Aim of the document

The aim of this document is to present a *proposal of harmonised form and criteria for compliance to Annex II of GAR*, in order to align information from Member States for maximum consistency and ease of understanding for those who the information is addressed to.

The purpose is to have as much information as possible and to avoid empty fields for some of the information requested.

The structure of the document is:

- *Content of GAR Annex II*
- *Form Proposed*
- *Conversion factor between reference conditions*
- *Guide to fill in cells in form*
- *Definitions*

Content of GAR Annex II

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/m^3 minimum/maximum;
(ii) Wobbe index in MJ/m^3 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.

Form proposed

The form and content is shown in the following table.

(a) (i) gross calorific value (GCV) in MJ/m³.	
Minimum	***Maximum***
Indicate minimum and maximum ***declared values***[1] in the concerned Member State. *If no `declared values´ are defined, indicate No Value Declared, NVD.* At least the Gross Calorific Value or the Wobbe Index limits shall be declared.	
(ii) Wobbe index in MJ/m³.	
Minimum	***Maximum***
Indicate minimum and maximum ***declared values*** in the concerned Member State. *If no `declared values´ are defined, indicate No Value Declared, NVD.* At least the Gross Calorific Value or the Wobbe Index limits shall be declared.	
(b) Gas composition by volume in % of the total content:	
— C1 to C5 content in % (sum)	
Minimum	*Maximum*
Indicate minimum and maximum ***declared values*** in the concerned Member State. *If no `declared values´ are defined, indicate No Value Declared, NVD.*	
— N2 + CO2 content in %	
Minimum	*Maximum*
Indicate minimum and maximum ***declared values*** in the concerned Member State. *If no `declared values´ are defined, indicate No Value Declared, NVD.*	
— CO content in %	
Minimum	*Maximum*
Indicate minimum and maximum ***declared values*** in the concerned Member State. *If no `declared values´ are defined, indicate No Value Declared, NVD.*	
— unsaturated HC content in %	
Minimum	*Maximum*
Indicate minimum and maximum ***declared values*** in the concerned Member State. *If no `declared values´ are defined, indicate No Value Declared, NVD.*	
— hydrogen content in %	
Minimum	*Maximum*
Indicate minimum and maximum ***declared values*** in the concerned Member State. *If no `declared values´ are defined, indicate No Value Declared, NVD.*	

[1] *Declared values by Member States means the applied limit values/range of parameters for each type of gas (family and group, see definition) used on their territory.*

(c) Information on toxic components contained in the gaseous fuel.
Toxic components refer to components in the unburnt fuel gas. To respect the threshold limits defined in REACH Directive for different toxic components. Note: unless indicated specifically, commercial gases are expected to contain no toxic components.

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.*
Each Member State should choose between one of the two options given and then supply the information requested.

Reference conditions

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/m*^{3} in the above required reference conditions for combustion reference temperature and volume measurement reference temperature and pressure. *If the reference conditions in the Member State are different, the values should be changed to the required one*. The applicable conversion factors for natural gas are stated in standard ISO 13443[2] and repeated in the next paragraph of this document.

Conversion factors between reference conditions

Extracted from Table A.1 of ISO 13443

Combustion (t, ºC) : Measure (t, ºC)

	25/0 to 15/15	*0/0 to 15/15*
Gross Calorific Value, real, volume base	0.9486	0.9461
Wobbe index, real, volume base	0.9487	0.9462

Note: be aware that the table in ISO 13433 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 with the above stated factors.

[2] ISO 13443. Natural gas. Standard reference conditions.

Guides to fill in cells in the form

In order *to avoid empty cells and "-" or "/" symbols* use the following acronym if no applicable limit values are available: *No Value Declared, NVD*.

Footnotes: the utilisation of footnotes is recommended only for useful extra information related to the content of the cell.

If no limit values are declared, this does not mean that the value is nill, nor that there is no constraints on the value.

Definitions

Following GAR Art. 2.:

- *'gas family' means a group of gaseous fuels with similar burning behaviour linked together by a range of Wobbe indices;*
- *'gas group' means a specified range of Wobbe indices within that of the gas family concerned.*