BRITISH STANDARD

BS EN
1089-1 : 1997

Transportable gas cylinders — Gas cylinder identification (excluding LPG)

Part 1. Stampmarking

The European Standard EN 1089-1 : 1996 has the status of a British Standard

ICS 23.020.30

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee PVE/3, Gas containers, to Subcommittee PVE/3/7, Periodic inspection and maintenance of transportable seamless gas containers, upon which the following bodies were represented:

Aluminium Federation
Association of British Oceanological Industries Ltd.
British Association of Breathing Apparatus Service Engineers
British Compressed Gases Association
British Fire Consortium
British Iron and Steel Producers Association
British Soft Drinks Association Ltd.
British Sub-Aqua Club
Engineering Equipment and Materials Users Association
Fire Extinguishing Trades Association
Health and Safety Executive
Home Office
International Marine Contractors Association
LP Gas Association
National Engineering Laboratory
Safety Assessment Federation Ltd.
Safety Equipment Association
Tubes Investments Limited

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The following BSI references relate to the work on this standard:
Committee reference PVE/3/7
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Contents

National foreword

This Part of BS EN 1089 has been prepared by Subcommittee PVE/3/7, and is the English language version of EN 1089-1 : 1996 *Transportable gas cylinders — Gas cylinder identification (excluding LPG) — Part 1: Stampmarking*, published by the European Committee for Standardization (CEN).

EN 1089-1 was produced as a result of international discussion in which the United Kingdom took an active part.

Users of this standard should note that the examples in figures 1, 2 and 3 are given to illustrate the location and form of each individual stampmarking. They do not relate to each other in a manner that would be consistent for any individual cylinder.

Cross-references

Publication referred to	Corresponding British Standard
EN 629-1	BS EN 629-1 *Transportable gas cylinders — 25E taper thread for connection to gas cylinders* Part 1: *Specification*
EN 10088-1	BS EN 10088-1 *Stainless steels* Part 1: *List of stainless steels*
ISO 3166	BS EN ISO 23166 *Codes for the representation of names of countries*

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 14, an inside back cover and a back cover.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1089-1

November 1996

ICS 23.020.30

Descriptors: Gas cylinders, designation, marking, labelling, colour marking, colour codes

English version

Transportable gas cylinders — Gas cylinder identification (excluding LPG) — Part 1: Stampmarking

Bouteilles à gaz transportables — Identification de la bouteilles à gaz (à l'exclusion du GPL) — Partie 1: Marquage

Ortsbewegliche Gasflaschen — Gasflaschen-Kennzeichnung (ausgenommen LPG) — Teil 1: Stempelung

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 23, Transportable gas cylinders, the secretariat of which is held by BSI.

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 May 1997, and conflicting national standards shall be withdrawn at the latest by May 1997.

This European Standard 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(s).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Contents

Introduction

This European Standard is a three Part standard, belonging to a series of standards specifying gas cylinder identification requirements.

Part 1 : *Stampmarking*
Part 2 : *Precautionary labels*
Part 3 : *Colour coding*

1 Scope

This European Standard specifies stampmarking of refillable transportable gas cylinders of volume up to and greater than 150 L, including:

– steel and aluminium gas cylinders;

– gas cylinders of composite construction.

These being hereinafter referred to as 'cylinders'.

Stampmarking of LPG cylinders is not covered by this European Standard.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 629-1	*Transportable gas cylinders — 25E Taper thread for connection of valves to gas cylinders*
	Part 1: Specification
EN 10088-1	*Stainless steels*
	Part 1: List of stainless steels
prEN ISO 11114-1	*Transportable gas cylinders — compatibility of cylinder and valve materials with gas content*
	Part 1: Metallic materials
prEN ISO 11116	*Transportable gas cylinders — 17E Taper thread for connection of valves to gas cylinders — Specification*
ISO 3166	*Codes for the representation of names of countries*

3 Definitions

For the purposes of this European Standard, the following definition applies:

3.1 stampmarking

Permanent markings, applied to the cylinders by hard metal stamping, engraving, casting or other similar methods. In the case of composite cylinders, some permanent markings may be achieved by use of a printed label, placed in the resin.

4 Application of stampmarkings

4.1 General

All mandatory stampmarkings are listed in the following tables:

Table 1: Manufacturing stampmarkings (stampmarking No. 1 to No. 14)

Table 2: Operational stampmarkings (stampmarking No. 15 to No. 24).

Additional markings may be applied as requested by the cylinder owner, provided the layout does not cause any confusion in their interpretation or in the interpretation and clarity of the other mandatory markings.

4.2 Workmanship

The stampmarkings, shown in table 1 and table 2 shall be stamped durably and legibly on a reinforced part of the cylinder. For welded steel cylinders some stampmarkings may appear on a welded identity plate, or any other part permanently attached to the cylinder and not subjected to gas pressure.

For composite cylinders some stampmarkings may be printed on a label, to be placed in the resin (see **4.3**).

The characters in the stampmarkings should normally be at least 5 mm in height. On small cylinders with an outside diameter 140 mm, this height may be reduced, but in no case shall the characters be less than 2,5 mm in height.

The stamps used for marking shall have such radii as are necessary to prevent the formation of sharp notches. This radius shall be a minimum of 0,2 mm.

4.3 Arrangements of stampmarkings

The mandatory stampmarkings shown in table 1 and table 2 shall be grouped on one side of the shoulder of the cylinder (front). Any additional stampmarkings may be stamped on the other side (rear). Stampmarkings required to be checked at the time of filling shall be grouped together. The lower part of the rear side shall be kept free for periodic inspection markings (see annex A).

When an identity plate (or label for composite cylinders) is used, all the stampmarkings may be on a single plate (or label) provided that the layout does not cause any confusion in their interpretation and follows generally the requirements of table 1 and table 2.

For composite cylinders, when a label in the resin is used, the manufacturer's identification and the manufacturing serial number shall appear on the shoulder in conformity with annex A.

The arrangement of the stampmarkings shall be as shown in annex A.

When it is difficult to comply with annex A, a different arrangement, of the stampmarking, may be used subject to the approval of the inspection authority. This different arrangement shall not cause any confusion in interpretation. In such a case stampmarkings may be on a permanently attached part (for example on the neck ring), with the exception of the manufacturer's identification and manufacturing serial number which shall comply with annex A.

Table 1. Manufacturing stampmarkings

Stamp marking number	Definition	Status	Figures as shown in annex A		
		Mandatory (M)	Figure A.1	Figure A.2	Figure A.3
1	**Standard:** The identification of the relevant construction European Standard to which the cylinder is designed, manufactured and tested.	M	EN XXX	EN XXX	EN XXX
2	**Country of origin:** Capital letter(s) identifying the country of origin, of the cylinder shell, in accordance with ISO 3166.	M	FR	FR	FR
3	**Manufacturer's identification:** Name and/or trade mark of cylinder manufacturer.	M	XY	XY	XY
4	**Manufacturing serial no.** Number given by the manufacturer to clearly identify the cylinder. (Letters may also be used) In the case of small cylinders, the manufacturing batch number may replace the manufacturing serial number.	M	7654321	7654322	7654323
5	**Stamp for non-destructive testing (NDT):** Where the cylinder is tested by, and meets all the requirements of, a NDT according to a European standard for gas cylinders (for example ultrasonic, magnetic particle, dye penetrant, acoustic emission), the following symbols shall be used: UT: for ultrasonic; MT: for magnetic particle; PT: for dye penetrant; T: for acoustic emission	M if a NDT is requested by regulation or EN standard	UT	MT	PT
6	**Identification of steel compatibility:** Steel cylinders and composite cylinders with steel liners compatible with hydrogen and other gases of group 2 and group 11 (see prEN ISO 11114-1) shall be stampmarked with the letter 'H'. Stainless steel cylinders manufactured from high grade stainless steel and composite cylinders with high grade stainless steel liners (for example X 2 Cr Ni Mo 17-12-2, see EN 10088-1) shall be stamped with the letters 'HG'.	If applicable M	H	—	—
7	**Test pressure:** The prefix 'PH' followed by the value of the test pressure and the letters 'BAR'.	M	PH 300 BAR	PH 250 BAR	PH 60 BAR

Table 1. Manufacturing stampmarkings *(continued)*

Stamp marking number	Definition	Status	Figures as shown in annex A		
		Mandatory (M)	Figure A.1	Figure A.2	Figure A.3
8	**Inspection stamp:** Stamp of authorized inspection body.	M	#	#	#
9	**Test date:** Year (last two figures) and month (two figures) of manufacturing tests.	M	95/10	95/10	95/10
10	**Empty weight:** The weight of the cylinder including all integral parts (for example neck ring, foot ring, etc.) followed by the letters 'KG'. This weight shall not include the weight of valve, valve cap or valve guard, any coating, or porous mass for acetylene. The empty weight shall be expressed to three significant figures rounded up to the last digit. (For cylinders of less than 1 kg, the weight shall be expressed to 2 significant figures rounded up to the last digits). For acetylene cylinders it shall be expressed to at least one digit after the decimal point. Example: Measured weight 0,964 kg 1,064 kg 10,64 kg 106,41 kg Weight to be expressed as: 0,97 KG 1,07 KG 10,7 KG 107 KG	M	62,1 KG	54,3 KG	45,3 KG
11	**Water capacity**: The minimum water capacity guaranteed by the cylinder manufacturer followed by the letter 'L'. By request of the customer and/or owner for permanent gases, this capacity may be expressed as the nominal average water capacity with a tolerance of ± 2,5 %. In such a case the prefix '≈' shall be stamped in front of the value of the water capacity. If the value of the minimum or nominal water capacity is an integer, the digits after the decimal point may be neglected. The actual determined volume may also be indicated by request of the customer and/or owner in special cases. For cylinders intended to contain acetylene the stamped water capacity shall be the actual determined volume, rounded down to three significant figures, similar to the empty weight.	M	≈ 50 L	40 L	50,8 L
12	**Identification of the cylinder thread:** for example **25 E**: thread in accordance with EN 629-1 or **17 E**: thread in accordance with prEN ISO 11116-1	M	25 E	17 E	25 E

Table 1. Manufacturing stampmarkings *(continued)*

Stamp marking number	Definition	Status	Figures as shown in annex A		
		Mandatory (M)	Figure A.1	Figure A.2	Figure A.3
13	**Minimum guaranteed wall thickness:** Minimum guaranteed wall thickness in mm (as for the type approval test) of the cylindrical shell.	M Not mandatory for composite or small cylinders	5,8	5,8	5,8
14	**Identification of alloy:** Number of the aluminium alloy according to 'The Aluminium Association', with the prefix 'AA' (see annex B).	M for aluminium cylinders	–	AA7060	–

Table 2. Operational markings

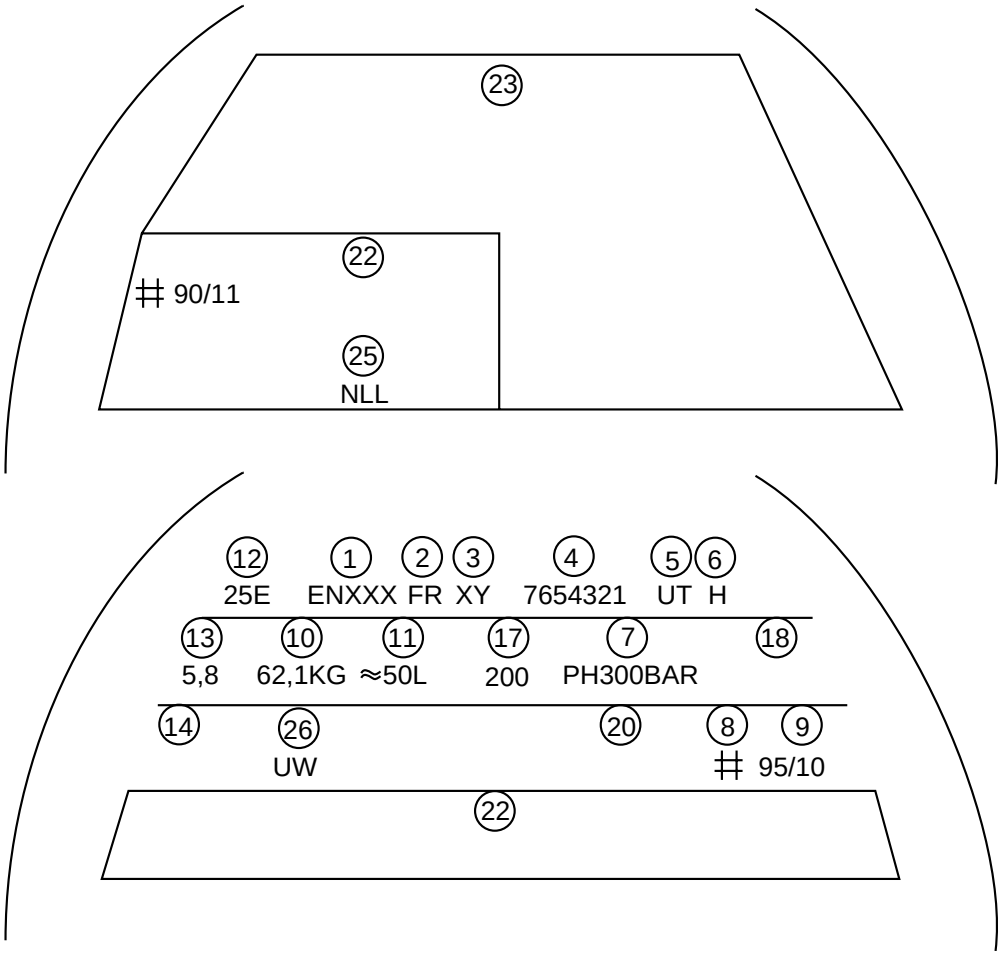
Operational marking	Definition	Status	Figures as shown in annex A		
		Mandatory (M)	Figure A.1	Figure A.2	Figure A.3
15	**Identity of porous mass:** For acetylene cylinders prepared with porous mass. Name or trade mark of porous mass. This mass shall clearly identify the country and factory of origin. Stampmarking No. 15 need not be stampled at the time of testing the empty cylinder shell.	M for acetylene	–	–	ZZZ
16	**Total weight:** For acetylene cylinders the formula 'C_2H_2' shall be stampmarked	M for C_2H_2	–	–	C_2H_2
17	**Working pressure:** Settled pressure in bar at a uniform temperature of 288 K (15 °C) for a full gas cylinder. This marking is not required for cylinders containing liquefied gases or boron trifluoride.	M for permanent gases and acetylene	200	–	18
18	**Maximum permissible filling weight:** The product of the water capacity of the cylinder and the filling ratio of the gas. The maximum permissible filling weight should be marked by means of stampmarking, stencilling, or labelling. If the maximum permissible filling weight is stampmarked, it shall be followed by the letters 'KG' and the name and/or chemical formula of the gas. The maximum permissible filling weight does not apply to acetylene.	M for liquefied and permanent gases filled by weight if not labelled or stencilled	–	30 KG CO_2	–
19	**Total weight:** For acetylene cylinders the total weight, comprising either Tare A or Tare F (see marking No. 20) – weight of maximum acetylene content, followed by the letters 'KG', shall be stamped.	M for C_2H_2	–	–	TOTAL 85,1 KG
20	**Tare weight:** Shall be stampmarked on cylinders for liquefied, for dissolved gases and where regulation requires filling by weight, for permanent gases. The tare weight is the sum of the empty weight (stampmarking No. 10), the mass of the valve including dip tube where fitted, any fixed valve guard and the mass of all other parts which are permanently attached (for example by clamping or bolted fixing) to the cylinder when presented for filling. The tare weight shall be stampmarked as follows: the letters 'TARE' followed by the value of the tare weight and the letters 'KG'. The tare weight shall be expressed to three significant figures rounded up to the last digit.	M for liquefied for dissolved gases and where regulation requires filling by weight, for permanent gases	–	TARE 55,4 KG	–

Table 2. Operational markings *(continued)*

Operational marking	Definition	Status	Figures as shown in annex A		
		Mandatory (M)	Figure A.1	Figure A.2	Figure A.3
	For dissolved acetylene cylinders two weights, described below as 'TARE A' and 'TARE S' shall be stampmarked as shown in figure A.3. Tare A is the empty weight + weight of valve and all other parts which are permanently attached when presented for filling + weight of solvent. Tare S is Tare A + weight of saturation gas at atmospheric pressure at 15 °C. For solvent free acetylene cylinders one weight only, desribed below as 'Tare F', shall be stampmarked. Tare F is the empty weight + weight of valve and all other parts which are permanently attached when presented for filling + weight of porous mass. If the tare weight for acetylene cylinders includes parts, which are permanently attached, other than the valve, the total weight of these parts shall be stamped in front of the letters 'TARE'. This weight shall be expressed to the same decimal point as the tare weight. (e.g. 2.3 TARE 75,1/75,6 KG)				
21	**Identification of solvent for acetylene cylinders:** Identification of solvent (for example 'A' for acetone or 'DMF" for dimethylforamide) followed by the weight of solvent and the letters 'KG'. Acetylene cylinders without solvent shall be stampmarked 'FS' in place of this marking.	M for C_2H_2	–	–	DMF 18,5 KG
22	**Inspection stamp and date of periodic inspection:** Inspection authority stamp and year (last two figures) and month (two figures), of retest shall be stampmarked at the time when periodic inspection is carried out. Enough space shall be provided, on the cylinder, for more than one reinspection.	M	90/11	90/11	90/11
23	**Space for additional optional stampmarkings, or for application of labels:**	–	–	–	–
24	**Inspection stamp, certifying the correct massing:**	M for C2H2	–	–	#
25	**Service life for composite cylinders:** For cylinders of unlimited life, the letters 'NLL'. For cylinders with limited life, the letters 'FIN' followed by the expiry date year (last two figures) and month (two figures).	M for composite cylinders	NLL	FIN 95/08	–

Table 2. Operational markings *(continued)*					
Operational marking	**Definition**	**Status**	**Figures as shown in annex A**		
		Mandatory (M)	**Figure A.1**	**Figure A.2**	**Figure A.3**
26	**Underwater use of composite cylinders:** Composite cylinders for underwater use, which have met the specific test requirements, shall be stampmarked with the letters 'UW'.				

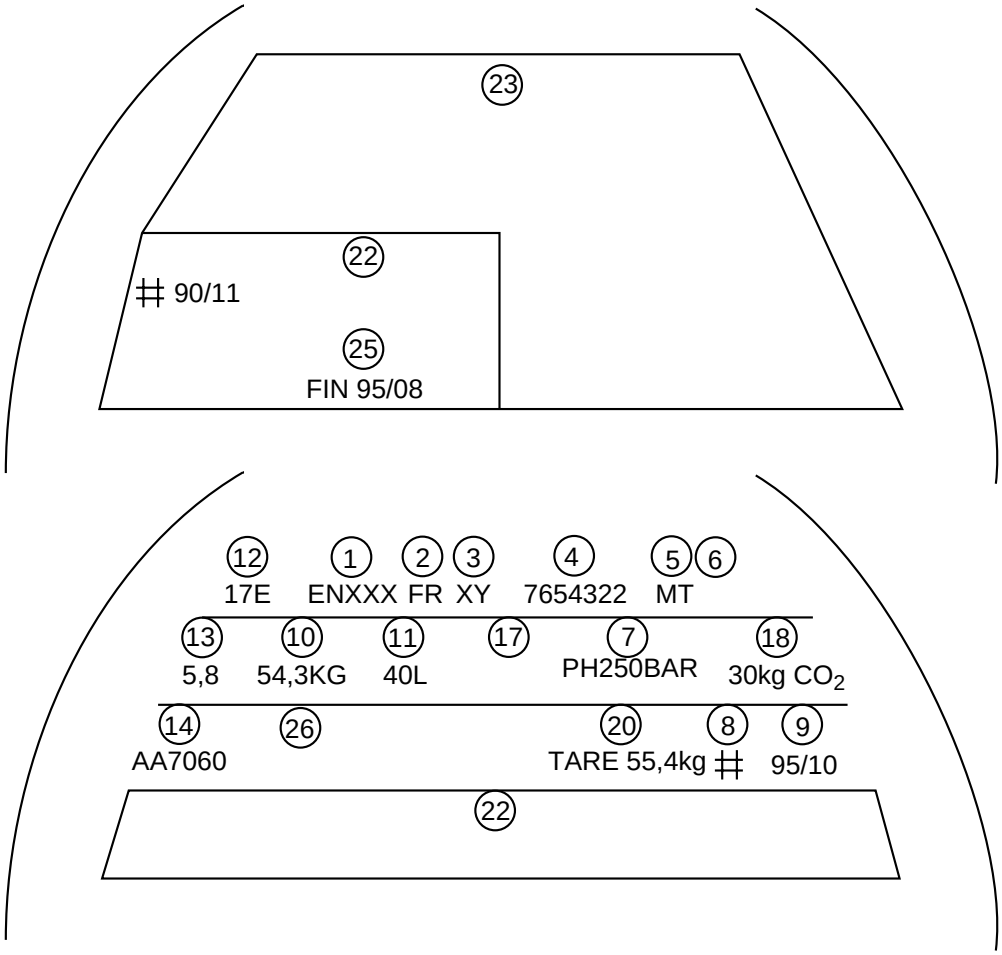
Annex A (normative)



1 Standard
2 Country of origin
3 Manufacturer's identification
4 Manufacturing serial no.
5 Stamp for non-destructive testing (if applicable)
6 Identification of compatibility (if applicable)
7 Test pressure [1)]
8 Inspection stamp[1)]
9 Test date (year/month)[1)]
10 Empty weight
11 Water capacity[1)]
12 Identification of cylinder thread
13 Minimum guaranteed wall thickness
14 Identification of alloy (if applicable)
15 –
16 –
17 Working pressure[1)]
18 Maximum permissible filling weight (if filled by weight)
19 –
20 Tare weight, when required (see table 2)
21 –
22 Inspection stamp and date of periodic inspection[1)]
23 Space for additional optional stampmarkings or for application of labels
24 –
25 Service life for composite cylinders
26 Underwater use of composite cylinders

[1)] These stampmarkings should be grouped as closely as possible.

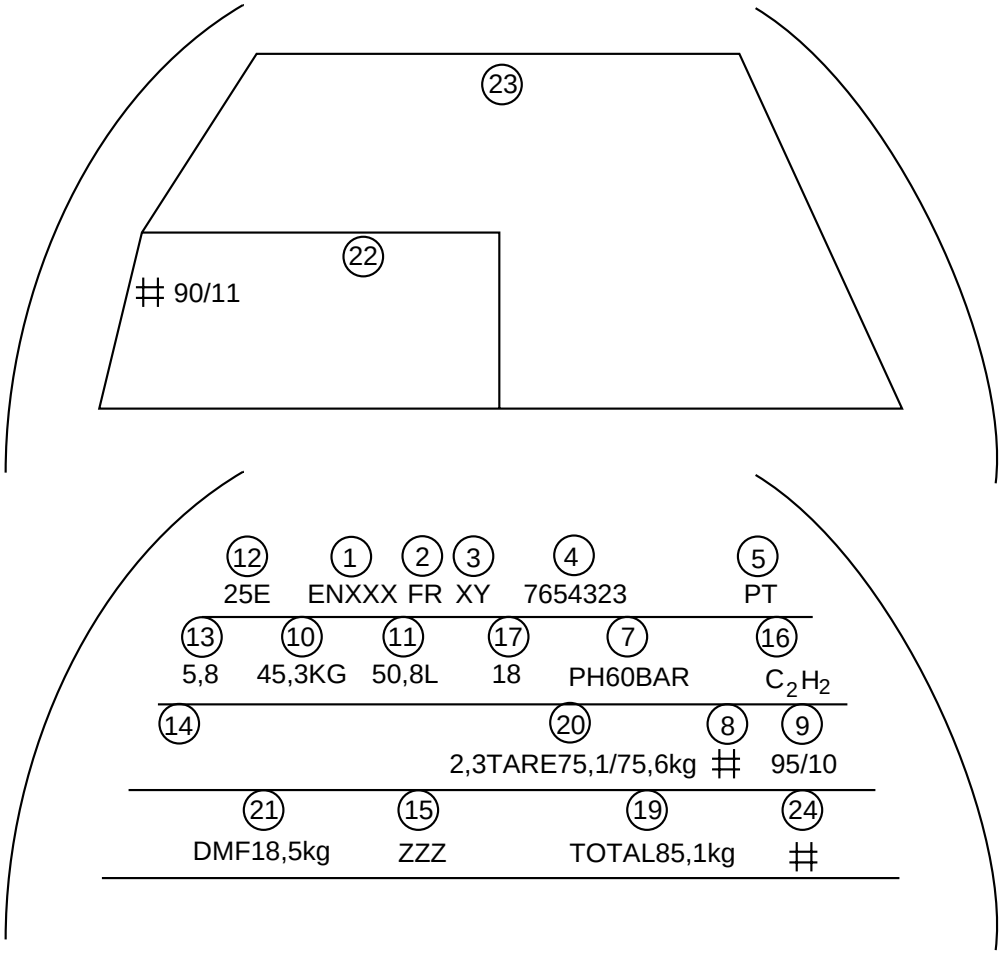
Figure A.1 Location of stampmarking for permanent gases



1 Standard
2 Country of origin
3 Manufacturer's identification
4 Manufacturing serial no.
5 Stamp for non-destructive testing (if applicable)
6 Identification of compatibility (if applicable)
7 Test pressure [1)]
8 Inspection stamp[1)]
9 Test date (year/month)[1)]
10 Empty weight
11 Water capacity[1)]
12 Identification of cylinder thread
13 Minimum guaranteed wall thickness
14 Identification of alloy (if applicable)
15 –
16 –
17 Space for working pressure in case of later change of service to a permanent gas[1)]
18 Maximum permissible filling weight (if filled by weight)
19 –
20 Tare weight, when required (see table 2)
21 –
22 Inspection stamp and date of periodic inspection[1)]
23 Space for additional optional stampmarkings or for application of labels
24 –
25 Service life for composite cylinders
26 Underwater use of composite cylinders

[1)] These stampmarkings should be grouped as closely as possible.

Figure A.2 Location of stampmarking for liquefied gases



1 Standard
2 Country of origin
3 Manufacturer's identification
4 Manufacturing serial no.
5 Stamp for non-destructive testing (if applicable)
6 –
7 Test pressure [1)]
8 Inspection stamp[1)]
9 Test date (year/month)[1)]
10 Empty weight
11 Water capacity[1)]
12 Identification of cylinder thread
13 Minimum guaranteed wall thickness
14 Identification of alloy (if applicable)
15 Identity of porous mass[1)]
16 Identification of content[1)]
17 Working pressure[1)]
18 –
19 Total weight[1)]
20 Tare weight (including both Tare A and Tare S or Tare F, for solvent free cylinders)[1)]
21 Identification of solvent, for acetylene cylinders[1)]
22 Inspection stamp and date of periodic inspection[1)]
23 Space for additional optional stampmarkings or for application of labels
24 Inspection stamp, certifying the correct massing
25 –
26 –

[1)] These stampmarkings should be grouped as closely as possible.

Figure A.3 Location of stampmarking for acetylene

Annex B (informative)

Bibliography

The Aluminium Association, Inc. 900, 19th Street N.W.
Washington, D.C. 20 006 - 2168 USA.

List of references

See national foreword.

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