



Gas Quality Parameters at NTS Entry Points

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Introduction

During the recent Gas Markets Plan project, National Grid reviewed processes for change to gas quality limits at system entry points. Industry stakeholders indicated a need to improve transparency in relation to gas quality and it was considered that publication of gas quality limit values would be helpful for parties that offtake gas from the NTS to better understand the range of gas quality that they may receive. This information would also serve as a reference source to help assess the potential impact of proposals to change gas quality limit values at particular NTS Entry Points which arise from time to time.

Accordingly, we are publishing this document to outline the gas quality parameters that are currently in force at NTS entry, interconnector and storage points where the connected party has agreed to release this information for publication. This document will be updated to reflect changes in any of the published parameters or with the addition of further sites if we receive consent to publish gas quality parameters for their site.

Any queries about the document should be sent to: Box.UKT.customerlifecycle@nationalgrid.com.

Version History

Version Number	Date of Publication	Changes to Previous version
1	February 2022	-
2	October 2022	Addition of Teesside PX (Gas Processing Plant) and St Fergus NSMP

Section A: Entry Connections

Bacton - Shell

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not be more than 3.3 ppm by volume
Total Sulphur	Not be more than 15 ppm by volume
Oxygen Content	Not be more than 10 ppm by volume
Impurities	Be commercially free from objectionable odours and materials and dust or other solid or liquid matter waxes gums and gum forming constituents which might cause injury to or interference with the proper operation of the lines meters regulators facilities or other appliances through which it flows
Hydrocarbon Dewpoint	Which at any pressure up to and including 69 bar gauge does not exceed -1°C
Water Content	Not greater than -9°C which at a pressure of 69 bar gauge
Wobbe Number	Have a lower limit equal to 48.2 MJ/CM, and an upper limit equal to 51.2 MJ/CM
Carbon Dioxide Content	Not be more than 2.0 mol%
Calorific Value	Have a lower limit of 36.9 MJ/CM and an upper limit of 42.3 MJ/CM inclusive (both limits being real gross dry).
Delivery Temperature	Not less than 1°C and not more than 38°C.

Bacton - Shell SEAL

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 3.3 ppm by volume
Total Sulphur	Not more than 15ppm by volume
Oxygen Content	Not more than 10 ppm by volume
Impurities	Not contain solid or liquid material which may interfere with the integrity or operation of pipes or any gas appliance which a consumer could reasonably be expected to operate.
Hydrocarbon Dewpoint	Not more than minus two degrees (-2°C) at any pressure up to 75 barg gauge
Water Dewpoint	Not be more than -10°C at 75 bar gauge.
Wobbe Number	Have a lower limit equal to 48.1 MJ/CM, and an upper limit equal to 51.4 MJ/CM
Carbon Dioxide	Not more than 2.5 mol%
Calorific Value	Have a lower limit of 36.9 MJ/CM and an upper limit of 42.3 MJ/CM inclusive (both limits being real gross dry).
Pressure	Not more than 75 barg

Note: There are no contractual limits specified for Incomplete Combustion Factor, Soot Index or Hydrogen, therefore the GS(M)R limits apply pursuant to UNC TPD I2.4.5.

Barrow

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 3.3ppm
Total Sulphur	Not more than 15ppm
Hydrogen Content	Not more than 0.1 mol%.
Oxygen Content	Not more than 0.1 mol%
Impurities	Gas tendered for delivery by system users to the system at the system entry point shall not contain any solid, liquid or gaseous material which would interfere with the integrity or operation of the system or any pipeline connected to such system or any appliance which a consumer might reasonably be expected to have connected to the system.
Hydrocarbon Dewpoint	Not more than minus two degrees (-2°C) at any pressure up to the delivery pressure of 75 barg.
Water Dewpoint	Not such as would cause a water dewpoint more than minus ten degrees (-10°C) Celsius at any pressure up to the delivery pressure of 75 barg.
Wobbe Number	Shall be between 47.2 MJ/SCM and 51.41 MJ/SCM
Incomplete Combustion Factor	Not more than 0.48
Soot Index	Not more than 0.60
Odour	It shall have no odour that may cause National Grid to fail to meet its obligation under Part 1 of Schedule 3 of the Regulations
Carbon Dioxide	Not more than 2.0 mol%
Gross Calorific Value	Shall be within the range of 36.9 to 42.3 MJ/SCM (real gross dry)
Delivery Temperature	Shall be between one and thirty eight degrees Celsius (1°C and 38°C)
Pressure	Shall be that required to deliver gas into the system taking account of the back pressure as the same shall vary from time to time. The delivery pressure shall not exceed seventy five bar gauge (75 barg)

Easington - Langedled

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 5mg/SCM (not including COS)
Total Sulphur	Not more than 30mg/SCM
Hydrogen Content	Not more than 0.1 mol%
Oxygen Content	Not more than 10 ppm
Impurities	Gas tendered for delivery by System Users to the System at the System Entry Point shall not contain any solid, liquid or gaseous material which would interfere with the integrity or operation of the System or any pipeline connected to such system or any appliance which a consumer might reasonably be expected to have connected to the System
Hydrocarbon Dewpoint	Not more than -2°C at any pressure up to seventy bar gauge (70 barg).
Water Content	Not such as would cause a water dewpoint more than minus ten degrees Celsius (-10°C) at seventy bar gauge (70 barg)
Wobbe Number	Shall be between 47.2MJ/SCM, and 51.41 MJ/SCM
Incomplete Combustion Factor	Not more than 0.48
Soot Index	Not more than 0.60
Odour	It shall have no odour that may cause National Grid to fail to meet its obligation under Part 1 of Schedule 3 of the Gas Safety (Management) Regulations 1996.
Carbon Dioxide Content	Shall be not more than 2.5 mol%
Calorific Value	Shall be within the range 36.9 to 43.7 MJ/SCM. (real gross dry)
Delivery Temperature	Shall be between one and thirty eight degrees Celsius (1°C and 38°C).
Pressure	Shall be that required to deliver gas into the System taking account of the back pressure as the same shall vary from time to time. The delivery pressure shall not be lower than forty eight bar gauge (48 barg) nor exceed seventy bar gauge (70 barg).

Isle of Grain 1

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 5 mg/SCM
Total Sulphur	Not more than 50 mg/SCM.
Hydrogen Content	Not more than 0.1 mole%.
Oxygen Content	Not more than 0.02 mol%
Hydrocarbon Dewpoint	Not more than minus two degrees Celcius (-2°C) at any pressure up to seventy bar gauge (70 barg).
Water Content	Not such as would cause a water dewpoint more than minus ten degrees Celcius (-10°C) at eighty five bar gauge (85 barg) or the actual delivery pressure.
Wobbe Number	Shall be between 47.2 MJ/SCM and 51.41 MJ/SCM
Incomplete Combustion Factor	Not more than 0.48
Soot Index	Not more than 0.60
Odour	It shall have no odour that may cause National Grid to fail to meet its obligation under Part 1 of Schedule 3 of the Gas Safety (Management) Regulations 1996.
Carbon Dioxide	Not more than 2.0 mol%
Nitrogen	Not more than 7.0 mol%
Total Inerts	Not more than 7.0 mol%
Ethane	Not more than 12.0 mol%
Gross Calorific Value	Shall be within the range 36.9 to 42.3 MJ/SCM (real gross dry)
Delivery Temperature	Shall be between one and thirty eight degrees Celcius (1°C and 38°C)
Pressure	Shall be that required to deliver gas into the system taking account of the back pressure as the same shall vary from time to time. The delivery pressure shall not exceed seventy bar gauge (70 barg)

Isle of Grain 2

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 5 mg/SCM
Total Sulphur	Not more than 50 mg/SCM
Hydrogen Content	Not more than 0.1 mole%
Oxygen Content	Not more than 0.02 mol%
Hydrocarbon Dewpoint	Not more than minus two degrees Celsius (-2°C) at any pressure up to the delivery pressure of 70 barg.
Water Content	Not such as would cause a water dewpoint more than minus ten degrees Celsius (-10°C) at eighty five bar gauge (85 barg) or the actual delivery pressure.
Wobbe Number	Shall be between 47.2 MJ/SCM, and 51.41 MJ/SCM
Incomplete Combustion Factor	Not more than 0.48
Soot Index	Not more than 0.60
Odour	It shall have no odour that may cause National Grid Gas to fail to meet its obligation under Part I of Schedule 3 of the Gas Safety (Management) Regulations 1996.
Carbon Dioxide Content	Shall be not more than 2.0 mol%
Ethane	Not more than 12.0 mol%
Gross Calorific Value	Shall be within the range 36.9 to 42.3 MJ/SCM (real gross dry).
Delivery Temperature	All be between 1°C and 38°C
Pressure	Shall be that required to deliver gas into the system taking account of the back pressure as the same shall vary from time to time. The delivery pressure shall not exceed 70 bar gauge.

Milford Haven - South Hook

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 3.3 ppm
Total Sulphur	Not more than 50 mg/m ³
Hydrogen Content	Not more than 0.1 mol%
Oxygen Content	Not more than 200 ppm
Hydrocarbon Dewpoint	Not more than minus two degrees Celsius (-2°C) at any pressure up to the delivery pressure of 94 barg
Water Content	Not such as would cause a water dewpoint more than minus ten degrees Celsius (-10°C) at sixty bar gauge (60 barg)
Wobbe Number	Shall be between 47.2 MJ/SCM, and 51.41 MJ/SCM
Incomplete Combustion Factor	Not more than 0.48
Soot Index (SI)	Not more than 0.60
Odour	It shall have no odour that may cause National Grid to fail to meet its obligation under Part 1 of Schedule 3 of the Gas Safety (Management) Regulations 1996.
Carbon Dioxide	Not more than 2.5 mol%
Gross Calorific Value	Shall be within the range 36.9 to 42.3 MJ/SCM. (real gross dry)
Delivery Temperature	Shall be between one and thirty eight degrees Celsius (1°C and 38°C)
Pressure	Shall be that required to deliver gas into the System taking account of the back pressure as the same shall vary from time to time. The delivery pressure shall not exceed ninety four bar gauge (94 barg)
Organo Halides	Not more than 1.5 milligrams per SCM
Radioactivity	Not more than 5 Becquerels per gram
Ethane	Not more than 12 mol%

St Fergus - NSMP

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 3.3 ppm
Total Sulphur	Not more than 15 ppm
Hydrogen Content	Not more than 0.1 mol%
Oxygen Content	Not more than 10 ppm
Impurities	Gas tendered for delivery by System Users to the System at the System Entry Point shall not contain any solid, liquid or gaseous material which would interfere with the integrity or operation of the System or any pipeline connected to such System or any appliance which a consumer might reasonably be expected to have connected to the System.
Hydrocarbon Dewpoint	Not more than minus two degrees Celsius (-2°C) at sixty nine bar gauge (69 barg)
Water Content	Not more than minus ten degrees Celsius (-10°C) at sixty nine bar gauge (69 barg)
Wobbe Number	Shall be between 47.2 MJ/SCM, and 51.41 MJ/SCM
Incomplete Combustion Factor (ICF)	Not more than 0.48
Soot Index (SI)	Not more than 0.60
Odour	Shall have no odour that may cause Transco to fail to meet its obligation under Part 1 of Schedule 3 of the Gas Safety (Management) Regulations 1996.
Carbon Dioxide Content	Not more than 5.5 mol% (or such other limit as may be determined in accordance with Appendix G, paragraph 1.2) during the Modification Period and not more than 4.0 mol% at all other times
Aggregate of Carbon Dioxide and Nitrogen	Not more than 7.0 mol% during the Modification Period.
Calorific Value	Shall be within the range 36.9 MJ/SCM to 42.3 MJ/SCM. (real gross dry)
Delivery Temperature	Shall be not less than, in any event, one degrees Celsius (1°C) nor more than thirty eight Celsius (38°C) at sixty nine bar gauge (69 barg).
Pressure	Shall be that required to deliver gas into the Transco system taking account of the back pressure as the same shall vary from time to time. The delivery pressure shall be not less than forty one bar gauge (41 barg) and shall not exceed forty four bar gauge (44 barg).

St Fergus - (Shell) SEGAL

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 3.3 parts per million
Total Sulphur	Not more than 35 parts per million
Oxygen Content	Not more than 0.1 mol per cent
Impurities	Be commercially free from objectionable odours and materials and dust or other solid or liquid matter waxes gums and gum forming constituents which might cause injury to or interference with the proper operation of the lines meters regulators or other appliances through which it flows
Hydrocarbon Dewpoint	Have a hydrocarbon dewpoint which at any pressure up to and including 72.39 bar does not exceed minus two degrees Celsius (-2°C)
Water Content	Not greater than minus ten degrees Celsius (-10°C) at sixty-nine (69) bar gauge
Wobbe Number	Not more than fifty-one decimal two megajoules per cubic metre (51.2 MJ/m ³) and not less than forty-eight decimal two megajoules per cubic metre (48.2 MJ/m ³)
Carbon Dioxide Content	Not more than two (2) mol per cent
Calorific Value	Not more than forty-two decimal three megajoules per cubic metre (42.3 MJ/m ³) and not less than thirty-six decimal nine megajoules per cubic metre (36.9 MJ/m ³)
Delivery Temperature	Have a temperature which is not less than five degrees Celsius (5°C) and not more than thirty-eight degrees Celsius (38°C)

Teesside PX (Gas Processing Plant)

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 3.3 parts per million
Total Sulphur	Not more than 15 ppm
Hydrogen Content	Not more than 0.1 mol%.
Oxygen Content	Not more than 10 ppm
Impurities	Gas tendered for delivery by System Users to the System at the System Entry Point shall not contain any solid, liquid or gaseous material which would interfere with the integrity or operation of the System or any pipeline connected to such System or any appliance which a consumer might reasonably be expected to have connected to the System. Gas will be filtered to 50 microns prior to delivery. The particle removal shall be 95% above 50 microns as pressure of 79.5 barg.
Hydrocarbon Dewpoint	Not more than minus two degrees Celsius (-2°C) at any pressure up to seventy bar gauge (70 barg)
Water Content	Not such as would cause a water dewpoint more than minus ten degrees Celsius (-10°C) at the delivery pressure which shall not exceed seventy bar gauge (70 bar).
Wobbe Number	Shall be between 47.2 MJ/SCM, and 51.4 MJ/SCM
Incomplete Combustion Factor (ICF)	Not more than 0.48
Soot Index (SI)	Not more than 0.60
Odour	It shall have no odour that may cause Transco to fail to meet its obligation under Part 1 of Schedule 3 of the Gas Safety (Management) Regulations 1996.
Carbon Dioxide Content	Not more than 2.9 mol%.
Nitrogen Content	no limit
Total Inerts	no limit
Calorific Value	Shall be within the range 36.9to 42.3 MJ/SCM (real gross dry)
Delivery Temperature	Shall be between one and thirty eight degrees Celsius (1°Cand 38°C).
Pressure	Shall be that required to deliver gas into the system taking account of the back pressure as the same shall vary from time to time. The delivery pressure shall not exceed seventy bar gauge (70barg).

Section B: Interconnectors

Bacton – BBL

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide and COS	Not more than 5.3 mg/NCM
Total Sulphur	Not more than 52.7 mg/NCM
Hydrogen Content	Not more than 0.1 mol%
Oxygen Content	Not more than 200 ppm
Impurities	Gas tendered for delivery by NGG System Users to the NGG System at the System Entry Point shall not contain any solid, liquid or gaseous material which would interfere with the integrity or operation of the NGG System or any pipeline connected to such NGG System or any appliance which a consumer might reasonably be expected to have connected to the NGG System.
Hydrocarbon Dewpoint	Hydrocarbon Dewpoint: not more than minus two degrees Celsius (-2°C) between 0 and 70 barg.
Water Content	Water Content: not such as would cause a water dewpoint more than minus ten degrees Celsius (-10°C) at any pressure, between 0 and 70 barg.
Wobbe Number	Shall be between 49.79 MJ/NCM and 54.23 MJ/NCM
Incomplete Combustion Factor	Not more than 0.48
Soot Index	Not more than 0.6
Odour	It shall have no odour that may cause National Grid Gas to fail to meet its obligation under Part 1 of Schedule 3 of the Regulations
Carbon Dioxide Content	2.5% (molar)
Calorific Value	Shall be within the range 38.93 to 44.62 MJ/NCM (real gross dry)
Delivery Temperature	Delivery Temperature shall be between one and thirty eight degrees Celsius (1°C and 38°C)
Pressure	Pressure shall be that required to deliver gas into the NGG System taking account of the back pressure as the same shall vary from time to time. The delivery pressure shall not exceed seventy bar gauge (70 barg)
Organo Halides	Not more than 1.5 milligrams per NCM
Radioactivity	Not more than 5 Becquerels per gram

Bacton - Interconnector

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide and COS	Not more than 3.3 ppm vol
Total Sulphur	Not more than 30 mg/Nm ³
Hydrogen Content	Not more than 1000.0 ppm vol
Oxygen Content	Not more than 1000.0 ppm vol
Impurities	Entry Gas shall not contain any solid or liquid material which would interfere with the integrity or operation of the National Grid Gas System or any pipeline connected to such system or any appliance which a consumer might reasonably be expected to have connected to the National Grid Gas System
Hydrocarbon Dewpoint	Shall be no more than -2.0°C from 1 to 69 barg
Water Dewpoint	Shall be no more than -10.0°C from 1 to 69 barg
Wobbe Number	Shall be between 49.75 MJ/NM ³ and 54.19 MJ/NM ³
Incomplete Combustion Factor	Not more than 0.48
Soot Index	Not more than 0.60
Odour	Entry Gas shall have no odour which might cause National Grid Gas to contravene the Legal Requirement or gas industry practice not to distribute any gas which does not possess a distinctive and characteristic odour
Carbon Dioxide Content	Not more than 2.5 mol%
Calorific Value	Shall be between 38.9 MJ/NM ³ and 44.6 MJ/NM ³
Delivery Temperature	Shall be between 1.0°C and 38.0°C
Pressure	The pressure of Entry Gas shall not exceed 69 barg

Section C: Storage Connections

Aldborough

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 5 mg/m ³
Total Sulphur	Not more than 50 mg/m ³
Hydrogen Content	Not more than 0.1% (mole).
Oxygen Content	Not more than 0.2% (mole)
Hydrocarbon Dewpoint	Not more than -2°C at any pressure up to 85 barg
Impurities	Gas delivered to the System from the Storage Facility shall not contain any solid, liquid or gaseous material which would interfere with the integrity or operation of the System or any pipeline connected to such System or any appliance which a consumer might reasonably be expected to have connected to the System.
Water Content / Dewpoint	Not more than 50 mg/m ³ nor such as would cause a water dewpoint more than minus ten degrees Celcius (-10°C) at the delivery pressure of 75 barg
Wobbe Number	Shall be in the range 47.20 to 51.41 MJ/m ³
Incomplete Combustion Factor	Not more than 0.48
Soot Index (SI)	Not more than 0.60
Odour	Where gas is delivered to the National Grid Gas National Transmission System it shall have no odour that may cause National Grid Gas to fail to meet its obligation under Part 1 of Schedule 3 of the Gas Safety (Management) Regulations 1996
Carbon Dioxide	Not more than 2.5% (mole)
Gross Calorific Value	Gross Calorific Value shall be within the range 36.9 to 42.3 MJ/m ³ (real gross dry).
Delivery Temperature	All be between 1°C and 38°C
Pressure	Not to exceed the maximum operating pressure of 75 barg. This maximum operating pressure is subject to a pressure of 70 barg not being exceeded at National Grid's Sproatley above ground installation.

Hatfield Moor

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 5 mg/m ³
Total Sulphur	Not more than 50 mg/m ³
Hydrogen Content	Not more than 0.1 mole%
Oxygen Content	Not more than 0.2 mole%
Impurities	Gas delivered to the System from the Storage Facility shall not contain any solid, liquid or gaseous material which would interfere with the integrity or operation of the System or any pipeline connected to such system or any appliance which a consumer might reasonably be expected to have connected to the System.
Hydrocarbon Dewpoint	Not more than -2°C at any pressure up to the delivery pressure of 70 barg
Water Content	Not more than 50 mg/m ³ nor such as would cause a water dewpoint more than -10°C at the delivery pressure of 70 barg
Wobbe Number	Shall have a lower limit more than or equal to 48.14 MJ/m ³ and an upper limit less than or equal to 51.41 MJ/m ³
Incomplete Combustion Factor	Not more than 0.48
Sooting Index	Not more than 0.60
Odour	Where gas is delivered to the National Transmission System it shall have no odour that may cause National Grid to fail to meet its obligation under Schedule 3 of the Gas Safety (Management) Regulations 1996 unless the same has been introduced by National Grid.
Carbon Dioxide	Shall be not more than 2.0 mole%
Nitrogen Content	Shall be not more than 5.0 mole%
Total Inerts	Shall be not more than the 7.0mole%
Calorific Value	Shall be within the range 36.9 to 42.3 MJ/m ³ . CV is expressed in the real gross value.
Delivery Temperature	All be between 1°C and 38°C
Pressure	Shall be that required to deliver gas into the system taking account of the back pressure as the same shall vary from time to time. The delivery pressure shall not exceed 70 bar gauge.

Hilltop

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide (including COS)	Not more than 5 mg/m ³ (Typically 3.3ppm)
Total Sulphur	Not more than 50 mg/m ³
Hydrogen Content	Not more than 0.1 mole%.
Oxygen Content	Not more than 0.001% (mole)
Impurities	Gas delivered to the System from the Storage Facility shall not contain any solid, liquid or gaseous material which would interfere with the integrity or operation of the System or any pipeline connected to such System or any appliance which a consumer might reasonably be expected to have connected to the System
Hydrocarbon Dewpoint	Not more than -2°C at any pressure up to the delivery pressure of 70 barg
Water Content / Dewpoint	Not more than 50 mg/m ³ nor such as would cause a water dewpoint more than minus ten degrees Celsius (-10°C) at the delivery pressure of 70 barg
Wobbe Number	Shall be in the range 47.20 to 51.41 MJ/m ³
Incomplete Combustion Factor	Not more than 0.48
Soot Index	Not more than 0.60
Odour	Where gas is delivered to the National Grid National Transmission System it shall have no odour that may cause National Grid to fail to meet its obligation under Part 1 of Schedule 3 of the Gas Safety (Management) Regulations 1996
Carbon Dioxide	Not more than 2.5% (mole)
Gross Calorific Value	Shall be within the range 36.9 to 42.3 MJ/m ³ (real gross dry).
Delivery Temperature	All be between 1°C and 38°C
Pressure	Not to exceed the maximum operating pressure of 70 barg

Hornsea

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 5 mg/m ³
Total Sulphur	Not more than 50 mg/m ³
Hydrogen Content	Not more than 0.1 mole%
Oxygen Content	Not more than 0.01 mole%
Impurities	Gas delivered to the System from the Storage Facility shall not contain any solid, liquid or gaseous material which would interfere with the integrity or operation of the System or any pipeline connected to such system or any appliance which a consumer might reasonably be expected to have connected to the System.
Hydrocarbon Dewpoint	Not more than -2°C at any pressure up to the delivery pressure of 70 barg
Water Content	Not more than 50 mg/m ³ nor such as would cause a water dew- point more than -10° C at the delivery pressure of 70 barg
Wobbe Number	Shall be in the range 47.20 MJ/m ³ to 51.41 MJ/m ³
Incomplete Combustion Factor	Not more than 0.48
Sooting Index	Not more than 0.60
Odour	Where gas is delivered to the National Transmission System it shall have no odour that may cause National Grid to fail to meet its obligation under Part 1 of schedule 3 of the Gas Safety (Management) Regulations 1996.
Carbon Dioxide	Shall be not more than 2.5 mole%
Calorific Value	There is no entry limit on Gross Calorific Value
Delivery Temperature	All be between 1°C and 38°C
Pressure	Not to exceed the maximum operating pressure of 70 barg

Humbly Grove

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 5 mg/m ³
Total Sulphur	Not more than 50 mg/m ³
Hydrogen Content	Not more than 0.1 (molar)
Oxygen Content	Not more than 0.2 molar)
Hydrocarbon Dewpoint	Not more than -2°C at any pressure up to 85 barg
Water Content	Not more than 50 mg/m ³ nor such as would cause a water dewpoint more than -10°C at the delivery pressure of 75 barg
Wobbe Number	Shall be in the range 47.20 MJ/m ³ to 51.41 MJ/m ³
Incomplete Combustion Factor	Not more than 0.48
Sooting Index	Not more than 0.60
Odour	Where gas is delivered to the National Transmission System it shall have no odour that may cause National Grid to fail to meet its obligation under Part 1 of Schedule 3 of the Gas Safety (Management) Regulations 1996.
Total Inerts	Not more than 7.0% (molar) subject to Carbon Dioxide not more than 2.0% (molar)
Gross Calorific Value	Shall be within the range 36.9 to 42.3 MJ/m ³ (real gross dry).
Delivery Temperature	All be between 1°C and 38°C
Pressure	Not to exceed the maximum operating pressure of 75 barg
Organo Halides	Not more than 1.5mg/m ³
Radioactivity	Not more than 5 Becquerels/g

Stublach

Gas Quality Parameter	Gas Quality Limit
Hydrogen Sulphide	Not more than 5 mg/m ³
Total Sulphur	Not more than 50 mg/m ³
Hydrogen Content	Not more than 0.1 mole %
Oxygen Content	Not more than 0.001 mole %
Hydrocarbon Dewpoint	Not more than -2°C at any pressure up to the delivery pressure of 70 barg
Impurities	Gas delivered to the System from the Storage Facility shall not contain any solid, liquid or gaseous material which would interfere with the integrity or operation of the System or any pipeline connected to such System or any appliance which a consumer might reasonably be expected to have connected to the System.
Water Content / Dewpoint	Not more than 50 mg/m ³ nor such as would cause a water dewpoint more than minus ten degrees Celsius (-10°C) at the delivery pressure of 70 barg
Wobbe Number	Shall be in the range 47.20MJ/m ³ to 51.41MJ/m ³
Incomplete Combustion Factor	Not more than 0.48
Soot Index	Not more than 0.60
Odour	Where gas is delivered to the National Grid National Transmission System it shall have no odour that may cause National Grid to fail to meet its obligation under Part 1 of Schedule 3 of the Gas Safety (Management) Regulations 1996.
Carbon Dioxide	Not more than 2.5 mole %
Gross Calorific Value	Shall be within the range 36.9 to 42.3MJ/m ³ (real gross dry).
Delivery Temperature	Between 1°C and 38°C
Pressure	Not to exceed the maximum operating pressure of 70 barg

Appendix

Units of Measurement

Acronym	Unit of Measure
PPM	Parts Per Million
MJ/CM	Mega Joules per Standard Cubic Metre
MJ/SCM	Mega Joules per Standard Cubic Metre
mg/m ³	Milligrams per Cubic Metre
mg/NCM	Milligrams per Normal Cubic Metre
MJ/NCM	Mega Joules per Normal Cubic Metre
mg/Nm ³	Milligrams per Normal Cubic Metre
MJ/m ³	Mega Joules per Standard Cubic Metre

National Grid plc
National Grid House,
Warwick Technology Park,
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nationalgrid.com