
**Hydrogen fuel — Product
specification —**

**Part 2:
Proton exchange membrane (PEM)
fuel cell applications for road vehicles**

Carburant hydrogène — Spécification de produit —

*Partie 2: Applications des piles à combustible à membrane à échange
de protons (MEP) pour les véhicules routiers*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 14687-2 was prepared by Technical Committee ISO/TC 197, *Hydrogen technologies*.

This first edition of ISO 14687-2 cancels and replaces the first edition of ISO/TS 14687-2:2008.

ISO 14687 consists of the following parts, under the general title *Hydrogen fuel — Product specification*:

- *Part 1: All applications except proton exchange membrane (PEM) fuel cell for road vehicles*
- *Part 2: Proton exchange membrane (PEM) fuel cell applications for road vehicles*
- *Part 3: Proton exchange membrane (PEM) fuel cell applications for stationary appliances*

Introduction

This part of ISO 14687 specifies two grades of hydrogen fuel, “Type I, grade D” and — Type II, grade D. These grades are intended to apply to the interim stage of proton exchange membrane (PEM) fuel cells for road vehicles (FCV) on a limited production scale.

It is also noted that this part of ISO 14687 has been prepared based on the research and development focusing on the following items:

- PEM catalyst and fuel cell components tolerance to hydrogen fuel contaminants;
- effects/mechanisms of contaminants on fuel cell systems and components;
- contaminant measurement techniques for laboratory, production, and in-field operations;
- onboard hydrogen storage technology;
- vehicle demonstration results.

Since the FCV and related technology are developing rapidly, this part of ISO 14687 needs to be revised according to technological progress as necessary. Technical Committee ISO/TC 197, *Hydrogen Technologies*, will monitor this technology trend.

Hydrogen fuel — Product specification —

Part 2:

Proton exchange membrane (PEM) fuel cell applications for road vehicles

1 Scope

This part of ISO 14687 specifies the quality characteristics of hydrogen fuel in order to ensure uniformity of the hydrogen product as dispensed for utilization in proton exchange membrane (PEM) fuel cell road vehicle systems.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6145 (all parts), *Gas analysis — Preparation of calibration gas mixtures using dynamic volumetric methods*

ISO 14687-1, *Hydrogen fuel — Product specification — Part 1: All applications except proton exchange membrane (PEM) fuel cell for road vehicles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14687-1 and the following apply.

3.1

constituent

component (or compound) found within a hydrogen fuel mixture

3.2

contaminant

impurity that adversely affects the components within the fuel cell system or the hydrogen storage system

NOTE An adverse effect can be reversible or irreversible.

3.3

detection limit

lowest quantity of a substance that can be distinguished from the absence of that substance with a stated confidence limit

3.4

determination limit

lowest quantity which can be measured at a given acceptable level of uncertainty

3.5

fuel cell system

power system used for the generation of electricity on a fuel cell vehicle, typically containing the following subsystems: fuel cell stack, air processing, fuel processing, thermal management and water management