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## Gas cylinders — Stamp marking

*Bouteilles à gaz — Marquage*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html). (standards.iteh.ai)

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Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

This third edition cancels and replaces the second edition (ISO 13769:2007), which has been technically revised. The main changes compared to the previous edition are as follows:

- inclusion of markings for non-refillable gas cylinders;
- inclusion of markings for gas cylinders less than 0,5 l water capacity;
- inclusion of marking examples for small non-refillable and refillable gas cylinders.

## Introduction

This document has been written so that it is suitable to be referenced in the UN *Recommendations for the Transport of Dangerous Goods — Model Regulations*.

This document is intended to be applied at the time of cylinder manufacture. However, it may be applied by the cylinder user during use operations, e.g. the stamping of “empty weight” (item 10 in [Figures C.1](#), [C.2](#) and [C.3](#)) on cylinders not so marked at the time of manufacture. It is also intended to be applied at the time of periodic inspection.

Some stamp markings include the year and month. The order of these time elements is given with the most significant digits (the year) to the left, in accordance with the rules given in ISO 8601.

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# Gas cylinders — Stamp marking

## 1 Scope

This document specifies stamp marking of transportable gas cylinders of volumes greater than 0,12 l and up to or equal to 150 l and tubes of volumes up to or equal to 3 000 l, including:

- steel and aluminium-alloy gas cylinders;
- composite gas cylinders;
- acetylene cylinders;
- liquefied petroleum gas (LPG) cylinders (see [Annex A](#)); and
- small cylinders (see [Annex B](#)).

Unless noted by exception, the use of “cylinder” in this document refers to the above types of cylinders.

Non-refillable cylinders are addressed by this standard.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 10286, *Gas cylinders — Terminology*  
<https://standards.iteh.ai/catalog/standards/sist/d344d0c2-51cd-4013-b093-c49fc86ee36e/iso-13769-2018>

ISO 11114-1, *Gas cylinders — Compatibility of cylinder and valve materials with gas contents — Part 1: Metallic materials*

UN *Recommendations for the Transport of Dangerous Goods — Model Regulations* (as amended)

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10286 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1

#### stamp marking

marking on a cylinder, either *permanent* (3.2) or *durable* (3.3)

### 3.2

#### permanent marking

marking applied to cylinders by hard metal stamping, engraving, casting or other method such as labelling for composite cylinders and small cylinders

### 3.3 durable marking

marking such as stencilling, labelling or other suitable methods

Note 1 to entry: Stencilling is the marking of a cylinder using inks and/or paints.

Note 2 to entry: Suitable methods include placing a tag/ring under the cylinder valve.

### 3.4 small cylinder

cylinder on which, due to its geometry, the arrangement and position of the markings cannot be executed as described in [Annex C](#)

## 4 Application of stamp markings

### 4.1 General

The stamp markings listed in [Table 1](#) consist of manufacturing, operational and certification stamp marks. See [4.3](#) for the arrangement and position of stamp markings.

Additional markings may be applied as agreed upon by interested parties, provided the layout does not cause confusion regarding their interpretation and the clarity of other mandatory markings is not affected.

[Annex B](#) specifies the marking provisions for small cylinders.

### 4.2 Workmanship

The stamp markings listed in [Table 1](#) shall be applied legibly so that the integrity of the cylinder is unaffected, e.g. either on a reinforced part of the cylinder or on a permanent attachment. Hard metal stampings shall not be applied to the cylindrical part of the cylinder (unless applied by the manufacturer as part of the manufacturing process).

For refillable metal and composite cylinders, the stamp markings shall be applied permanently. Certain information (see [Table 1](#)) may be applied durably to the cylinder (e.g. by stencilling, labelling, using a ring).

For cylinders with a diameter less than 51 mm, the stamp marking may also be applied either permanently or durably with a fixed label or other suitable method on the cylindrical part. However, a hard metal stamping procedure shall not be used if it results in an unacceptable cycle and burst performance.

The depth (when applicable) of the characters in the stamp marking applied by any method shall be such that they are legible and durable under all operating conditions.

The stamp marking tools used (when applicable) shall have such radii as are necessary to prevent the formation of sharp notches. The radius of the stamp marking tool should not be less than 0,2 mm. Different values may be used, but it shall be demonstrated by fatigue and burst tests in accordance with the design standard or equivalent that a failure does not initiate in the markings.

For welded cylinders, some stamp markings appear on a welded identity plate or on another part permanently attached to the cylinder and thus are not subject to gas pressure.

For composite cylinders, permanent markings can be achieved by use of a printed label encapsulated either by placing it under the resin or by covering it with a permanent transparent coating on the shoulder or the side wall of the cylinder (see [4.3](#)).

Except for the "UN" mark, the characters in the stamp markings shall be at least 5 mm in height. This height may be reduced on cylinders with an outside diameter less than 140 mm except for small cylinders, whose requirements are shown in B.1.1. In no case shall the characters be less than 2,5 mm



in height. The minimum size of the “UN” mark shall be 10 mm for cylinders with diameters greater than or equal to 140 mm and 5 mm for cylinders with diameters less than 140 mm.

### 4.3 Arrangement and position of stamp markings

All stamp markings described in [Table 1](#) shall appear consecutively in the sequence shown in the figures in [Annex C](#), which indicate the arrangement of the stamp markings. The UN *Model Regulations* distinguishes between three different groups of stamp marks, gives them an explicit place in their arrangement and requires certain markings to appear in a specified sequence.

In [Figures C.1](#) and [C.2](#), the top group of stamp marks includes manufacturing marks (12, 2, 3, 4, 6). The group of stamp marks in the middle includes operational marks (13, 10, 11, 17, 7). The bottom group of stamp marks includes certification marks (27, 1, 28, 8, 9).

In [Figure C.3](#), the top row includes manufacturing marks. The second and third rows include operational marks and the bottom row includes certification stamp marks.

[Annex A](#) includes examples of positions of stamp markings for metallic LPG cylinders.

[Annex B](#) includes provisions and examples of stamp markings for small cylinders when the arrangement and position of the markings cannot be executed (due to limited space) as specified in [Annex C](#).

When an identity plate or label (e.g. for composite cylinders) is used, all stamp markings may be on a single plate or label, provided the layout does not cause confusion regarding their interpretation and follows the requirements of [Table 1](#).

For hoop-wrapped composite cylinders that are stamp marked using a label under the resin, at a minimum the manufacturer’s identification and the manufacturing serial number shall be duplicated by stamping them on the shoulder in accordance with [Annex C](#) for traceability purposes.

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**Table 1 — Stamp markings**

Stamp marking number	Description of the marking	Status Mandatory (M) <sup>a</sup> Normative (N) <sup>b</sup> Optional (O)	Figures as shown in <a href="#">Annex C</a> (with examples)		
			<a href="#">Figure C.1</a> Location of stamp marking for compressed gases	<a href="#">Figure C.2</a> Location of stamp marking for liquefied gases	<a href="#">Figure C.3</a> Location of stamp marking for acetylene
1	<b>Standard:</b> The identification of the relevant construction standard to which the cylinder is designed, manufactured and tested.	M	ISOXXX	ISOXXX	ISOXXX
2	<b>Country of manufacture:</b> Capital letter(s) identifying the country of manufacture of the cylinder shell using the characters of the distinguishing signs of motor vehicles in international traffic as specified in the UN <i>Model Regulations</i> .	M when different from country of approval (stamp marking No. 28)	CH	CH	CH
3	<b>Manufacturer’s identification:</b> Name and/or trade-mark of cylinder manufacturer.	M	MF	MF	MF

<sup>a</sup> Mandatory in accordance with the UN *Model Regulations*.  
<sup>b</sup> Not mandatory according to the UN *Model Regulations* but normative for this document.  
<sup>c</sup> In the UN *Model Regulations*, “date of the initial inspection” is used.  
<sup>d</sup> In International Standards, “weight” is equivalent to a force, expressed in newtons. However, in common parlance (as used in terms defined in this document), “weight” continues to be used to mean “mass,” although this practice is deprecated (see ISO 80000-4).  
<sup>e</sup> The Aluminium Association Inc., 1400 Crystal Drive, Suite 430, Arlington, VA 22202, USA; [www.aluminum.org](http://www.aluminum.org)  
<sup>f</sup> The stamped value can be less than the approved value.  
<sup>g</sup> The reference in UN *Model Regulations* is to mark No. 8 (not to mark No. 27).

Table 1 (continued)

Stamp marking number	Description of the marking	Status Mandatory (M) <sup>a</sup> Normative (N) <sup>b</sup> Optional (O)	Figures as shown in Annex C (with examples)		
			Figure C.1 Location of stamp marking for compressed gases	Figure C.2 Location of stamp marking for liquefied gases	Figure C.3 Location of stamp marking for acetylene
4	<b>Manufacturing serial number:</b> Alphanumeric identification number given or assigned by the manufacturer to clearly identify the cylinder.  In the case of cylinders less than or equal to 1 l, the manufacturing batch number may replace the manufacturing serial number.	M	7654321	7654322	7654323
5	<b>Stamp for non-destructive examination (NDE):</b> When the cylinder is tested by and meets all the requirements of NDE in accordance with an ISO standard for gas cylinders (e.g. ultrasonic, magnetic particle, dye penetrant, acoustic emission), the following symbols shall be used:  UT: for ultrasonic MT: for magnetic particle PT: for dye penetrant AT: for acoustic emission	N if applicable	UT	MT	PT
6	<b>Identification of steel compatibility:</b> Steel cylinders and composite cylinders with steel liners compatible with hydrogen and other gases of group 2 and group 11 in ISO 11114-1 shall be stamp marked with the letter "H". Stainless steel cylinders manufactured from high-grade stainless steel and composite cylinders with high-grade stainless-steel liners shall be stamped with the letters "HG".  <b>EXAMPLE:</b> X2CrNiMo17-12-2, as found in ISO 15510.	M if applicable	H	H	—
7	<b>Test pressure:</b> The prefix "PH" followed by the value of the test pressure in bars and the letters "BAR".	M	PH300BAR	PH250BAR	PH60BAR or PH52BAR
8	<b>Inspection stamp:</b> Identity mark or stamp of the authorized inspection body.	M	#	#	#
9	<b>Initial test date<sup>c</sup>:</b> Year (four digits) followed by month (two digits) of initial test, separated by a slash (i.e. "/").	M	2007/10	2007/10	2007/10
<p><sup>a</sup> Mandatory in accordance with the UN <i>Model Regulations</i>.</p> <p><sup>b</sup> Not mandatory according to the UN <i>Model Regulations</i> but normative for this document.</p> <p><sup>c</sup> In the UN <i>Model Regulations</i>, "date of the initial inspection" is used.</p> <p><sup>d</sup> In International Standards, "weight" is equivalent to a force, expressed in newtons. However, in common parlance (as used in terms defined in this document), "weight" continues to be used to mean "mass," although this practice is deprecated (see ISO 80000-4).</p> <p><sup>e</sup> The Aluminium Association Inc., 1400 Crystal Drive, Suite 430, Arlington, VA 22202, USA; <a href="http://www.aluminum.org">www.aluminum.org</a></p> <p><sup>f</sup> The stamped value can be less than the approved value.</p> <p><sup>g</sup> The reference in UN <i>Model Regulations</i> is to mark No. 8 (not to mark No. 27).</p>					

Table 1 (continued)

Stamp marking number	Description of the marking	Status Mandatory (M) <sup>a</sup> Normative (N) <sup>b</sup> Optional (O)	Figures as shown in Annex C (with examples)												
			Figure C.1 Location of stamp marking for compressed gases	Figure C.2 Location of stamp marking for liquefied gases	Figure C.3 Location of stamp marking for acetylene										
10	<p><b>Empty weight<sup>d</sup>:</b> The weight of the cylinder in kilograms (kg), including all integral parts (e.g. neckring, footing, etc.) followed by the letters “KG”. This weight shall not include the weight of the valve, valve cap or valve guard, any coating or any porous material for acetylene. The empty weight shall be expressed to three significant figures rounded up to the last digit. For cylinders less than 1 kg, the empty weight shall be expressed to two significant figures rounded up to the last digit. For acetylene cylinders, it shall be expressed to at least one digit after the decimal sign.</p> <p><b>EXAMPLE:</b></p> <table border="0"> <tr> <td>Weight measured</td> <td>0,964 kg</td> <td>1,064 kg</td> <td>10,64 kg</td> <td>106,41 kg</td> </tr> <tr> <td>To be expressed as</td> <td>0,97 kg</td> <td>1,07 kg</td> <td>10,7 kg</td> <td>107 kg</td> </tr> </table>	Weight measured	0,964 kg	1,064 kg	10,64 kg	106,41 kg	To be expressed as	0,97 kg	1,07 kg	10,7 kg	107 kg	M for refillable cylinders O for non-refillable cylinders	62,1KG	43,3KG	45,3KG
Weight measured	0,964 kg	1,064 kg	10,64 kg	106,41 kg											
To be expressed as	0,97 kg	1,07 kg	10,7 kg	107 kg											
11	<p><b>Water capacity:</b> The minimum water capacity, in litres, guaranteed by the cylinder manufacturer, followed by the letter “L”. On request by the customer or owner of the cylinder for compressed gases, this capacity may be expressed as the nominal average water capacity with a tolerance of ±1,5 %. In such a case, the symbol “≈” shall be stamped in front of the value of the water capacity.</p> <p>In the case of liquefied gases, the water capacity in litres is expressed to three significant figures rounded down to the last digit. If the value of the minimum or nominal water capacity is an integer, the digits after the decimal sign may be neglected. The actual determined volume may also be indicated on request by the customer or owner in special cases.</p> <p>For cylinders intended to contain acetylene, the stamped water capacity shall be the actual determined volume, rounded down to three significant figures.</p>	M for liquefied gases N for acetylene O for compressed gases	≈50L	40,6L	50,8L										
12	<p><b>Identification of cylinder thread:</b> e.g. 17E or 25E thread in accordance with ISO 11363-1.</p>	M for refillable cylinders O for non-refillable cylinders	25E	25E	25E										
13	<p><b>Minimum guaranteed wall thickness:</b> Minimum guaranteed wall thickness in millimetres (as per the type approval test) of the cylindrical shell, followed by the letters “MM”.</p>	M Exception: not mandatory for composite cylinders or cylinders ≤ 1 l O for non-refillable cylinders	5,8MM	15,5MM	4,2MM										

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