



## **APPENDIX 3**

# **Quality and Delivery Specifications**

Natural Gas injected into or withdrawn from the Storage Facility under a Storage Agreement must at any time comply with the Danish Gas Regulation and the Quality and Delivery Specifications below, unless otherwise instructed by Gas Storage Denmark ("GSD") during abnormal state of operation:

## 1. Quality Specifications

- a) Wobbe Index: The Wobbe Index for the Natural Gas during normal operation must not be lower than 50.76 MJ/m<sup>3</sup> or higher than 55.8 MJ/m<sup>3</sup>.
- b) Relative Density: The Relative Density of the Natural Gas must not be lower than 0.555 or higher than 0.7.
- c) CO<sub>2</sub>: The CO<sub>2</sub> content of the Natural Gas must not exceed 2.5 mole%.
- d) O<sub>2</sub>: The O<sub>2</sub> content of the Natural Gas must not exceed 0.5 mol-%, although not more than 0.1 mol-% on a yearly basis (365 consecutive Gas Days).
- e) H<sub>2</sub>S and COS: The content of H<sub>2</sub>S + COS in the Natural Gas measured as sulphur must not exceed 5 mg/m<sup>3</sup>. However, under extraordinary operating conditions, the H<sub>2</sub>S + COS content may for a period of maximum 2 Hours constitute up to 10 mg/m<sup>3</sup>, although not more than 5 mg/m<sup>3</sup> on a 24-hour basis.
- f) Mercaptan: The mercaptan content of the Natural Gas measured as sulphur must not exceed 6 mg/m<sup>3</sup>.
- g) Total sulphur content: The total sulphur content must not exceed 30 mg/m<sup>3</sup>.
- h) Water dew point: The water dew point of the Natural Gas must not exceed minus 8° C at any pressure up to 70 bar absolute pressure.
- i) Hydrate formation: The Natural Gas must not form hydrates at temperatures of minus 8° C or higher at any pressure up to 70 bar absolute pressure.
- j) Hydrocarbon dew point: The Natural Gas must not form liquid hydrocarbons at temperatures of minus 2° C or higher at any pressure up to 70 bar absolute pressure.
- k) Dust and liquids: The Natural Gas must be technically free of gaseous, solid or liquid substances to the extent that this may involve a risk of blocking and malfunction or corrosion of ordinary gas installations and standard gas equipment. This provision does not apply to such liquid formation that occasionally occurs in Natural Gas in the form of very small droplets that cannot be removed from it.
- l) Other components and contaminants: The Natural Gas must not contain other components and/or contaminants to an extent which may imply that it cannot be transported, stored and/or marketed without further adjustment of the quality or treatment of the Natural Gas.
- m) Temperature: The temperature of the Natural Gas during normal operation must be no lower than 0° C and no higher than 50° C; however, in extraordinary operating conditions

or due to bona fide technical circumstances, the temperature of the Natural Gas may be as low as minus 10° C for periods of up to 2 Hours.

## **2. Revision of Appendix 3**

This Appendix 3 is subject to regular revision by GSD in cooperation with Energinet Gas TSO in step with changes in the Danish gas regulation (Gassikkerhedsloven) and/or changes in the quality and the delivery specifications typically applying in the Northwestern Europe.