

Hydrogen Specification Proposal



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Disclaimer

The specifications for hydrogen presented in this document are reflecting the best knowledge available at the moment of their publication. These gas quality specifications are subject to evolution, in line with the results of upcoming test and research programs as well as the publication of European gas quality standards. The information contained in this document reflects the point of view of Fluxys at this stage and is publicly disclosed for information purposes only and without any commitment whatsoever from Fluxys Belgium SA.

1. Introduction

The development of a hydrogen transmission infrastructure requires the right coordination between all relevant stakeholders in the value chain. One of the most important building blocks to make such cooperation successful consists in characterizing the hydrogen products that shall be transported through the pipelines.

The general principles that generally govern gas quality specifications in gas networks are to :

- ensure that infrastructures are fit for purpose for transporting gases
- protect the infrastructures (e.g. from corrosion) by limiting free water and acid components
- safeguard safety of operations and end-use by limiting toxic components
- ensure interoperability with adjacent systems

2. Quality Specification

The quality specifications for the hydrogen transported in the hydrogen transmission network operated by Fluxys Belgium are listed in the table below. These requirements are applicable at the points where the (not odourised) hydrogen is entering and leaving the transmission network.

These gas quality specifications are, to the extent possible,

- Aligned with the specifications as published by Easee-Gas (CBP H₂)¹, in the last draft specification proposals available from CEN, as well as with the specification published in United Kingdom, The Netherlands and Germany;
- Taking into account feedback from the market received in the framework of the Request For Information

Constituents	Units	Requirements	Note
H ₂	% mol	> 98	(1)
Total hydrocarbons	% mol	< 1,5	(1)
Sum of inerts (N ₂ +He+Ar)	% mol	< 2	(1)
<i>Wobbe Index (informative, based on possible composition)</i>	<i>MJ/m³(n)</i>	<i>42,19 - 48,36</i>	
H ₂ O Dewpoint	°C from 0 to 69 barg	< - 8	(1)
HC Dewpoint	°C at 69 barg	< - 2	(1)

¹ https://easee-gas.eu/download_file/DownloadFile/36/cbp-2022-001-01-hydrogen-quality-specification

O ₂	ppm mol (24 hour moving average)	< 10 (< 1000 Where the hydrogen can be demonstrated not to flow to installations or end-user applications sensitive to higher levels of O ₂)	(1)
CO ₂	ppm mol	< 20	(1)
CO	ppm mol	< 20	(1)
H ₂ S + COS	ppm mol	< 3,3	(1)
S _{TOT} (without odorant)	ppm mol	< 7	(1)
NH ₃	ppm mol	< 10	(2)
Halogenated compounds	ppm mol	< 0,05	(2)

- (1) Compounds that shall be measured on a continuous basis at entry points
- (2) Compounds that do not have to be measured on a continuous basis at entry points. However, the producers need to demonstrate that they respect the requirements in the table :
- either by providing sound technical evidence that certain compounds cannot be present in their hydrogen stream,
 - either by providing regular spot measurement results from a mutually agreed laboratory

In addition, the hydrogen delivered does not contain other elements or impurities (solid, liquid or gaseous) that might interfere with the integrity and operation of the Fluxys Belgium's infrastructures or downstream systems.

3. Operating Conditions

Parameters	Units	Operating conditions
Operating pressures	barg	At entry points : up to 66 ² At exit points : down to 20
Temperature	°C	2 – 38

² Variable, defined by the network operator and depending on network conditions