INTERNATIONAL STANDARD

ISO 21013-3

First edition
2006-01-01

Cryogenic vessels — Pressure-relief accessories for cryogenic service —

Part 3: Sizing and capacity determination

Récipients cryogéniques — Dispositifs de sécurité pour le service cryogénique —

Partie 3: Détermination de la taille et du volume

Reference number
ISO 21013-3:2006(E)

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Published in Switzerland

Contents

Page

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 21013-3 was prepared by Technical Committee ISO/TC 220, *Cryogenic vessels*.

ISO 21013 consists of the following parts, under the general title *Cryogenic vessels — Pressure-relief accessories for cryogenic service*:

— *Part 1: Reclosable pressure-relief valves*

— *Part 2: Non-reclosable pressure-relief devices*

— *Part 3: Sizing and capacity determination*

Cryogenic vessels — Pressure-relief accessories for cryogenic service —

Part 3: Sizing and capacity determination

1 Scope

This part of ISO 21013 provides separate calculation methods for determining the required mass flow to be relieved for each of the following specified conditions.

— Vacuum-insulated vessels with insulation system (outer jacket + insulating material) intact under normal vacuum; outer jacket at ambient temperature; inner vessel at temperature of the contents at the relieving pressure.

— Vacuum-insulated vessels with insulation system (outer jacket + insulating material) intact under normal vacuum; outer jacket at ambient temperature; inner vessel at temperature of the contents at the relieving pressure; pressure regulator of the pressure build-up system functioning at full potential.

— Vacuum-insulated vessels with insulation system remaining in place but with loss of vacuum, or non-vacuum-insulated vessels with insulation system intact; outer jacket at ambient temperature; inner vessel at temperature of the contents at the relieving pressure; vacuum or non-vacuum-insulated vessels with insulation system remaining fully or partially in place, but with loss of vacuum in the case of vacuum-insulated vessels, and fire engulfment; inner vessel at temperature of the contents at the relieving pressure.

— Vessels with insulation system totally lost and fire engulfment.

Good engineering practice based on well-established theoretical physical science shall be adopted to determine the required mass flow where an appropriate calculation method is not provided for an applicable condition.

2 Normative references

The following referenced documents are indispensable for the application 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 4126-1, *Safety devices for protection against excessive pressure — Part 1: Safety valves*

ISO 4126-6:2003, *Safety devices for protection against excessive pressure — Part 6: Application, selection and installation of bursting disc safety devices*