ISO/DTR 27929

ISO/TC 265

Secretariat: SCC

Date: 2025-~~05-07~~08-11

Transportation of carbon dioxide by ship

~~*Transport de dioxyde de carbone par bateau*~~

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Published in Switzerland

Contents

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 document 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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This document was prepared by Technical Committee ISO/TC 265, *Carbon dioxide capture, transportation, and geological storage*.

This second edition cancels and replaces the first edition (ISO/TR 27929:2024), which has been technically revised.

The main changes are as follows:

— Figure 4 has been corrected to represent the correct phase diagram for CO_2;

— Figure 5 has been revised to be consistent in wording.

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.

Introduction

In a carbon dioxide capture and storage (CCS) value chain, the main means for transportation of CO_2 from an emitter to storage are by ships or by pipelines. Transportation of gas in liquid state is well established in the shipping industry and has been done for decades. However, liquid CO_2 is different from other gases carried by ships and poses new challenges for both ship design and ship operation. Compatibility along the value chain is an essential element in the development of CCS. It is important to have a common understanding of how different aspects, such as cargo temperature and pressure, can influence the ship design and ship operation.

The purpose of this document is to support consistency and compatibility in the design of CCS value chains and address important areas where future development and standardization can add value. This document ~~will discuss~~ discusses CO_2 ship types, ship logistics and interface-specific aspects related to the safe and reliable design and operation of CO_2 ships.

Transportation of liquified gas on ships is governed by the regulations, codes and conventions drawn up under the International Maritime Organization (IMO) which is referred to under United Nations Convention on the Laws of the Sea (UNCLOS). Ships carrying CO_2 are regulated by the IMO International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code), which serves as the main technical regulation for CO_2 carriers under the International Convention for the Safety of Life at Sea (SOLAS).

Ship transportation of CO_2 is currently limited to commercial trade for small-scale use in industries such as the food or beverage industries and is served by a handful of small ships. However, the evolving industry around CCS will demand transportation volumes of a different magnitude and involve development of new ship designs and ship logistics concepts. These are introducing a need for knowledge-sharing related to type of transportation concepts, CCS value chain compatibility, technical and operational reliability and the safety of CO_2 carriers.

Quantification, verification and reporting along the different elements in the CCS value chain will become important. This document briefly describes the limitations and challenges to them and how they can be done onboard the ship.

In this document, CO_2 means a captured CO_2 stream, including potential impurities following the capture process, if not otherwise explicitly referred to as pure CO_2.