
**Design criteria for the thermal
insulation of reactor coolant system
main equipments and piping of PWR
nuclear power plants**

*Critères de conception du calorifuge des composants primaires
principaux et des tuyauteries du circuit primaire principal des
centrales nucléaires REP*

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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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 85, *Nuclear energy, nuclear technologies, and radiological protection*, Subcommittee SC 6, *Reactor Technology*.

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.

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Design criteria for the thermal insulation of reactor coolant system main equipments and piping of PWR nuclear power plants

1 Scope

This document specifies the basic requirements of thermal insulation design of reactor coolant system (RCS) equipment and piping.

Among thermal insulation of various RCS equipment and piping, the following two kinds of thermal insulations are described in detailed based on common design logic and requirements:

- thermal insulation of reactor pressure vessel (RPV);
- thermal insulation of RCS piping and other equipment.

This document is valid for two types of thermal insulation:

- metallic thermal insulation;
- non-metallic thermal insulation.

This document mainly applies to nuclear power plants with pressurized water reactor (PWR). For other reactor types, this document can be taken as reference.

2 Normative references

The following standards 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 standards (including any amendments) applies.

ISO 7345, *Thermal performance of buildings and building components — Physical quantities and definitions*

ISO 9229, *Thermal insulation — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7345, ISO 9229 and the following 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

metallic thermal insulation

thermal insulation with metallic material as the primary insulating material

Note 1 to entry: The metallic thermal insulation is composed by large number of thermal insulation panels. Each thermal insulation panel is surrounded by outer cladding and filled by inner metallic reflective foils/sheets. The geometry of inner packed foils/sheets can be embossed structure or liners in parallel.

Note 2 to entry: The typical geometry of metallic thermal insulation is shown in [Annex A](#). The geometry mentioned in [Annex A](#) can be referred by designers.