International Standard

ISO 21028-1

Third edition
2026-09

Cryogenic vessels — Toughness requirements for materials at cryogenic temperature —

Part 1: Temperatures below −80 °C

Récipients cryogéniques — Exigences de ténacité pour les matériaux à température cryogénique —

Partie 1: Températures inférieures à −80 °C

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This document was prepared by Technical Committee ISO/TC 220, *Cryogenic vessels*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 268, *Cryogenic vessels and specific hydrogen technologies applications*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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This third edition cancels and replaces the second edition (ISO 21028-1:2016), which has been technically revised.

The main changes are as follows:

— addition of normative references;

— addition of Table 1 in 4.2.

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Introduction

The use of materials at low temperatures entails special problems which should be addressed. Consideration should be given, in particular, to changes in mechanical characteristics, expansion and contraction phenomena and the thermal conduction of the various materials. Austenitic stainless steel can transform from the austenitic to the martensitic phase when cooled down, leading to dimensional change that should be considered during design.

However, the most important property to consider is material toughness at low temperatures.

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