ovens, and keep the samples in conductive or dissipative containers. Equipotentiality and grounding shall be assured at any time at workplaces. The remaining and tested samples shall be eliminated in safe conditions.

5.2 Sampling of pyrotechnic compositions

5.2.1 Extraction of pyrotechnic compositions

Carefully dismantle the firework article, remove the initial fuse, instantaneous fuse, ignition head, friction head, etc.

Carefully separate any pyrotechnic compositions or pyrotechnic units from any paper, cardboard, wooden, chipboard and plastic parts, wires and every other inert material such as aluminium tubes.

Collect a sufficient quantity of each pyrotechnic composition according to the required sample sizes of the different parts of ISO 22863 corresponding to the analyses to be carried out.

Some pyrotechnic compositions or pyrotechnic compositions and inert powders can be into mutual contact as schematized in [Figure 1](#). In such cases, take samples from the parts 1 and 2 and mix them in the same proportions as in the article or the pyrotechnic unit from which they were extracted. No sample shall be taken from part 3.