
**Industrial furnace and associated
processing equipment — Safety —**

**Part 4:
Protective systems**

Fours industriels et équipements associés — Sécurité —

Partie 4: Systèmes de protection



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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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 244, *Industrial furnaces and associated processing equipment*.

ISO 13577 consists of the following parts, under the general title *Industrial furnaces and associated processing equipment — Safety*:

- *Part 1: General requirements*
- *Part 2: Combustion and fuel handling systems*
- *Part 3: Generation and use of protective and reactive atmosphere gases*
- *Part 4: Protective systems*

The following part is under preparation:

- *Part 11: Requirements for arc furnaces*

Introduction

This part of ISO 13577 was developed to specify the requirements of a protective system, which is a safety-related electrical control system (SRECS) of industrial furnaces and associated processing equipment (TPE).

Mandatory safety-related control functions of TPE are specified in ISO 13577-1, ISO 13577-2, and ISO 13577-3.

It is intended that in designing the protective system of TPE, manufacturers of TPE choose from the four methods provided in this part of ISO 13577.

This part of ISO 13577 is to be used together with the other parts of ISO 13577. Since ISO 13577 is a type-C standard of ISO 12100, TPE are required to be designed in accordance with the principles of ISO 12100. However, there are cases in which a risk assessment according to IEC 61511 (all parts) is more suitable for the design of a TPE protective system.

This document is a type-C standard as stated in ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations, or hazardous events are covered are indicated in the scope of this part of ISO 13577.

When requirements of this type-C standard are different from those which are stated in type-A or -B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

IEC 61511 (all parts) provides the option of a low-demand rate on the protective system. IEC 62061 or ISO 13849-1 always assume high-demand applications.

Therefore, this part of ISO 13577 permits extended risk assessment for SRECS in which risk assessment based on IEC 61511 (all parts) can be chosen as an alternative.

Industrial furnace and associated processing equipment — Safety —

Part 4: Protective systems

1 Scope

This part of ISO 13577 specifies the requirements for protective systems used in industrial furnaces and associated processing equipment (TPE).

The functional requirements to which the protective systems apply are specified in the other parts of ISO 13577.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable to its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13574:—¹⁾, *Industrial furnaces and associated processing equipment — Vocabulary*

ISO 13849-1:2006, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

IEC 60947-4-1, *Low-voltage switchgear and controlgear — Part 4-1: Contactors and motor-starters - Electromechanical contactors and motor-starters*

IEC 60947-5-1, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices*

IEC 60204-1, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

IEC 60730-2-5, *Automatic electrical controls for household and similar use — Part 2-5: Particular requirements for automatic electrical burner control systems*

IEC 61508 (all parts):2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems*

IEC 61131-3, *Programmable controllers — Part 3: Programming languages*

IEC 61511 (all parts), *Functional safety — Safety instrumented systems for the process industry sector*

IEC 62061, *Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13574:—²⁾ and the following apply.

1) To be published.

2) To be published.