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NSAI Standards

Irish Standard
I.S. EN ISO 21012:2018

Cryogenic vessels - Hoses (ISO 21012:2018)

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National Foreword

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NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 21012

December 2018

ICS 23.020.40; 83.140.40

Supersedes EN 12434:2000

English Version

Cryogenic vessels - Hoses (ISO 21012:2018)

R?ipients cryog?iques - Tuyaux flexibles (ISO 21012:2018)

Kryo-Beh?ter - Schlauchleitungen (ISO 21012:2018)

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European foreword

This document (EN ISO 21012:2018) has been prepared by Technical Committee ISO/TC 220 "Cryogenic vessels" in collaboration with Technical Committee CEN/TC 268 “Cryogenic vessels and specific hydrogen technologies applications” the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12434:2000.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZA, which is an integral part of this document.

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The text of ISO 21012:2018 has been approved by CEN as EN ISO 21012:2018 without any modification.

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Annex ZA
(informative)

Relationship between this European Standard and the Essential requirements of EU Directive 2014/68/EU (Pressure equipment Directive) aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/071 to provide one voluntary means of conforming to essential requirements of 2014/68/EU (Pressure equipment Directive).

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Annex I of Directive 2014/68/EU (Pressure equipment Directive)

Essential Requirements of Directive 2014/68/EU	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
2.2.1	4.1	Design
4	4.2	Materials
1.1	4.3	Cleanliness
2.2.3 (b)	4.4	Mechanical properties
2.2.4	5	Hose sample test
3.2.2	6.2	Proof test
3.3	7	Marking

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

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INTERNATIONAL STANDARD

ISO 21012

Second edition
2018-03

Cryogenic vessels — Hoses

Récipients cryogéniques — Tuyaux flexibles

Reference number
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Foreword

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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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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 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 ISO/TC 220, *Cryogenic vessels*.

This second edition cancels and replaces the first edition (ISO 21012:2006), which has been technically revised.

This edition includes the following significant changes with respect to the previous edition:

— Subclause 4.2: Added “any austenitic stainless steel hoses shall be annealed after formation for hydrogen service.”;

— Subclause 4.4.3: Replaced shall with should;

— Subclause 4.4.3: Replaced 50 000 cycles with 10 000 cycles;

— Subclause 4.4.3: Added “This test is only required if the flexible hose is subject to multiple wide/significant moves when under pressure.”;

— Subclause 5.3.2.1: Replaced 50 000 cycles with 10 000 cycles;

— Subclause 5.3.2.2: Replaced 50 000 cycles with 10 000 cycles;

— Annex B: Changed from Normative to Informative;

— Annex C: Changed from Normative to Informative;

— Annex C: Changed last sentence in second last paragraph to “Sufficient liquid nitrogen shall be used to ensure the flexible hose assembly reaches liquid nitrogen temperature.”.

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Cryogenic vessels — Hoses

1 Scope

This document specifies design, construction, type and production testing, and marking requirements for non-insulated cryogenic flexible hoses used for the transfer of cryogenic fluids within the following range of operating conditions:

— working temperature: from −270 °C to +65 °C;

— nominal size (DN): from 10 to 100.

End fittings for mounting of any couplings are within the scope of this document, but the couplings are subject to other standards.

It is intended that the hose be designed and tested to satisfy the generally accepted rated pressure i.e. at least PR 40. Hoses may be then selected with a PR equal to or greater than the maximum allowable pressure (PS) of the equipment to which it is to be used.

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 7369, *Pipework — Metal hoses and hose assemblies — Vocabulary*

ISO 10806, *Pipework — Fittings for corrugated metal hoses*

ISO 21010, *Cryogenic vessels — Gas/materials compatibility*

ISO 21028-1, *Cryogenic vessels — Toughness requirements for materials at cryogenic temperature — Part 1: Temperatures below −80 °C*

ISO 23208, *Cryogenic vessels — Cleanliness for cryogenic service*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7369 and the following apply.

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

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
hose
flexible leak-tight inner tube of either corrugated metal, elastomer or plastic

3.2
braid
layer, or layers, of cylindrically woven wires covering the hose and permanently attached to the flexible hose assembly end fittings, serving the function of restraining the flexible hose against elongation

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