

GAR Annex II.

MARCOGAZ recommendation

This document is the result of the agreement reached by MARCOGAZ WG Gas Quality/Biogas members.

Gas Appliance Regulation, GAR

GAR is the short name for:

REGULATION (EU) 2016/426 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2016 on appliances burning gaseous fuels and repealing Directive 2009/142/EC.

According to Article 4.1: **By 21 October 2017**, Member States shall communicate to the Commission and the other Member States in accordance with **Annex II** and using the relevant form the types of gas and corresponding supply pressures of gaseous fuels used on their territory. Additionally, Article 4.3 expresses: *The Commission may, by means of implementing acts, define the **harmonised form** of the Member States' communications referred to in paragraph 1 of this Article.*

Aim of the document

The aim of this document is to present the *MARCOGAZ proposal of the harmonised form.*

In Appendix I¹, there is shown a selection of some parts of GAR affecting this proposal, including Annex II.

MARCOGAZ recommendation for Annex II

The recommendation is described and justified in the following table for each one of the items required by Annex II. A clean Table to be used as a template is provided in Appendix III.

¹ *Informative note: GAR is making reference to "biogas". It should be noted that the fully interchangeable gas with natural gas is biomethane, i.e., the product resulting from the treatment/upgrading of biogas.*

Gas quality information

For each **gas family and group (i.e, 1, 2H, 2L, 3P, ...)**:

<p>(a) (i) gross calorific value (GCV) in MJ/m³. (ii) Wobbe index in MJ/m³.</p>
<p>To indicate minimum and maximum declared values² in any Member State (MS). To supply data of real gases transported/distributed in any MS could be risky because this can change from time to time and past values are not a guarantee of future ones.</p>
<p>(b) Gas composition by volume in % of the total content:</p>
<p>– C1 to C5 content in % (sum)</p>
<p>To indicate minimum and maximum of the sum of the different components if available in declared values or indicate that it is not available. Maximum could be 100 % for some natural gases and LPGs.</p>
<p>– N2 + CO2 content in %</p>
<p>To indicate minimum and maximum if available in declared values or indicate that it is not available. Normally, minimum value is zero for some natural gases and LPGs.</p>
<p>– CO content in %</p>
<p>To indicate minimum and maximum if available in declared values or indicate that it is not available. Normally, minimum value is zero for natural gases and LPGs.</p>
<p>– unsaturated HC content in %</p>
<p>To indicate minimum and maximum if available in declared values or indicate that it is not available. Normally, minimum value is zero for some natural gases.</p>
<p>– hydrogen content in %</p>
<p>To indicate minimum and maximum if available in declared values or indicate that it is not available. Normally, minimum value is zero for natural gases and LPGs.</p>
<p>(c) Information on toxic components contained in the gaseous fuel.</p>
<p>To follow the threshold limits defined in REACH Directive for different toxic components. In principle, natural gas should not have toxic component in its normal composition.</p>

That communication shall also include **either of the following**:

<p>(a) supply pressure at the inlet of appliances in mbar: nominal/minimum/maximum;</p>
<p>(b) (i) supply pressure at the point of delivery in mbar: nominal/minimum/maximum; (ii) admissible pressure loss in the end-user gas installation in mbar: nominal/minimum/maximum.</p>
<p>Each Member State should choose between one of the two options given and then supplying the information requested.</p>

² Declared values mean the values declared by each Member State for the corresponding parameter in the relevant National Regulation/Specification for gas quality.

Reference condition

The reference conditions for Wobbe index and gross calorific value shall be the following:

- (a) combustion reference temperature: 15 °C;*
- (b) volume measurement reference temperature: 15 °C;*
- (c) volume measurement reference pressure: 1 013,25 mbar.*

The gross calorific value and Wobbe Index should be supplied in MJ/m³ in the above required reference condition for combustion reference temperature and volume measurement reference temperature and pressure.

If the reference condition in the Member State is different, the values should be changed to the required one. In Appendix II, there are the conversion factors stated in standard ISO 13443³ for information.

List of Notifying Authorities

The entity responsible in each Member State, to communicate to the European Commission and the other Member States the information required, should be identified by MARCOGAZ members to offer its collaboration.

The Notifying Authority in each Member State for different Directives and Regulation, included Regulation (EU) 2016/426, can be found in in the following EC internet page:

<http://ec.europa.eu/growth/tools-databases/nando/index.cfm?fuseaction=na.main>

Not all the EU countries are included (at 10th May 2017); besides, it is suggest checking if the identified Notifying Authority is the correct one.

³ ISO 13443. Natural gas. Standard reference conditions.

Appendix I: parts of GAR affecting the gas quality collection information

Whereas

- (21) In order to avoid barriers to trade with regard to appliances on grounds relating to the fact that the gas supply conditions are not yet harmonised and to ensure that economic operators are sufficiently informed, Member States should communicate to the other Member States and to the Commission the types of gas and corresponding supply pressures used on their territory and any changes thereof in good time.
- (22) The communication of the gas types and supply pressures by Member States should contain the necessary information for economic operators. In that framework, the primary source of the gaseous fuel supplied is not relevant for the characteristics, the performance and the compatibility of appliances with the communicated gas supply conditions.
- (23) When determining the gas families and gas groups used on their territory, Member States are encouraged to take into account the ongoing standardisation work concerning gas qualities and thus ensure, across the Union, a coherent and coordinated approach towards harmonisation of gaseous fuels via standardisation.
- (24) When, in accordance with Directive 2009/73/EC of the European Parliament and of the Council⁴ and the ongoing standardisation work of CEN on gas quality specifications, Member States take concrete measures for a wider use of biogas by injecting such gas into the gas distribution network or by distributing such gas through isolated systems, they should ensure that they update in a timely manner their communication of the types of gas in the event that the quality of the supplied gas does not remain within the already communicated quality range.
- (25) When Member States establish their national action plans in accordance with Directive 2009/28/EC⁵ in order to comply with their obligation to increase the percentage of renewable energies and in particular biogas in the total energy consumption, they are encouraged to consider the possibilities of injecting such gases into the gas distribution network.
- (26) Member States should take the necessary measures to ensure that the gas supply conditions do not constitute barriers to trade and that they do not restrict the putting into service of appliances that are compatible with the local gas supply conditions.
- (27) Appliances covered by this Regulation and complying with it should benefit from the principle of free movement of goods. Such appliances should be allowed to be put into service provided that they are compatible with the local gas supply conditions.
- (28) The appliance category marking indicated on the appliance or its data plate establishes a direct link with the gas families and/or gas groups for which an appliance has been designed to burn safely at the desired performance level and thus ensures the compatibility of the appliance with the local gas supply conditions.

⁴ Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC (OJ L 211, 14.8.2009, p. 94).

⁵ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

Article 1 Scope

1. This Regulation applies to appliances and fittings.
2. For the purposes of this Regulation, an appliance is considered to be 'normally used' where the following conditions are met:
 - (a) it is correctly installed and regularly serviced in accordance with the manufacturer's instructions;
 - (b) it is used with a normal variation in the gas quality and a normal fluctuation in the supply pressure as set out by Member States in their communication pursuant to Article 4(1);
 - (c) it is used in accordance with its intended purpose or in a way which can be reasonably foreseen.

Article 2 Definitions

- (9) 'gas family' means a group of gaseous fuels with similar burning behaviour linked together by a range of Wobbe indices;
- (10) 'gas group' means a specified range of Wobbe indices within that of the gas family concerned;
- (11) 'Wobbe index' means an indicator of the interchangeability of fuel gases used to compare the combustion energy output of different composition fuel gases in an appliance;
- (12) 'appliance category' means the identification of gas families and/or gas groups that an appliance is designed to burn safely and at the desired performance level, as indicated by the appliance category marking;

Article 4 Gas supply conditions

1. By 21 October 2017, Member States shall communicate to the Commission and the other Member States in accordance with Annex II and using the relevant form the types of gas and corresponding supply pressures of gaseous fuels used on their territory. They shall communicate any changes thereof within six months after the announcement of the envisaged changes.
2. The Commission shall be empowered to adopt delegated acts in accordance with Article 41 concerning modifications to the content of the Member States' communications of the gas supply conditions on their territory, as set out in Annex II, in order to take into account the technical developments with regard to the gas supply conditions.
3. The Commission may, by means of implementing acts, define the harmonised form of the Member States' communications referred to in paragraph 1 of this Article. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 42(3).
4. The Commission shall ensure that the information provided by Member States in accordance with paragraph 1 is published in the Official Journal of the European Union.

ANNEX II:

CONTENT OF THE MEMBER STATES COMMUNICATIONS OF THE GAS SUPPLY CONDITIONS

1. The communications of the Member States to the Commission and the other Member States provided for in Article 4 shall have the following content:
 - (a) (i) gross calorific value (GCV) in MJ/m³ minimum/maximum;
(ii) Wobbe index in MJ/m³ minimum/maximum.
 - (b) Gas composition by volume in % of the total content:
 - C1 to C5 content in % (sum) minimum/maximum;
 - N₂ + CO₂ content in % minimum/maximum;
 - CO content in % minimum/maximum;
 - unsaturated HC content in % minimum/maximum;
 - hydrogen content in % minimum/maximum.
 - (c) Information on toxic components contained in the gaseous fuel.
That communication shall *also include either* of the following:
 - (a) supply pressure at the inlet of appliances in mbar: nominal/minimum/maximum;
 - (b) (i) supply pressure at the point of delivery in mbar: nominal/minimum/maximum;
(ii) admissible pressure loss in the end-user gas installation in mbar:
nominal/minimum/maximum.
2. The reference conditions for Wobbe index and gross calorific value shall be the following:
 - (a) combustion reference temperature: 15 °C;
 - (b) volume measurement reference temperature: 15 °C;
 - (c) volume measurement reference pressure: 1 013,25 mbar.

Appendix II: Conversion factor between reference conditions

Extracted from Table A.1 of ISO13443

Combustion (t, °C) : Measure (t, °C)

	<i>25/0 to 15/15</i>	<i>0/0 to 15/15</i>
<i>Gross Calorific Value, real, volume base</i>	0.948 6	0.946 1
<i>Wobbe index, real, volume base</i>	0.948 7	0.946 2

Note: be aware that the table in ISO13433 gives the conversion factor from 15/15 to 0/0, the values presented in this table are calculated from those for allowing direct conversion by multiplication.

Appendix III: Table for collecting gas quality information required

Gas quality information

For each **gas family and group (i.e, 1, 2H, 2L, 3P, ...)**:

(a) (i) gross calorific value (GCV) in MJ/m ³ . (ii) Wobbe index in MJ/m ³ .
(b) Gas composition by volume in % of the total content:
– C1 to C5 content in % (sum)
– N2 + CO2 content in %
– CO content in %
– unsaturated HC content in %
– hydrogen content in %
(c) Information on toxic components contained in the gaseous fuel.

That communication shall also include **either of the following**:

(a) supply pressure at the inlet of appliances in mbar: nominal/minimum/maximum;
(b) (i) supply pressure at the point of delivery in mbar: nominal/minimum/maximum; (ii) admissible pressure loss in the end-user gas installation in mbar: nominal/minimum/maximum.

Reference condition

The reference conditions for Wobbe index and gross calorific value shall be the following:

- (a) combustion reference temperature: 15 °C;*
- (b) volume measurement reference temperature: 15 °C;*
- (c) volume measurement reference pressure: 1 013,25 mbar.*