



SLOVENSKI STANDARD

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Rebrasta fleksibilna varnostna kovinska cev za priključitev gospodinskih plinskih aparatov

Corrugated safety metal hose assemblies for the connection of domestic appliances using gaseous fuels

Gewellte, metallene Sicherheits-Gasschlauchleitungen für den Anschluss von Haushalts-Gasgeräten

Tuyaux flexibles métalliques onduleux de sécurité pour le raccordement d'appareils a usage domestique utilisant des gaz combustibles

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Corrugated safety metal hose assemblies for the connection domestic appliance using gaseous fuels

Tuyaux flexibles métalliques onduleux de sécurité pour le
raccordement d'appareils à usage domestique utilisant des
gaz combustibles

Gewellte, metallene Sicherheits-Gasschlauchleitungen für
den Anschluss von Haushalts-Gasgeräten

This European Standard was approved by CEN on 6 December 2006.

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Foreword

This document (EN 14800:2007) has been prepared by Technical Committee CEN/TC 236 "Non industrial manually operated shut-off valves for gas and particular combinations valves-other products", the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2007, and conflicting national standards shall be withdrawn at the latest by December 2008.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 89/106/EC.

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

For corrugated metal gas hose assemblies pre-installed to a gas appliance and put on the market as one unit the Gas Appliance Directive is applicable. Additional requirements may apply.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EN 14800:2007 (E)**Introduction**

This European Standard contains product characteristics relating to the safety of persons, animal and property and the protection of their environment.

The objective of this European Standard is to achieve safe operation of corrugated metal gas hose assemblies by specifying the requirements of performance, materials and test methods.

These assemblies are designed for the use with fixed applications; they may also be used for the connection of movable applications.

This European Standard is based on a balance of requirements given by the major national European Gas Authorities for corrugated metal hose assemblies for the connection of domestic gas appliances.

It reflects the recognised practise and technology of products approved today as well as the present culture of usage by the consumer.

The European Standard describes two product types, one with an unrestricted bending radius and one with a restricted bending radius.

The introduction of new technologies supported by National Gas Authorities can require the adoption of this European Standard regarding individual requirements and tests.

Attention is drawn to the need for careful quality control as given in EN ISO 9001.

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1 Scope

This European Standard specifies the requirements of performance, the material and the test methods of corrugated safety metal gas hose assemblies for the connection of domestic appliances, in order to achieve safe operation.

The corrugated metal gas hose assemblies according to this European Standard are suitable for the connection of domestic appliances inside or outside a dwelling, using gas at a pressure lower than 0,5 bar.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 437:2003, *Test gases — Test pressures — Appliance categories*

EN 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

EN 1418, *Welding personnel — Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding of metallic materials*

EN 1775:1998, *Gas supply — Gas pipework for buildings — Maximum operating pressure \leq 5 bar — Functional recommendations*

EN 13133, *Brazing — Brazer approval* [SIST EN 14800:2007
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EN 13134, *Brazing — Procedure approval* [12e9e018469/sist-en-14800-2007](https://standards.iteh.ai/catalog/standards/sist/cf686fdd-ae2a-42a4-ad35-12e9e018469/sist-en-14800-2007)

EN 13501-1:2006, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*

prEN 15069:2004, *Safety gas connection valves for metal hose assemblies used for the connection of domestic appliances using gaseous fuel*

EN ISO 9001:2000, *Quality management systems — Requirements (ISO 9001:2000)*

EN ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests (ISO 9227:2006)*

EN ISO 10380, *Pipework — Corrugated metal hoses and hose assemblies (ISO 10380:2003)*

EN ISO 11925-2, *Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2:2002)*

EN 14800:2007 (E)**3 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.

- 3.1 domestic appliance**
appliance intended for use by individual householders inside or outside a dwelling
- 3.2 corrugated safety metal gas hose assembly**
element of flexible pipe-work to be fitted between the gas supply valve or the socket of a quick disconnect device and the appliance inlet connection, consisting of a corrugated metal hose, its end fittings with appropriate gaskets and, if required, an armouring and/or an external protection
- 3.3 CMG hose assembly**
abbreviation used in this European Standard to denote a corrugated safety metal gas hose assembly as defined in 3.2
- 3.4 corrugated metal hose**
pressure-tight hose made from tube or from welded strip with corrugations, helicoidal or annular to the axis of the hose, made by deforming the metal
- 3.5 end fittings**
components attached to a metal hose so as to constitute a metal hose assembly
- 3.6 screwed connection**
leak-tight threaded connection, which can only be assembled and disassembled with an appropriate tool
- 3.7 integrated non-detachable fitting**
end fitting, permanently attached to the corrugated metal hose by such a method as welding or brazing, so as to ensure that it can not be detached without destruction or alteration
- 3.8 safety quick connection device**
end fitting consisting of two parts that is designed to permit quick connection and disconnection without tools, leak-tight so that it prevents the release of gas from the upstream pipe work when disconnected and designed to prevent accidental disconnection and incorrect operation
- 3.9 armouring**
external reinforcement, partly or wholly covering the corrugated metal hose, which is designed to improve the mechanical characteristics of the hose
- 3.10 external protection**
outer cover used to protect the hose from environmental and other outside influences

3.11**nominal length**

length of a CMG hose assembly measured along its axis, including its end fittings, but excluding any swivel nuts.

CMG hose assemblies incorporating the plug of a quick connection device are measured to the point where the plug enters the socket in the working position

3.12**non-restricted bending radius**

radius measured to the centre line of the hose

3.13**restricted bending radius**

bending radius, which by the use of an additional component is limited to a minimum value measured to the centre line of the hose.

A lower value can only be reached by permanently deforming or destroying the additional component

3.14**rated flow-rate**

flow rate, under standard reference conditions, at a given pressure drop

3.15**seal
gasket**

non metallic element assuring leak-tightness between two adjacent elements, be they fixed or moveable in respect to each other

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3.16**swivel joint
rotary joint**

element or device that enables a continuous axial rotation of the hose with respect to the gas inlet or the appliance, and which functions without reducing the leak-tightness of the flexible connection

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3.17**gas**

first, second and third family gas as referred to in EN 437:2003, Table 1.

These gases are commonly referred to as manufactured gases, natural gases or liquefied petroleum gases (LPG)

4 Construction requirements**4.1 General**

These requirements shall ensure that the construction of a CMG hose assembly which, when properly installed and correctly used, under normal chemical, mechanical and thermal conditions will provide long term safe operation without degradation.

CMG hose assemblies are subdivided into:

type 1: CMG hose assemblies having no additional component limiting their bending radii;

type 2: CMG hose assemblies having an additional component limiting their bending radii.

EN 14800:2007 (E)**4.2 Nominal size**

The nominal size of CMG hose assemblies shall be designated either DN 8 or DN 12 and shall be determined by the flow rate requirements given in Table 2. For the purpose of this European Standard, DN 10 and DN 15 fittings shown in Annex A are considered as DN 8 and DN 12 respectively.

4.3 Materials

The CMG hose assembly described by this European Standard shall be manufactured from materials which shall withstand the performance and test requirements given in Clause 5. The corrugated metal hose shall be manufactured from metal(s) no less durable and robust than stabilized austenitic stainless steel and fulfil in addition to the requirements of this European Standard the requirements of EN ISO 10380. End fittings and non-permanently attached parts, whether surface finished or not, shall be manufactured from stainless steel, or from copper alloys containing at least 57 % copper and up to 3,5 % lead.

Where there may be risk of stress corrosion cracking, any threaded parts manufactured from the above copper alloys shall be stress relieved.

4.4 Requirements for the connection between hose and fittings

The connection between the corrugated hose and the end fitting of a CMG hose assembly as defined by this European Standard shall be made by a method such as welding or brazing, resulting in an integrated non-detachable connection, which can only be detached by irreparably damaging the hose or the end fitting. The connection shall ensure leak-tightness and shall withstand all tests requested in Clause 5. Welding and brazing processes shall conform to EN 1418, EN 13134 and EN 13133.

It shall be possible to withdraw swivel nuts in order to free the sealing surface.

4.5 End fittings design requirements

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End fittings shall be manufactured from materials that permit the CMG assembly to comply with the performance requirements of this European Standard for a reasonable economic working life when tested according to Table 1.

The design of end fittings shall be in accordance with 5.19.

A CMG hose assembly shall be fitted either with a swivel nut on one end and or a swivel joint.

The design of swivel nuts shall ensure that when used in conjunction with its seal/gasket and its matching part tightness is achieved at a maximum torque of $(10 \pm 0,5) \text{ N} \cdot \text{m}$ and that when further tightened to an torque of $(50 \pm 2,5) \text{ N} \cdot \text{m}$ there shall be no visible deformation or cracking and the connection shall remain gas tight.

Fittings used in conjunction with swivel nuts shall incorporate a means to hold the fitting during the tightening of the swivel nut without applying torsion to the hose or damage to the fitting.

Where threads are used at both ends of an assembly and there is a possibility of the assembly being installed the wrong way round, the fittings shall be identified by different colours and the flow direction shall be marked by the use of an arrow.

Seals/gaskets shall be from material suitable for their intended application. They shall be designed to be reusable and shall be retained on the fitting or held in place by caps and shall comply with the requirements of EN 549.

Screwed connections shall be capable of being assembled and disassembled only by using an appropriate tool without visible damage to the fitting.

4.6 CMG hose assembly lengths

The normal nominal lengths of the CMG hose assemblies shall be 0,5 m, 0,75 m, 1,0 m, 1,25 m, 1,5 m and 2,0 m. The admissible length tolerance shall be ± 20 mm. The maximum nominal length of a CMG hose assembly shall be 2,0 m.

NOTE CMG hose assemblies according to this European Standard are not designed to be joined together to form a hose string.

4.7 Corrosion requirements

CMG hose assemblies shall be resistant to any corrosive agents reasonably foreseen in a domestic environment.

NOTE If required the corrosion resistance of a CMG hose assembly can be increased by some form of external protection.

4.8 Insulation requirements

The corrugated metal hose part of a CMG hose assembly shall be electrically insulated externally by the use of an appropriate synthetic material at potential points of contact with metallic elements where cathodic corrosion can take place.

4.9 Electric conductivity requirements

CMG hose assemblies shall be electrically continuous along their length.

4.10 Hygiene

CMG hose assemblies shall have an outer surface, which can be readily cleaned by normal household means.

4.11 Cover materials

If the materials of a synthetic cover contain corrosive agents as ingredients, such as sulphur or chlorine, care shall be taken to ensure that such agents are not released during the manufacturing process.

4.12 Dangerous substances

Materials used in CMG hose assemblies shall not release any dangerous substances in excess of the maximum permitted levels specified in a relevant European Standard for the material or permitted in the national regulations of the member state of destination.

5 Performance requirements and tests

5.1 General

If any sample fails one of the tests within the test sequence schedule given in Table 1 then all samples shall be deemed to have failed to meet the type test requirements of this European Standard. The tests are performed under ambient conditions. If not otherwise indicated the following tolerances shall apply:

atmospheric pressure:	($\pm 0,1$) mbar	air pressure:	(± 5 %)
flow rate:	(± 5 %)	ambient temperature:	(± 1 °C)
temperature above 125 °C:	(± 10) °C	time:	($\pm 0,1$) %
dimensions:	($\pm 0,1$) mm		

5.2 Test sequence schedule

For each DN, nine CMG hose assemblies of 1 m length, three of 1,5 m length and five of 0,5 m length shall be tested in the sequence given in Table 1.

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Table 1 — Test sequence schedule

Hose assembly	No	1	2	3	4	5	6	7	8	9	10 to 15	16	17	No of samples
Hose length in metres		1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	0,5 + 1,5	0,5	0,5	
Initial leak-tightness test	5.3.2	X	X	X	X	X	X	X	X	X	X	X	X	17
Structural strength test	5.4.2		X											1
Flow rate test	5.5.2	X												1
Electrical continuity test	5.6.2	X												1
Tension test	5.7.2											X		1
Durability of marking test	5.8.2	X												1
Working temperature test	5.9.2	X	X											2
Salt spray test	5.10.2.1	X												1
Hydrochloric acid test	5.10.2.2	X												1
Household cleaning agent test	5.10.2.3		X											1
Reaction to fire	5.11.2										X			3 +3
Fire resistance test	5.12.2												X	1
Suppleness test	5.13.2						X							1
Bending test non-restricted bend radius or Bending test restricted bend radius	5.14.1.2 5.14.2.2			X	X	X								3
Flexing test	5.15.2							X	X	X				3
Torsion test	5.16.2						X							1
Impact resistance test	5.17.2						X							1
Penetration test	5.18.2	X												
Fitting tests where requested	5.19													
Drop test	5.19.2.1		X											1
Crush test	5.19.2.2		X											1
Torque test	5.19.3.2		X											1
Final leak-tightness test	5.3.2	X	X	X	X	X	X	X	X	X		X		10