SLOVENSKI STANDARD
SIST-TP CEN/TR 14473:2021

01-februar-2021

Nadomešča:
SIST-TP CEN/TR 14473:2014

Premične plinske jeklenke - Porozni materiali za jeklenke za acetilen

Transportable gas cylinders - Porous materials for acetylene cylinders

Ortsbewegliche Gasflaschen - Poröse Materialien für Acetylenflaschen

Bouteilles à gaz transportables - Matériaux poreux pour bouteilles d'acétylène

Ta slovenski standard je istoveten z: **CEN/TR 14473:2020**

ICS:

23.020.35 Plinske jeklenke Gas cylinders

SIST-TP CEN/TR 14473:2021 **en**

TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CEN/TR 14473

November 2020

ICS 23.020.35

Supersedes CEN/TR 14473:2014

English Version

Transportable gas cylinders - Porous materials for acetylene cylinders

Bouteilles à gaz transportables - Matières poreuses pour bouteilles à acétylène

Ortsbewegliche Gasflaschen - Poröse Materialien für Acetylenflaschen

This Technical Report was approved by CEN on 2 November 2020. It has been drawn up by the Technical Committee CEN/TC 23.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. CEN/TR 14473:2020 E

Contents

Page

European foreword

This document (CEN/TR 14473:2020) has been prepared by Technical Committee CEN/TC 23 “Transportable gas cylinders”, the secretariat of which is held by BSI.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes CEN/TR 14473:2014.

Compared to the previous version, the following changes apply:

a) data of further porous materials has been added;

b) the structure of the document has been changed:

— Clause 7 contains data for porous materials for acetylene cylinders approved to TPED evaluation of conformity at time of manufacture;

— Clause 8 contains data for porous materials for acetylene cylinders reassessed in accordance with TPED;

— Clause 9 contains data for porous materials for individual acetylene cylinders and that are type approved based on national regulations;

c) the document has been aligned with the current principles and rules for the structure and drafting of CEN and CENELEC documents.

For amendments or changes to this report, an application shall be made to the Secretariat of CEN/TC 23, with a copy of the documentation based on which the acetylene cylinders are placed on the market (type approval by the competent authority or conformity assessment in accordance with Directive 2010/35/EU (TPED)).

Introduction

This document contains data and information about monolithic porous materials for acetylene cylinders.

It does not contain information about non-monolithic porous materials.

In International Standards, weight is equivalent to a force, expressed in newton. However, in common parlance the word “weight” continues to be used to mean “mass”, but this practice is deprecated (ISO 80000-4).

In this document the unit bar is used, due to its universal use in the field of technical gases. It should, however, be noted that bar is not an SI unit, and that the according SI unit for pressure is Pa (1 bar = 10^5 Pa = 10^5 N/m^2).

Pressure values given in this document are given as gauge pressure (pressure exceeding atmospheric pressure) unless noted otherwise.

1 Scope

This document contains information about monolithic porous materials used in individual acetylene cylinders and in acetylene cylinder bundles in Europe. It does not claim to be exhaustive.

NOTE Where there is any conflict between this document and any applicable regulation, the regulation always takes precedence.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

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/

4 Source and nature of the data about the listed porous materials

The data contained in the tables in Clauses 7 and 8 are derived from the documentation based on which the acetylene cylinders were placed or still are on the market (type approval by the competent authority or conformity assessment in accordance with TPED) and according to which they are operated. In some cases a type approval or a TPED-certificate might no longer be valid but the cylinders that are already on the market still may be used. For this purpose, information on old porous materials is provided.

NOTE 1 The documentation provided was examined carefully before including the according information into this Technical Report. Nevertheless, there might be discrepancies to the actual approval, e.g. because more recent amendments exist which were not made available at the time of preparing this document. In some cases not all information was available in the documents provided and consequently the according information is missing (for example the maximum top clearance or the working pressure).

Acetylene cylinders that were reassessed in accordance with TPED may be filled with the filling values conforming to the reassessment certificate throughout the EU. It should be noted that these values might deviate from those of prior national approvals which still apply to those cylinders that were not reassessed according to TPED.

Where no official documentation could be made available to CEN/TC 23/WG 31, the data for the porous material is added with a note, that this information is shared by expert/porous material manufacturer as extracted from the official documentation, but has not been presented to the working group. This is of especial note in the case of reassessed acetylene cylinders, since every user can ask for a specific reassessment.

Clause 7 contains information on porous materials for acetylene cylinders approved to TPED. It also contains information on filling conditions for acetylene cylinder bundles in accordance with EN ISO 13088:2012. The same filling ratio applies for the whole EU.

Clause 9 contains information on porous materials used in individual acetylene cylinders and cylinder bundles that were type approved based on national regulations and/or standards.

If several years are indicated for the approval or certification, they refer to according amendments in addition.

NOTE 2 The initial agreements of the French porous materials have been delivered on the basis of a data pair "porous material/cylinder manufacturer". Therefore, the name of the cylinder manufacturer has been detailed: Chevalier Bertrand (CB), Schneider Industrie (SI), Pecquet Tesson (PTC), Société Métallurgique de Gerzat (SMG) and Siebel (S).

NOTE 3 Every user (owner) of a cylinder can decide on its own commercial acetylene load, provided that this load is less or equal to the maximum load given in the agreement.

5 Country codes

In this document, countries are identified in accordance with their distinguishing signs for motor vehicles according to the Vienna Convention on Road Traffic, which is also the basis for marking of cylinders according to the ADR (see Annex A to the ADR, 6.2.2.7) as follows:

A	Austria	FIN	Finland	NL	Netherlands
B	Belgium	GB	United Kingdom	P	Portugal
BG	Bulgaria	GR	Greece	PL	Poland
CH	Switzerland	H	Hungary	RO	Romania
CZ	Czech Republic	HR	Croatia	S	Sweden
D	Germany	I	Italy	SK	Slovakia
DK	Denmark	IRL	Ireland	SLO	Slovenia
E	Spain	L	Luxembourg		
F	France	N	Norway		

6 Overview (in alphabetic order) of porous materials for which data were available and could be checked

6.1 Single cylinders and bundles with TPED evaluation of conformity

Table 1 provides the list of porous materials for single cylinders and bundles in this Technical Report with TPED evaluation of conformity given in this Technical Report, and cross-references to the respective data tables in Clause 7.

Table 1 — List of porous materials for single cylinders and bundles with TPED evaluation of conformity

Porous material (trading name)	Solvent	Data
A-10W ECO	Acetone and solvent free	Table 4
A-10W ECO DMF	DMF	Table 5
BAF1	Acetone	Table 6
NORAL 2	Acetone	Table 7
SIAD AF	Acetone	Table 8
	DMF	Table 9
UL 1	Acetone	Table 10
	Solvent free	Table 11
UL 2	DMF	Table 12
Technogas AF	Acetone	Table 13
W-ECO-A	Acetone and solvent free	Table 14
W-ECO-A DMF	DMF	Table 15

6.2 Cylinders and/or bundles with reassessment to TPED

Table 2 provides the overview list of porous materials for cylinders and/or bundles with reassessment to TPED in this Technical Report, and cross-references to the respective data tables in Clause 8.

Table 2 — List of porous materials for cylinders and/or bundles with reassessment to TPED

Porous material (trading name)	Solvent	Cylinder and/or bundle	Data
AL 4	Acetone	Cylinder and bundle	Table 16
	DMF	Cylinder and bundle	Table 17
NORAL	Acetone	Cylinder and bundle	Table 18

6.3 Single cylinders and bundles that are type approved based on national regulations

Table 3 provides the overview list of porous materials for single cylinders and bundles that are type approved based on national regulations in this document, and cross-references to the respective data tables in Clause 9.

Table 3 — List of porous materials for cylinders and bundles that are type approved based on national regulations

Porous material (trading name)	Solvent	Data
AGA 2	Acetone	Table 19
AGA 2/2	DMF	Table 20
AGA 4	Acetone	Table 21
	Solvent free	Table 22
AGA H	Acetone	Table 23
AL 4	Acetone	Table 24
BOC 1	Acetone	Table 25
Heiser-DMF	DMF	Table 26
Heiser ECO	Acetone	Table 27
Heiser ECO DMF	DMF	Table 28
Heiser ECO	Solvent free	Table 29
JH-Coyne	Acetone	Table 30
Linde M 1	Acetone	Table 31
Linde M 2	DMF	Table 32
NA	Acetone	Table 33
NLH	Acetone	Table 34
NORAL	Acetone	Table 35
POR 92	Acetone	Table 36
SIAD 2	Acetone	Table 37
	DMF	Table 38
SIAD 3	DMF	Table 39
SIAD AF	Acetone	Table 40
T-200A	Acetone	Table 41

7 Data for porous materials for acetylene cylinders approved to TPED evaluation of conformity at time of manufacture

Clause 7 contains information on porous materials for pi-marked acetylene cylinders which were placed or still are on the market. Such porous materials are type tested in most cases according to EN ISO 3807, EN 1800 or ISO 3807-1. It also contains information on filling conditions for acetylene cylinder bundles in accordance with EN 12755 or EN ISO 13088:2012.

NOTE 1 According to ADR:2019, EN 1800 was used for type approvals until December 2016. ISO 3807-1 (applicable until 31 December 2020) or ISO 3807 are used at time of publication of this Technical Report for the type approval of UN-Cylinders and EN ISO 3807 is used for non-UN-Cylinders.

NOTE 2 EN 1800 and ISO 3807-1 were superseded by EN ISO 3807 in 2013. Nevertheless type approvals for the monolithic materials listed in this Technical Report were conducted according to these standards.

NOTE 3 EN 12755 was superseded by EN ISO 13088:2012. Nevertheless the filling conditions for bundles listed in this Technical Report are determined/calculated according to these standards.

Tables 4 to 15 provide data of porous materials for single cylinders and bundles with TPED evaluation of conformity. For an overview, refer to Table 1.

The following information is given for each porous material:

— the cylinder water capacity, in l, to which the filling conditions (solvent content, acetylene content, working pressure) are applicable;

— the specified solvent content, in kg/l, that the acetylene cylinder shall contain per litre water capacity in accordance with the type tests;

— the maximum acetylene content (including saturation acetylene), in kg/l, that the acetylene cylinder shall contain per litre water capacity in accordance with the type tests. Filling tolerances, especially depending on the scale, have to be taken into account to avoid overfilling.

— the working pressure (always given as gauge pressure [bar]) of the acetylene cylinder. For bundles it gives the maximum number of consecutive fillings before the bundle has to be dismantled and solvent has to be replenished in the individual cylinders.

Table 4 — A-10W ECO

General information			
Manufacturer	Worthington Cylinders GmbH, Beim Flaschenwerk 1, 3291 Kienberg bei Gaming, Austria		
Year and number of type approval or EU-Certificate	2005, 2006 BAM-05-M01		
Time of manufacture	2006 to 2013		
Type of porous material	Monolithic, asbestos-free		
Density in kg/l	0,270 ± 0,015		
Porosity in %	90,5 ± 1,5		
Maximum top clearance in mm	2		
Solvent	Acetone and solvent free		
Individual cylinders with acetone			
Cylinder water capacity l	**Solvent content** kg/l	**Acetylene content** kg/l	**Working pressure** bar
< 20	0,310	0,180	18
20 to 60	0,310	0,200	19
Individual cylinders without solvent			
Cylinder water capacity l	**Solvent content** kg/l	**Acetylene content** kg/l	**Working pressure** bar
≤ 60	—	0,020	19
Bundle cylinders based on EN 12755 or EN ISO 13088:2012			
Cylinder water capacity l	**Solvent content** kg/l	**Acetylene content** kg/l	**Maximum number of consecutive fillings**
20 to 60	0,289 to 0,331	0,180	6

Table 5 — A-10W ECO DMF

General information			
Manufacturer	Worthington Cylinders GmbH, Beim Flaschenwerk 1, 3291 Kienberg bei Gaming, Austria		
Year and number of type approval or EU-Certificate	2005, 2006, 2009 BAM-05-M02		
Time of manufacture	2006 to 2013		
Type of porous material	Monolithic, asbestos-free		
Density in kg/l	0,270 ± 0,015		
Porosity in %	90,5 ± 1,5		
Maximum top clearance in mm	2		
Solvent	DMF		
Individual cylinders with DMF			
Cylinder water capacity l	**Solvent content** kg/l	**Acetylene content** kg/l	**Working pressure** bar
40 to 60	0,400	0,209	18
Bundle cylinders based on EN 12755 or EN ISO 13088:2012			
Cylinder water capacity l	**Solvent content** kg/l	**Acetylene content** kg/l	**Maximum number of consecutive fillings**
40 to 60	0,385 to 0,410	0,188 [a]	100
[a] data taken from first TPED certificate (2005-12-23)			

Table 6 — BAF1

General information			
Manufacturer	Up to end 2018: Beijing Tianhai Industry Co. Ltd. No. 9 Tianying North Road, Chao Yang District, Beijing 100121, P.R. China From 2019 new production side: Jiangsu Tianhai Special Equipment Co., Ltd., Yulong Road, Jianbi Town, Jingkou Disctrict, Zhenjiang, Jiangsu 212006, P.R. China		
Year and number of type approval or EU-Certificate	2013, 0036-005-13 Rev.0 2017, 01 202 322/B-170141-T 2017, 01 202 322/B-170142-T 2017, 01 202 322/B-170143-T		
Time of manufacture	Since 2009		
Type of porous material	Monolithic		
Density in kg/l	≤ 0,280 kg/l		
Porosity in %	90 % to 92 %		
Maximum top clearance in mm	< 2,5 mm		
Solvent	Acetone		
Individual cylinders with acetone			
Cylinder water capacity l	**Solvent content** kg/l	**Acetylene content** kg/l	**Working pressure** bar
3,4 to 50	0,330	0,180	17

Table 7 — NORAL 2

General information	
Manufacturer	AIR LIQUIDE – ALFI IM – ZI Chemin de la Plaine, 89500 Villeneuve sur Yonne, France
Year and number of type approval or EU-Certificate [a]	— 3,35 l to 50 l (SI and PTC) [b] acetone: French agreement "Arrêté of 22/04/2003 to May 2003"; — From June 2003 to May 2013: — ASAP 03/B/0034 (for a water capacity of 3,35 l); — ASAP 03/B/0036 (for a water capacity of 5,8 l to 50 l). — June 2013: APAVE — 5,8 l to 50 l acetone n°P00220130614182020; — September 2013: APAVE — 3,35 l acetone n°P00220130918121314
Time of manufacture	Since 2003
Type of porous material	Monolithic, asbestos-free
Density in kg/l	0,29 ± 0,015
Porosity in %	90,5 ± 2,5
Maximum top clearance in mm	1 (for a water capacity of < 20 l); 2 (for a water capacity of > 20 l and < 40 l); 2 (for a water capacity of > 40 l)
Solvent	Acetone

Individual cylinders with acetone			
Cylinder water capacity l	**Solvent content** kg/l	**Acetylene content** kg/l	**Working pressure** bar
3,35	0,310	0,171	18
5,8 to 50	0,292	0,188	18

Bundle cylinders based on EN 12755 or EN ISO 13088:2012			
Cylinder water capacity l	**Solvent content** kg/l	**Acetylene content** kg/l	**Maximum number of consecutive fillings**
41,5 to 50	0,273 to 0,311	0,169	6

[a] Certificates could not be checked, but over the years the use has been proven to be safe. In this situation refer to the data (mainly TARE A/S) marked on the shoulder.

[b] The initial agreements of the French porous materials have been delivered on the basis of a data pair "porous material/cylinder manufacturer". Therefore, the name of the cylinder manufacturer has been detailed: Schneider Industrie (SI), Pecquet Tesson (PTC).