



Quality and Delivery Specifications

| 1 October~~1 January~~ 2020~~18~~

Natural Gas received, transported and redelivered in the Danish Gas System under a Capacity Agreement or storage agreement shall at all times comply with the Danish gas regulation ([Gas-sikkerhedsloven](#)[Gasreglementet](#)) and the following Quality Specifications.

1. Quality Specifications

- a) Wobbe Index: During normal operation the Wobbe Index for the Natural Gas shall not be lower than 50.76 MJ/m³ or higher than 55.8 MJ/m³. During abnormal state of operation the Wobbe Index for the Natural Gas shall not be lower than 50.04 MJ/m³ or higher than 55.8 MJ/m³ – require a preparedness plan approved by The Danish Safety Technology Authority (Sikkerhedsstyrelsen). A preparedness plan for the Entry Point at Ellund has been approved.
- b) Relative Density: The Relative Density of the Natural Gas shall not be lower than 0.555 or higher than 0.7.
- c) CO₂: The CO₂ content of the Natural Gas shall not exceed 2.5 mol-%.
- d) O₂: The O₂ content of the Natural Gas shall not exceed 0.1 mol-% on a 24-hour basis for the Entry Points, the Transit Points and the Storage Points. The O₂ content of the Natural Gas/Biomethane shall not exceed 0.5 mol-% for the Transition Points and the Metering Points for Biomethane.
- e) H₂S and COS: The content of H₂S + COS in the Natural Gas measured as sulphur shall not exceed 5 mg/m³. However, under extraordinary operating conditions in relation to the Entry Points, the Transit Points and the Storage Points, the H₂S + COS content may for a period of maximum 2 hours constitute up to 10 mg/m³, although not more than 5 mg/m³ on a 24-hour basis.
- f) Mercaptans: The mercaptans content of the Natural Gas measured as sulphur shall not exceed 6 mg/m³.
- g) Total sulphur content: The total sulphur content shall not exceed 30 mg/m³.
- h) Water dew point: The water dew point of the Natural Gas shall 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 shall 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 and that cannot be removed from it.
- l) Odourisation: The Natural Gas shall be delivered unodorised at the Entry Point. Odourisation of the Natural Gas shall take place at the Transition Point.
- m) Other components and contaminants: The Natural Gas shall 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.

2. Delivery specifications

Temperature: The temperature of the Natural Gas during normal operation shall be no lower than 0 °C and no higher than 50 °C; however, under 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 two hours.

3. Revision of Appendix 1

This Appendix 1 is subject to regular revision by Energinet, Gas Storage Denmark and the Distribution Companies in step with changes in the Rules for Gas Transport and/or changes in the quality and delivery specifications typically applying in Europe.