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Joint Gas Network Guidance on Spot Samples

Introduction

The below guidance has been developed and agreed by Cadent, National Gas Transmission, NGN, SGN and WWU.

This generic check list should be used for offline spot sampling and laboratory analysis and is intended to provide guidance to Delivery Facility Operators (DFO) to cross check their own samples prior to submission to the network their site is connected to.

Please still refer to your site-specific sampling protocol for frequencies and required components.

The table below outlines both the maximum limit and the investigation limit at which gas networks may require further information to evidence satisfactory operation of the plant. Where offline samples exceed these investigation limits, DFO's are required to provide further information to gas networks to enable adequate assessment.

DFO's should also review their normal operational values for those components that also have online measurement, i.e. Hydrogen Sulphide and Oxygen and provide information as regards any variations.

If you have any questions, please get in touch with your local network, contact details are outlined in the table below.

Cadent	FWACV.SustainableGas@cadentgas.com
National Grid	box.UKT.customerlifecycle@nationalgrid.com or Box.OperationalRisk@nationalgrid.com
NGN	GasQualityEnquiries@northerngas.co.uk
SGN	gasquality@sgn.co.uk
WWU	Biomethane@wwutilities.co.uk

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Component	Maximum Limit @ 15C and 1.01325 bar	Investigation Limit @ 15C and 1.01325 bar
Hydrogen Sulphide	3.3 ppm (5mg/m3)	1 ppm and/or Online Measurement
Carbon Dioxide	2.50%	2.50%
Oxygen	1 mol% assuming GS(M)R exemption, but a site-specific limit may apply	0.1 mol% variation from online measurement
Methane	78 -100 Mol%	78 -100 Mol%
Propane	7 mol%	<1 ppm (Sampled by laboratory although not a Gas Distribution Network request, used to determine where sample is taken from)
Butane	1 mol%	
Pentane	0.35 mol%	
Total Sulphur	30 mg m-3 (EA QP limit) - 50 mg m-3 (GSMR)	30 mg m-3 (EA QP limit) - 50 mg m-3 (GSMR)
Hydrogen	0.1 mol%	0.1 mol%
Hydrocarbon dewpoint (calculated from total analysis using)*	Not more than -2oC at any pressure up to 85 bar	Not more than -2oC at any pressure up to 85 bar
Hydrogen Chloride	1.5 mg m-3 (EA QP limit)	1.5 mg m-3 (EA QP limit)
Hydrogen Fluoride	5 mg m-3 (EA QP limit)	5 mg m-3 (EA QP limit)
Organic halides	1.5 mg m-3 (NEA limit)	1.5 mg m-3 (NEA limit)
Siloxanes	0.23 mg m-3	0.23 mg m-3
Terpenes	<0.5 mg/m3	<0.5 mg/m3
Aldehydes & ketones		
Alcohols		
Ammonia	20 mg m-3 (EA QP limit)	20 mg m-3 (EA QP limit) must not impact on OI
Benzene	< 1 mg/m-3	< 1 mg/m-3
Toulene	< 1 mg/m-3	< 1 mg/m-3
Xylene	100 mg m-3	100 mg m-3
Arsenic	0.1 mg m-3	0.1 mg m-3
Mercury (metallic)	10 µg m-3	10 µg m-3
Particulates	0	0
Micro-organisms		
C6 to C12 alkanes	< 1 ppm	< 1 ppm

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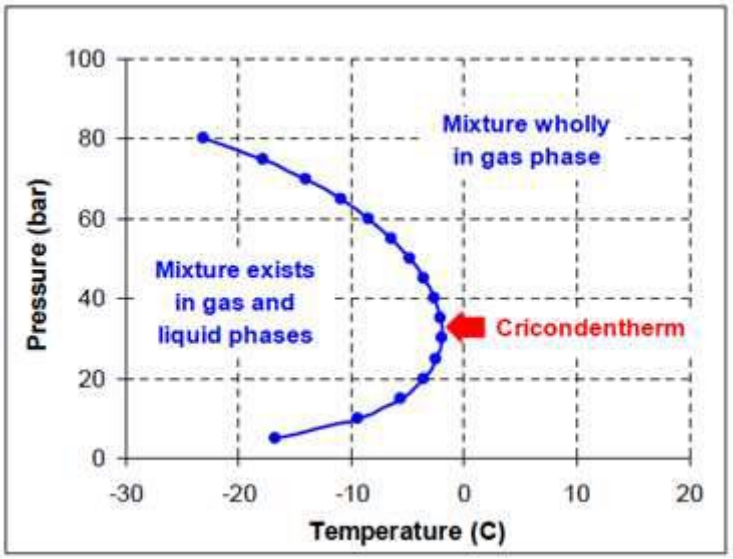
* Hydrocarbon dewpoint indicates the temperature at which heavy hydrocarbon components begin to condense out of the gaseous phase, when the gas is cooled at constant pressure. It is typically displayed on a phase diagram (see below) as a function of gas pressure and temperature, for natural gas with a given composition. The dew-point line divides the two-phase gas-liquid region and the single-phase gas region.

The maximum temperature at which liquids can form is called the Cricondentherm. This typically occurs at a pressure between 25 and 30 bar, hence why the above states at any pressure up to 85 bar, not at 85 bar.



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