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**PLASTICS - FIRE TESTS - STANDARD**  
**IGNITION SOURCES (ISO 10093:1998)**

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# INTERNATIONAL STANDARD

**ISO  
10093**

Second edition  
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## **Plastics — Fire tests — Standard ignition sources**

*Plastiques — Essais au feu — Sources d'allumage normalisées*



Reference number  
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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10093 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 4, *Burning behaviour*.

This second edition cancels and replaces the first edition (ISO 10093:1994), which has been technically revised.

This edition differs from the 1994 edition in that all methods that had not been standardized internationally were eliminated. The sources which were eliminated were S/DF4, which was based on the ASTM E 84 burner, and the sources S/C1, S/C2 and S/C3, which were small cribs used in British Standard tests. Two extra burners, S/DF5 and S/DF6, have been introduced in this revision. These are based on the IEC 60332-3:1992 and the ISO 9705:1993 ignition sources. Sources P/PF2 and P/PF3 in the 1994 edition have been integrated into a single source, P/PF2, with two definitions of fuel supply for the same burner.

Annexes A and B of this International Standard are for information only.

## Introduction

Fires are caused by a wide range of possible ignition sources. Statistical analysis of fires has identified the main primary and secondary sources, especially for fires in buildings. The most frequent sources of fires have been found to be as follows:

- a) cooking appliances;
- b) space-heating appliances;
- c) electric wiring, connectors and terminations;
- d) other electrical appliances (such as washing machines, bedwarmers, televisions, water heaters);
- e) cigarettes;
- f) matches and smokers' gas lighters;
- g) blow-lamps, blow-torches and welding torches;
- h) rubbish burning;
- i) candles.

The above list covers the major primary ignition sources for accidental fires. Other sources may be involved in fires raised maliciously. Research into causes of fires has shown that primary ignition sources (e.g. glowing cigarettes or dropped flaming matches) can set fire to waste paper, which then acts as a secondary ignition source of greater intensity.

When analysing and evaluating the various ignition sources for applications involving plastics materials, the following questions need to be answered on the basis of detailed fire statistics:

- a) What is the significance of the individual ignition sources in various fire risk situations?
- b) What proportion is attributable to secondary ignition sources?
- c) Where does particular attention have to be paid to secondary ignition sources?
- d) To what extent are different ignition sources responsible for fatal fire accidents?

The following laboratory ignition sources are intended to simulate actual ignition sources that have been shown to be the cause of real fires involving plastics. Laboratory ignition sources are preferred over actual ignition sources due to their consistency which results in greater data repeatability within a laboratory and greater reproducibility between laboratories.

These laboratory ignition sources may be used to develop new test procedures.

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