Technical Specification

ISO/TS 25375

Oil and gas industries including lower carbon energy — Multi-component for thermal recovery — Flooding development plan design

Industries du pétrole et du gaz, y compris les énergies à faible teneur en carbone — Multi-composants pour la récupération thermique — Elaboration de la stratégie d'injection

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First edition
2026-11

Reference number
ISO/TS 25375:2026(en)

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Published in Switzerland

ISO/TS 25375:2026 • https://standards.iteh.ai/catalog/standards/iso/18a0ce96-eb2a-4faf-af4c-c8364e1cb47d/iso-ts-25375-2026

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This document was prepared by Technical Committee TC 67, *Oil and gas industries including lower carbon energy*, Subcommittee SC 10, *Enhanced oil recovery*.

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Introduction

This document, developed by users and suppliers of the multi-component thermal flooding technology, is intended to provide efficient and low-carbon emission recovery of heavy oil reservoirs worldwide.

The multi-component thermal flooding technology is an enhanced oil recovery (EOR) method for heavy oil reservoirs, boasting advantages of production enhancement, efficiency improvement and low-carbon characteristics. Leveraging the synergistic effects of heat, chemical agents, and gases, this technology could solve the problems in steam flooding processes, including difficulties in steam chamber expansion, displacement imbalance, and excessive heat loss, thereby effectively enhancing oil recovery in heavy oil reservoirs.

Due to the significant differences in the characteristics of buried depth, oil viscosity and pressure of heavy oil reservoirs in different oil regions, the multi-component thermal fluids and displacement methods employed are not identical. This leads to notable differences in reservoir applicability and production enhancement effect of the multi-component thermal flooding technology across different oilfields. The international unified technical standard and specification have not been established, which limits the application and popularization of this technology across world.

This document gives relatively universal technical specifications for the multi-component thermal flooding development technology. It can assist international oil companies in carrying out heavy oil thermal recovery technical services.

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Oil and gas industries including lower carbon energy — Multi-component for thermal recovery — Flooding development plan design

1 Scope

This document provides the design content and technical specification for the scheme of the multi-component thermal flooding development plan, which is applicable to onshore and offshore heavy oil reservoirs.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology 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

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3.1
multi-component thermal fluids
MCTF
high temperature binary or ternary system composed of steam, hot water, gases and chemical agents, used to improve oil recovery in heavy oil fields

Note 1 to entry: Gas components can include N_2, CO_2, CH_4, flue gas, etc.

3.2
steam injection rate
quantity of steam injected into the well per day

3.3
gas injection rate
quantity of gas injected into the well per day

3.4
production-injection ratio
ratio of the liquid production rate to the *steam injection rate* (3.2) in the block during the multi-component thermal flooding process

3.5
gas-liquid ratio
GLR
ratio of gas volume to liquid volume under operating conditions

Note 1 to entry: *GLR* (3.5) is generally measured in standard units, e.g. cubic meters per cubic meter.

Note 2 to entry: *GLR* (3.5) in ISO/TS 26762:2025 [1] is defined as ratio of produced gas flow rate to the produced total liquid flow rate, which uses measures of produced gas/liquid and is different from the *GLR* (3.5) in this document.

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