



DPC: 24/30497911 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

Date: 10 October 2024

Origin: European

Latest date for receipt of comments: 03 December 2024

Project No. 2024/02166

Responsible committee: LBI/1/1 Laboratory furniture and fittings

Interested committees:

Title: Draft BS EN 14056-1 BS Laboratory furniture - Recommendations for design and installation. Part 1: General.

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

WARNING: THIS IS A DRAFT AND MUST NOT BE REGARDED OR USED AS A BRITISH STANDARD. THIS DRAFT IS NOT CURRENT BEYOND 03 December 2024

This draft is issued to allow comments from interested parties; all comments will be given consideration prior to publication. No acknowledgement will normally be sent. **See overleaf for information on the submission of comments.**

No copying is allowed, in any form, without prior written permission from BSI except as permitted under the Copyright, Designs and Patent Act 1988 or for circulation within a nominating organization for briefing purposes. Electronic circulation is limited to dissemination by e-mail within such an organization by committee members.

Further copies of this draft may be purchased from BSI Shop <http://shop.bsigroup.com> or from BSI Customer Services, Tel: +44(0) 20 8996 9001 or email cservices@bsigroup.com. British, International and foreign standards are also available from BSI Customer Services.

Information on the co-operating organizations represented on the committees referenced above may be obtained from <https://standardsdevelopment.bsigroup.com/>.

Responsible Committee Secretary: Ms Ellena Cullum (BSI)

Direct tel:

E-mail: ellena.cullum@bsigroup.com

Full document details: 24/30497911 DC

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
------------------	------------------------

1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

English Version

Laboratory furniture - Recommendations for design and installation - Part 1: General

Mobilier de laboratoire - Recommandations de conception et d'installation - Partie 1 : Généralités

Laboreinrichtungen - Empfehlungen für Anordnung und Montage - Teil 1: Allgemeines

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 332.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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, Türkiye and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

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

Contents	Page
European foreword	4
Introduction	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions.....	6
4 Examples of typical worktop and support structure assemblies for laboratory benches.....	10
4.1 Fixed pedestal assembly	10
4.2 Leg frame support structures.....	11
4.2.1 Cantilever T-frame	11
4.2.2 C-frame.....	11
4.2.3 H-frame and four-leg frame (with or without lower bracing rail)	11
5 Examples of typical services distribution carriers for laboratory benches	12
5.1 Integrated channel services distribution.....	12
5.2 Bench mounted services carriers	13
5.3 Wall and floor fixed services carriers	13
5.4 Overhead services carriers	14
6 Examples of typical under-bench storage units.....	14
7 Illustrations with typical characteristics of the different combinations of bench types with different services distribution methods.....	15
8 Dimensions.....	24
8.1 General.....	24
8.2 Heights and depths.....	25
8.2.1 Working height of the worktop	25
8.2.2 Shelves	25
8.3 Depths	25
8.3.1 General.....	25
9 Design considerations for laboratory benches and installation	25
9.1 General considerations.....	25
9.2 Specific considerations for chemistry laboratories	27
9.3 Specific considerations for biology laboratories.....	27
9.4 Specific considerations for service outlets.....	27
9.5 Digitalisation	27
10 Space requirements and dimensions	27
11 User guide	28
12 Marking and labelling	29
13 Documentation	29
Annex A (normative) Recommendations for the safe and effective delivery, offloading, distribution and installation of a laboratory bench.....	30

A.1	Delivery to site and offloading.....	30
A.1.1	Access to the building.....	30
A.1.2	Delivery vehicle(s)	30
A.1.3	Access to the offloading point	30
A.1.4	External lifting of materials	30
A.2	Distribution	30
A.2.1	Internal access.....	30
A.2.2	Door openings, corridors, gangways, etc.	30
A.3	Conditions required for safe and ergonomic installation.....	31
A.3.1	Security.....	31
A.3.2	Storage.....	31
A.3.3	Internal temperatures and humidity	31
A.3.4	Lighting and electrical supply	31
A.3.5	Internal lifting of materials.....	31
A.3.6	Waste disposal and recycling.....	31
A.3.7	Welfare activities.....	31
A.4	Installations.....	31
A.4.1	Obstruction by others	31
A.4.2	Main mechanical and electrical supply	31
A.5	Inspection, acceptance and handover.....	32
A.5.1	Inspection.....	32
A.5.2	Rectification of faults listed	32
A.5.3	Final acceptance inspection.....	32
A.5.4	Acceptance	32
Annex B (normative)	Guideline and overview of services outlets for laboratory benches....	33
B.1	Services distribution areas for laboratory benches	33
B.2	Services connections	33
B.3	Services outlets.....	34
B.3.1	General	34
B.3.2	Gases and vacuum	35
B.3.3	Electrical sockets	36
B.3.4	Communication ports.....	36
B.3.5	Decentralised services supply	36
Annex C (normative)	Recommendations for the documentation of a laboratory bench installation.....	37
Bibliography		39

European foreword

This document (prEN 14056-1:2024) has been prepared by Technical Committee CEN/TC 332 “Laboratory equipment”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 14056:2003.

This document includes the following significant technical changes with respect to EN 14056:2003:

- a) fundamental revision of the document to give recommendations for design and installation, moving requirements and recommendations on separate parts of laboratory benches in future further parts of the standard series.

Introduction

The revision of EN 14056:2003 is the first step towards the establishment of an EN 14056 standard series. This document is now Part 1 of this series, describing various combinations and general requirements, while further details regarding the single parts will be provided within the following parts:

- Part 2: Table frames
- Part 3: Worktops
- Part 4: Storage units
- Part 5: Services distribution carriers
- Part 6: Services supply (not final yet, will possibly be integrated into part 5)

1 Scope

This document is applicable to biology, chemistry and physics laboratories where research, preparative, analytical, process activities take place and which can involve work with hazardous substances, including higher education (college and university teaching and post-graduate research).

This document does not cover the requirements of schools, i.e. pre college/pre-university (refer to EN 13150), or highly specialist laboratories which need very specific, bespoke solutions to enable them to function.

This document specifies requirements for installation and design of laboratory benches, associated storage units, and for the provision and connection of services integral or delivered to the laboratory benches. This document gives guidelines for all parties involved in the planning, design, manufacture, installation, testing of a new laboratory or in the refurbishment of an existing laboratory.

For safety storage cabinets for flammable liquids EN 14470-1 and for pressurized gas cylinders EN 14470-2 applies.

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.

EN 13792, *Colour coding of taps and valves for use in laboratories*

3 Terms and definitions

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

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

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

3.1

laboratory bench

assembly of individual components, combined to create a facility within a laboratory to enable laboratory work

Note 1 to entry: A laboratory bench may include but not limited to a worktop, leg frame support structure, shelving, storage units, worktop mounted service outlets (gases, water, electricity, IT) a services spine and services provision. Services may also be delivered via a separate overhead delivery system.

Note 2 to entry: A laboratory bench may be fixed to the building structure (e.g. wall or floor) or may be free-standing (not fixed to the building structure).

3.1.1

total depth

d_1

horizontal distance between front edge and rear edge of the laboratory bench (perpendicular to the length w_1) including possible areas for services supply and distribution

Note 1 to entry: The total depth is applicable for single and double-sided assemblies.

3.1.2**total length** w_1

horizontal distance from the extreme left to the extreme right end of the laboratory bench

3.1.3**single-sided laboratory bench**

laboratory bench for single sided use, usually fixed to a wall

3.1.4**island bench**

laboratory bench, which is not fixed to a wall and is a stand-alone assembly

3.1.5**peninsula bench**

laboratory bench, which may be attached, usually at right angles to a wall or wall bench

3.1.6**double-sided laboratory bench**either *island bench* (3.1.4) or *peninsula bench* (3.1.5)**3.2****storage unit**

cupboard, drawer packs, tray units or basket units which are located under the worktop fixed in place or moveable

3.2.1**plinth recess** d_7

horizontal distance between plinth vertical front and worktop vertical front edge

3.2.2**plinth height****castor height** h_8

vertical distance from the floor to the lower edge of the storage unit body

3.2.3**clearance** h_9

vertical clear distance between the top of a moveable storage unit and the underside of a worktop support frame or worktop where there is no frame

3.3**worktop**

horizontal surface to enable laboratory work

3.3.1**working height of the worktop** h_1

vertical distance between floor and worktop surface

3.3.2

depth of the worktop

d_2

horizontal distance between front edge and rear edge of the worktop

3.3.3

worktop length

w_2

horizontal distance between the left and right edge of the worktop

3.4

services distribution carrier

support structure by which services such as gases, water, electricity and IT are distributed to services outlets which comprise part of the lab bench assembly (spine, duct, bridge, void, channel)

3.4.1

height of the services distribution carrier

h_3

vertical distance between lower and upper edge of the services distribution carrier

3.4.2

height of the highest shelf

h_5

vertical distance between floor and top of a shelf

3.4.3

depth of the shelf

d_5

horizontal distance between front edge and rear edge of the shelf

3.4.4

lower edge of services distribution carrier

h_4

vertical distance between the floor and the lower edge of the services carrier - this height describes the clear height under the services distribution carrier, where applicable

3.4.5

depth of the services distribution carrier

d_3

horizontal distance between front edge and rear edge of the services distribution carrier

3.4.6

length of the services distribution carrier

w_3

horizontal distance from the left to the right edge of the services distribution carrier

3.4.7

clearance height below the services distribution carrier

vertical distance between the upper edge of the work surface and the lower edge of the services distribution carrier included of the services outlets

Note 1 to entry: This height describes the useful height under the services distribution carrier.

3.4.8**distance below the lowest services outlet above the floor** h_7

vertical distance between the floor and the lower edge of the services outlet

Note 1 to entry: This height describes the clear height under the services outlet.

3.4.9**distance below the lowest services outlet above the worktop** h_{11}

vertical distance between the worktop and the lower edge of the services outlet

Note 1 to entry: This height describes the clear height under the services outlet.

3.5**services outlet**

outlet to which cabling or piping connects to enable users to access services

Note 1 to entry: Examples for services outlets are electrical or IT sockets and gases or water taps.

3.6**useable space on the worktop**

clear space on the worktop free of obstructions, such as services outlets, service carriers, shelves etc.

3.6.1**height of useable space on the worktop** h_6

useable vertical distance between the surface of the worktop and the underside of the lowest component (e.g. shelf, services distribution carrier) located above the work surface

3.6.2**depth of the useable space on the worktop** d_6

useable horizontal distance between front edge and rear edge of the worktop, minus space required for service outlets, services carriers, front or rear edge (e.g. upstand or marine edge)

3.6.3**length of the useable space on the worktop** w_6

useable horizontal distance between the left and right edge of the worktop, minus space required for service outlets, services carriers, edge (e.g. upstand or marine edge)

3.7**useable space below the worktop**

clear space below the worktop free of obstructions, such as installation frames etc.

3.7.1**height of useable space below the worktop** h_{10}

useable vertical distance between the bottom of the worktop and the floor

3.7.2

depth of the useable space below the worktop

d_{10}

useable horizontal distance between front edge of the worktop and rear abutment (e.g. wall, support structure, cover panel)

3.7.3

length of the useable space below the worktop

w_{10}

useable horizontal distance between the left and right abutments (e.g. walls, storage units or support structures)

3.8

moveable

ability to relocate a laboratory bench or component of the same, which can involve some disassembly/unfastening of components and means of transportation (e.g. trolleys, skids, lifting equipment)

3.9

mobile

ability to relocate a laboratory bench or component of the same freely and easily with little or no disassembly/unfastening or requirement for means of transportation (e.g. lightweight components, storage units and laboratory bench assemblies which include casters)

4 Examples of typical worktop and support structure assemblies for laboratory benches

4.1 Fixed pedestal assembly

A fixed pedestal assembly utilizes floor mounted under-bench storage units which are fixed in under the worktop and which provide the support structure for the worktop, see Figure 1. This system is not designed to be quickly and easily reconfigured.

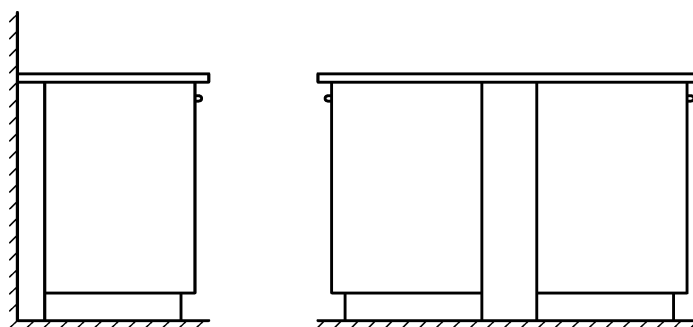


Figure 1 — Schematic depiction of fixed pedestal assembly

4.2 Leg frame support structures

4.2.1 Cantilever T-frame

A T-frame support structure is usually fixed to a wall or to the floor, see Figure 2. The leg frame provides support for the worktop which is independent of under-bench storage units. This allows the under-bench storage units to be moved and repositioned. The storage units can be suspended (for cleaning under and for maintenance purposes, access to services etc.) from the underside of the support structure or push under either on castors or glides.

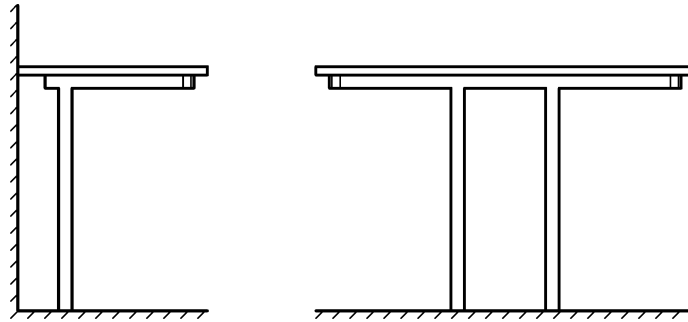


Figure 2 — Schematic depiction of cantilever T-frame assembly

4.2.2 C-frame

A C-frame support structure functions like a T-frame but includes a floor-level horizontal foot, see Figure 3. The frame can be fixed to a wall or floor for stability but can also be free-standing or mounted on castors. This allows the under-bench storage units to be moved and repositioned. Where not fixed to a wall or floor, the whole bench assembly can also be moved. The storage units can be suspended (for cleaning under and for maintenance purposes, access to services etc.) from the underside of the support structure or push under on castors or glides.

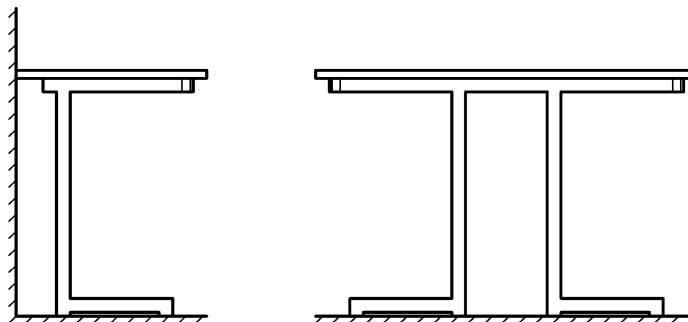


Figure 3 — Schematic depiction of C-frame assembly

4.2.3 H-frame and four-leg frame (with or without lower bracing rail)

An H-frame and four-leg frame support structure functions like a C-frame but includes an additional front vertical support, see Figures 4 and 5. This is provided where there is a requirement for heavier load bearing capability. The frame can be fixed to a wall for stability but is rarely floor fixed and can also be free-standing or mounted on castors. This allows the under-bench storage units to be moved and repositioned. Where not fixed to a wall, the whole assembly can be moved. The storage units can be suspended (for cleaning under and for maintenance purposes, access to services etc.) from the underside of the support structure or push under on castors or glides.