

**Decree by the Minister of Economic Affairs dated ,
no. WJZ/13196684, establishing regulations for natural gas composition
(Natural gas composition scheme)**

**Appendix 1, as referred to in article 1(1) of the Regeling
gassamenstelling (natural gas composition scheme)**

H-gas as injected at an injection point

Gas quality		Value	Unit
Wobbe index		Until 1 October 2014: 49.9 – 54	MJ/Nm ³
		From 1 October 2014 onwards: 49.9 – 55.7	MJ/Nm ³
Heavier hydrocarbon content		Until 1 October 2014: 0 – 8.7	mol% propane equivalent (PE)
Water dew point		≤ -8	°C (at 70 bar(a))
Natural-gas condensate		≤ 5	mg/Nm ³ at -3 °C at any pressure
Temperature		10 – 30	°C
Oxygen content	in RTL and RNB networks	≤ 0.5	mol%
	in HTL network	≤ 0.0005	mol%
Carbon dioxide content		≤ 2.5	mol%
Hydrogen content	Syngas system users as specified in appendix 6	≤ 40	mol%
	the rest of the Netherlands	≤ 0.02	mol%
Sulfur content based on inorganically bound sulfur (H ₂ S and COS)		≤ 5	mg/Nm ³
Sulfur content based on alkylthiols		≤ 6	mg/Nm ³
Total sulfur content	<u>before odourisation</u>		
	peak value	≤ 20	mg/Nm ³
	annual average ¹	≤ 5.5	mg/Nm ³
	<u>after odourisation</u>		
	peak value	≤ 31	mg/Nm ³
	annual average	≤ 16.5	mg/Nm ³
THT content (odourant)	in HTL network: odourless gas	0	mg/Nm ³
	in RTL network: odourless/odourised gas	0 / 10 – 30	mg/Nm ³

¹ Average over the part of the year preceding and including the moment of
injection.

	in RNB network: odourised gas	10 – 30	mg/Nm ³
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Appendix 2, as referred to in article 1(2) of the Regeling gassamenstelling (natural gas composition scheme)

G-gas as injected at an injection point

Gas quality		Value	Unit
Wobbe index		43.46 – 44.41 ²	MJ/Nm ³
Calorific value		See footnote ³	
Heavier hydrocarbon content		≤ 5	mol% PE
Water dew point		≤ -8	°C (at 70 bar(a))
Natural-gas condensate		≤ 80	mg/Nm ³ at -3 °C at any pressure
Temperature	in RTL and HTL networks	10 – 30	°C
	in RNB network ⁴	5 – 20	°C
Oxygen content	in RTL network	≤ 0.5	mol%
	in HTL network	≤ 0.0005	mol%
Carbon dioxide content	in RTL network	≤ 10.3 ⁵	mol%
	in HTL network	≤ 3	mol%

² The following restriction applies to the Wobbe index based on the carbon dioxide content. The Wobbe index values are hourly averages.

Carbon dioxide content %	6 – 8	8 – 10.3
Wobbe-index MJ/Nm ³	43.97 – 44.41	44.10 – 44.41

In addition, the Wobbe index of the gas to be injected should lie above the minimum value at least 50 percent of the time; dips below the minimum of less than 0.2 MJ/Nm³ may occur a maximum of 200 hours per year, and dips of at most 0.3 MJ/Nm³ may occur a maximum of 10 hours per year.

³ A The calorific value of the gas to be injected is not more than 1.5 percent lower than the average calorific value of the gas that has been injected from the national gas transport network into the network area in question over the past twelve months.

B If the calorific value at the junction with the injection system is not measured, then, in contrast to A, the calorific value of the gas to be injected is higher than or equal to the average calorific value of the gas that has been injected from the national gas transport network into the network area in question over the past twelve months.

⁴ A higher injection temperature can be agreed upon by the transmission system operator and the green gas injector if the gas will cool off in the injector's connection pipe, so that the gas has reached a temperature between 5 and 20 °C by the time it reaches the junction with the transmission system operator's network. The acceptable temperature can be calculated using the method presented in the KIWA report "Eisen aan Groen Gas invoedtemperatuur" (Requirements for green gas injection temperatures) dated 2 August 2012.

⁵ In RTL pipes that connect with border points, the gas may contain a maximum of 3 percent carbon dioxide.

Hydrogen content	in HTL and RTL networks	≤ 0.02	mol%
	in RNB network	≤ 0.5	mol%
Sulfur content based on inorganically bound sulfur (H_2S and COS)		≤ 5	mg/Nm^3
Sulfur content based on alkylthiols		≤ 6	mg/Nm^3
Total sulfur content	<u>before odourisation</u>		
	peak value	≤ 20	mg/Nm^3
	annual average	≤ 5.5	mg/Nm^3
	<u>after odourisation</u>		
	peak value	≤ 31	mg/Nm^3
	annual average	≤ 16.5	mg/Nm^3
THT content (odourant)	in HTL network: odourless gas	0	mg/Nm^3
	in RTL network: odourised gas	10 – 30	mg/Nm^3
	in RNB network: odourised gas	10 – 30	mg/Nm^3
Silicon content based on siloxanes		≤ 0.08	≤ 0.08

Opmerking [GM1]: A typographical error in the original.

**Appendix 3, as referred to in article 1(3) of the Regeling
gassamenstelling (natural gas composition scheme)**

H-gas at domestic delivery points

Gas quality		Value	Unit
<u>Wobbe index</u>			
Standard bandwidth in Noord-Holland and Zuid-Holland provinces (including Rijnmond) and in Groningen as specified in appendix 6		Until 1 October 2014: 48.3 – 54.0	MJ/Nm ³
		From 1 October 2014 onwards: 48.3 – 55.7	MJ/Nm ³
<i>Different minimum value (Wobbe index)</i>			
Delfzijl gas system as specified in appendix 6		48.6	MJ/Nm ³
Eemshaven gas system as specified in appendix 6		47.2	MJ/Nm ³
ZOO Drenthe gas system as specified in appendix 6		48	MJ/Nm ³
ZZO Drenthe gas system as specified in appendix 6		43.46	MJ/Nm ³
Ijmond gas system as specified in appendix 6		49.3	MJ/Nm ³
Limburg as specified in appendix 6		49	MJ/Nm ³
Remaining provinces as specified in appendix 6		47	MJ/Nm ³
<i>Different maximum value (Wobbe index)</i>			
Westgas/Waalhaven gas system as specified in appendix 6		57.5	MJ/Nm ³
Maasmond gas system as specified in appendix 6		56	MJ/Nm ³
LNG gas system		57.2	MJ/Nm ³
Heavier hydrocarbon content		Until 1 October 2014: ≤ 8.7	mol% PE
Water dew point		≤ -8	°C (at 70 bar(a))
Natural-gas condensate		≤ 5	mg/Nm ³ at -3 °C at any pressure
Oxygen content	in RTL and RNB networks	≤ 0.5	mol%
	in HTL network	≤ 0.0005	mol%
Carbon dioxide content		≤ 2.5	mol%
Hydrogen content	Syngas system as specified in appendix 6	≤ 40	mol%
	the rest of the Netherlands	≤ 0.02	mol%
Sulfur content based on inorganically bound sulfur (H ₂ S and COS)		≤ 5	mg/Nm ³
Sulfur content based on alkylthiols		≤ 6	mg/Nm ³
Total sulfur content	<u>before odourisation</u>		
	peak value	≤ 20	mg/Nm ³

	annual average	≤ 5.5	mg/Nm ³
	<u>after odourisation</u>		
	peak value	≤ 31	mg/Nm ³
	annual average	≤ 16.5	mg/Nm ³
THT content (odourant)	in HTL network: odourless gas	0	mg/Nm ³
	in RTL network: odourised gas	0 / 10 – 30	mg/Nm ³
	in RNB network: odourised gas	10 – 30	mg/Nm ³

**Appendix 4, as referred to in article 1(4) of the Regeling
gassamenstelling (natural gas composition scheme)**

G-gas at domestic delivery points

Gas quality		Value	Unit
Wobbe index ^{6 7}		43.46 – 44.41	MJ/Nm ³
Heavier hydrocarbon content		≤ 5	mol% PE
		Until 1 July 2016, no limit applies on very cold days and in exceptional circumstances ⁸	
Water dew point		≤ -8	°C (at 70 bar(a))
Natural-gas condensate		≤ 80	mg/Nm ³ at -3 °C at any pressure
Oxygen content	in storage	≤ 0.0005	mol%
	elsewhere	≤ 0.5	mol%
Carbon dioxide content		≤ 10.3 ¹¹	mol%
Hydrogen content		≤ 0.02	mol%
Sulfur content based on inorganically		≤ 5	mg/Nm ³

⁶ Excluding the imprecision in measurement and control at mixing stations. The imprecision in measurement and control at a mixing station must be taken into account when assessing the Wobbe index after the gas passes through the station. For this reason, the transmission system operator for the national gas transport network may target the contractual boundary value for the Wobbe index, as long as the resulting hourly exceedances lie within a normal distribution around the boundary value with a standard deviation of 0.1 MJ/Nm³.

⁷ The following restriction applies to the Wobbe index based on the carbon dioxide content. The Wobbe index values are hourly averages.

Carbon dioxide content %	6 – 8	8 – 10.3
Wobbe-index MJ/Nm ³	43.97 – 44.41	44.10 – 44.41

In addition, the Wobbe index of the gas to be delivered should lie above the minimum value at least 50 percent of the time; dips below the minimum of less than 0.2 MJ/Nm³ may occur a maximum of 200 hours per year, and dips of at most 0.3 MJ/Nm³ may occur a maximum of 10 hours per year.

⁸ The Besluit leveringszekerheid Gaswet (Decree on security of supply regarding the Natural Gas Law) tasks GTS, the transmission system operator for the national gas transport network, with providing G-gas to small-scale users during peak demand when offtake exceeds that predicted for a day with an average affective daily temperature below 9 degrees Celsius. At these times, GTS must be able to distribute G-gas with higher amounts of heavier hydrocarbons than usual. GTS has committed to limiting its reserves for peak supply to sources of gas that have a heavier hydrocarbon content equivalent to a maximum PE of 5 percent. GTS will need until the summer of 2016 to implement this. Until that time, gas with a PE above 5 percent may be delivered in other exceptional circumstances stemming from other causes. Exceptional circumstances are those involving abnormal business operations, such as times when a pipe is undergoing maintenance, a component is broken, or another unforeseen circumstance occurs. At these times, the security of supply can in some cases only be guaranteed by using the reserves for peak supply.

bound sulfur (H ₂ S and COS)			
Sulfur content based on alkylthiols		≤ 6	mg/Nm ³
Total sulfur content	<u>before odourisation</u>		
	peak value	≤ 20	mg/Nm ³
	annual average	≤ 5.5	mg/Nm ³
	<u>after odourisation</u>		
	peak value	≤ 31	mg/Nm ³
	annual average	≤ 16.5	mg/Nm ³
THT content (odourant)	in HTL network: odourless gas	0	mg/Nm ³
	in RTL network: odourised gas	10 – 30	mg/Nm ³
	in RNB network: odourised gas	10 – 30	mg/Nm ³

**Appendix 5, as referred to in article 1(5) of the Regeling
gassamenstelling (natural gas composition scheme)**

L-gas border stations: Export

Gas quality		Value	Unit
Wobbe index	Belgium	42.7 – 46.9	MJ/Nm ³
	Germany	42.7 – 46.8	MJ/Nm ³
Oxygen content		≤ 0.5	mol%
Carbon dioxide content		≤ 3	mol%
Inorganically bound sulfur in H ₂ S and COS (excluding odourant)		≤ 5	mg/Nm ³
Alkylthiol sulfur content (excluding odourant)		≤ 6	mg/Nm ³
Total sulfur content (excluding odourant)		≤ 20 peak value	mg/Nm ³
THT odourant (if odourised)		10 – 30	mg/Nm ³
Delivery temperature		0 – 40	°C
Water dew point		≤ -8	°C (at 70 bar(a))
Natural-gas condensate		≤ 80	mg/Nm ³ at -3 °C at any pressure

H-gas at border stations: Import and export

Gas quality		Value	Unit
Wobbe index		See export stations table	MJ/Nm ³
Oxygen content			mol%
	in RTL network	≤ 0.5	mol%
	in HTL network	≤ 0.0010	mol% daily average
Carbon dioxide content		≤ 2.5	mol%
Inorganically bound sulfur in H ₂ S and COS (excluding odourant)		≤ 5	mg/Nm ³
Alkylthiol sulfur content (excluding odourant)		≤ 10	mg/Nm ³
Total sulfur content (excluding odourant)		≤ 20 peak value	mg/Nm ³
Delivery temperature		-10 – 40	°C
Water dew point		≤ -8	°C (at 70 bar(a))
Natural-gas condensate		≤ 5	mg/Nm ³ at -3 °C at any pressure

Wobbe index of H-gas at border stations: Import and export

Country	Export stations	Wobbe index [MJ/Nm³]	
		Minimum	Maximum
Belgium and France	's Gravenvoeren and Obbicht	49.8	55.7
Belgium	Zelzate and Zandvliet	49.2	55.7
Germany	Oude Statenzijl (all exits)	49	55.7
Germany and	Bocholtz	49.69	55.7

Italy			
Germany	Vlieghuis	48	57
United Kingdom	Julianadorp (BBL)	49.79	54.23