FINAL DRAFT
Amendment

ISO 13623:2017/ FDAM 1

Petroleum and natural gas industries — Pipeline transportation systems

AMENDMENT 1: Complementary requirements for the transportation of fluids containing carbon dioxide or hydrogen

Industries du pétrole et du gaz naturel — Systèmes de transport par conduites

AMENDEMENT 1: Exigences complémentaires relatives au transport de fluides contenant du dioxyde de carbone ou de l'hydrogène

ISO/TC **67**/SC **2**

Secretariat: **UNI**

Voting begins on:
2024-03-06

Voting terminates on:
2024-05-01

Reference number
ISO 13623:2017/FDAM 1:2024(en)

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Published in Switzerland

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This document was prepared by Technical Committee ISO/TC 67, *Oil and gas industries including lower carbon energy*, Subcommittee SC 2, *Pipeline transportation systems*.

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Petroleum and natural gas industries — Pipeline transportation systems

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2 Normative references

Add the following documents:

ISO 27913, *Carbon dioxide capture, transportation and geological storage — Pipeline transportation systems*

API Spec 5L, 46th edition (2018), *Specification for Line Pipe*

5.2 Categorization of fluids

Add the following paragraph at the end of the subclause:

For category E fluids containing carbon dioxide exceeding the limit specified in G.1 the requirements in Annex G shall apply

For category E fluids containing hydrogen exceeding the limit specified in H.2, Annex H shall apply.

8.1.6 Shear-fracture toughness

Designate the existing NOTE as NOTE 1 and add the following new NOTE:

NOTE 2 ISO 27913 provides guidance on determining the fracture-toughness requirements for the arrest of running shear fractures in carbon dioxide pipelines.

Annex G

Add the following annex after Annex F.

Annex G
(normative)

Requirements for the transportation of fluids containing carbon dioxide

G.1 General

This annex provides requirements for the transportation of fluids consisting overwhelmingly of carbon dioxide.

NOTE Industry-accepted interpretation of "overwhelmingly CO_2" required by the London Convention and Protocol which came into force in February 2007 is 95 % molar fraction.

G.2 General design consideration

When designing pipeline systems for the transportation of fluid containing overwhelmingly CO_2, the following specific properties of carbon dioxide shall be considered:

— asphyxiant and mildly toxic;

— non-flammable;

— odourless;

— heavier than air;

— highly corrosive in the presence of free water;

— transportable in both gas or dense phase in manageable pressure and temperature regimes having adequate margin with respect to the phase envelope to avoid two-phase flow during normal operation;

— significant impact of impurities on the thermodynamic properties and the potential hazards;

— more susceptible to running shear fracture than conventional natural gas, especially if carbon dioxide is transported in dense phase.

NOTE Carbon dioxide is not classified as toxic under the Globally Harmonized System of Classification and Labelling of Chemicals. However, carbon dioxide is considered to be sufficiently toxic to be classified as a category E fluid as defined in Table 1 (see Reference [8]).

G.3 Requirements

Pipeline transportation systems designated for the transportation of the fluid defined in G.1 shall conform to the requirements specified in this document for category E substances and with the requirements of ISO 27913.

Annex H

Add the following annex after the newly-added Annex G, before the Bibliography.