



SLOVENSKI STANDARD

SIST EN 14056:2003

01-junij-2003

Uvodna besedila in opombe, ki so del tega standarda, so vključeni v ta slovenski standard.

Laboratory furniture - Recommendations for design and installation

Laboreinrichtungen - Empfehlungen für Anordnung und Montage

Mobilier de laboratoire - Recommandations de conception et d'installation

Ta slovenski standard je istoveten z: EN 14056:2003

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ICS 71.040.10

English version

Laboratory furniture - Recommendations for design and installation

Mobilier de laboratoire - Recommandations de conception
et d'installation

Laboreinrichtungen - Empfehlungen für Anordnung und
Montage

This European Standard was approved by CEN on 2 January 2003.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This document (EN 14056:2003) has been prepared by Technical Committee CEN/TC 332 "Laboratory equipment", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by October 2003, and conflicting national standards shall be withdrawn at the latest by October 2003.

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

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1 Scope

This European Standard gives recommendations for the installation and design of laboratory benches, storage units and services and their connections and fittings. The recommendations may be used by all parties involved in the design, manufacture, installation and use of a new laboratory or in the refitting of an old laboratory.

NOTE 1. Attention is drawn to national regulations in respect of electricity, water and gas supply.

NOTE 2. Attention is drawn to building regulations and requirements, e.g. for floor loading.

NOTE 3. In the use of laboratory equipment and furniture, risk assessment and appropriate precautions are the responsibility of the organization running the laboratory and the laboratory user.

NOTE 4. Attention is drawn to any national regulations in respect of transfer of liability during the building and installation of laboratories.

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 (including amendments).

EN 12469, *Biotechnology — Performance criteria for microbiological safety cabinets.*

EN 13150, *Workbenches for laboratories — Dimensions, safety requirements and test methods.* EN 61010-1, *Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 1: General requirements (IEC 61010-1:2001).* EN 14175-2, *Fume cupboards — Part 2: Safety and performance requirements.*

3 Storage and handling

Prior to installation, furniture should be stored in a secure space and steps should be taken to minimise the risk of damage or deterioration. Care should be taken in protecting furniture stored or installed in the laboratory before and during decoration and fitting out of the laboratory. Information given by the manufacturer should be followed.

The adequacy of access to the laboratory and any temporary storage space should be checked. In difficult cases, scaffolded access through windows may be necessary. Particular attention should be paid to the following:

- a) door dimensions;
- b) stairways and landings;
- c) elevator load and dimensions;
- d) corridor dimensions, changes of corridor direction and potential obstructions.

Information should be exchanged between the furniture supplier and the furniture installer about the space needed for moving the furniture into the laboratory.

4 Laboratory conditions for installation

The furniture should not be installed if the air temperature or relative humidity in the laboratory to receive it is significantly different from that of its storage space.

If furniture has to be installed before new building work has dried out, heating and dehumidification should be applied slowly over a number of days. Dehumidifiers should be used in preference to heaters. If heating only is applied, good ventilation is essential.

Where mobile and relocatable furniture is to be installed, all surfaces, including those to be concealed by the furniture, should be decorated before installation. This minimise redecoration and making good at subsequent layout changes.

It is recommended to complete decoration and floor coverings as far as possible before furniture is installed. Where furniture has already been installed, it should be protected effectively from following trades prior to handover.

5 Fixing floor- and wall-mounted furniture

Fixed furniture items should be fixed to the floor or supporting wall by the method recommended by the manufacturer.

Workbenches shall comply with EN 13150.

NOTE European standards for laboratory storage units and fume cupboards are in development.

Floor-mounted bench substructures of the cupboard pedestal or leg frame type should include a provision for levelling the worktop. A similar provision should be included with wall-mounted furniture. Worktops should be provided with upstands in order that the junction with the wall is located above the general work surface.

If floor covering is to be covered to the furniture, forming a continuous upstand to facilitate cleaning and decontamination, fixed floor furniture may need to be installed before floor covering is laid.

When fixing laboratory furniture, care should be taken to facilitate cleaning.

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6 Placing mobile and relocatable furniture

Mobile furniture should be fitted with a locking device and relocatable furniture should be fitted with a levelling device.

Having placed mobile and relocatable furniture in the required positions, these devices should be adjusted to achieve a neat level and line of all components in grouped arrangements. Components should be fixed in accordance with the manufacturer's instructions.

7 Height adjustable furniture

Height adjustable furniture should have a means of adjustment, levelling and locking.

8 Services distribution zone in furniture

Laboratory furniture layouts should include 'spine' zones for services distribution.

Generally a building service distribution run should not be located in the laboratory furniture spine if it continues on to service other areas of the building.

Services should be grouped and coded under the following types:

- a) electrical: lighting and power;
- b) communications;

- c) water;
- d) steam: steam and condensate;
- e) each gas;
- f) drainage.

NOTE Attention is drawn to national regulations or standards that may apply.

Pipes for cold water and steam should have a thermal insulation. All pipes should be fixed in such a way that their deformation during use does not occur.

9 Services input

The location of building services supply connection points depends on the furniture configuration. Electrical connections in the floor should be avoided.

NOTE Floor connections may impose severe restrictions on the rearrangement of services and furniture, unless the laboratory has a raised access floor, duct, service void or some similar arrangement.

Wall connections should be easily accessible.

The provision of a services bollard should be considered where equipment is mobile.

Consideration should be given to the provision of the following:

- a) access space for service entry, connection and maintenance;
- b) means of isolating branch or bench from supply. Ideally, isolation and protection points should be located adjacent to the exit from the laboratory. Overhead, multi-user or teaching environments may necessitate alternatives. Siting an interface at each bench or group offers the advantage of local isolation which does not disturb nearby benches;
- c) protection for personnel, e.g. by suitably rated residual current devices or circuit breakers, 'knock-off' button, gas or steam valves, pressure-reducing valves.

Separation facilities to be considered for individual services can be as follows:

- 1) Ventilation. No special facilities;
- 2) Water. Isolation with a valve or stopcock of suitable materials;
- 3) Waste. Isolation by siphon or dilution chamber;
- 4) Steam. Isolation with a valve or stopcock of suitable materials;
- 5) Gases: general. Isolation and pressure reduction to a level safe for use at bench or fume cupboard outlets. Pressure reduction should occur as near as possible to the source of supply within the laboratory;
- 6) Gases: combustible. Main stopcock control accessible at exit door of laboratory;
- 7) Gases: special. Isolation and pressure reduction to a level suitable for the apparatus in use. Pressure reduction should occur as near as possible to the source of supply within the laboratory. Flow limitation is recommended for hazardous gases. For hazardous gases, it is also recommended that the outlet from the safety valve and diaphragm on the pressure reducing valve leads to a safe place outside the building. Final filtration of high purity gases may be provided for the protection of the apparatus served;

8) Electrical. Means of isolation and protection should be provided in accordance with appropriate IEC standards. Emergency tripping facilities should be provided by means of stop push buttons or on load switches to control all bench outlets from at least one position within the laboratory. All bench outlets and certain fixed equipment should be protected;

NOTE Attention is drawn to national regulations.

9) Communications. With regard to communication and data transmission lines, electromagnetic compatibility should be observed.

10 Installing services

Allowance should be made for a degree of misalignment between the location of building services terminations and the furniture that relates to them.

For electrical power and telecommunications, tolerance is provided by the flexibility of cabling and wiring. If the situation demands, conduiting cabling should be considered with piped services.

Fixed furniture requires a different design approach from that of mobile and relocatable furniture.

Service connections for fixed furniture may be either:

- a) a rigid hand crafted junction pipe or conduit formed to take up any discrepancy between the location of building site services terminations in furniture; or
- b) a flexible junction pipe or conduit adjusted to take up any discrepancy as above.

For mobile furniture assemblies, the use of flexible service connections is essential to allow for movement and to facilitate relocation. The length of flexible service connections should be related to the grid of services outlets on the building site where such a grid is provided for future relocation and reconnection of furniture and equipment.

11 Service outlets

11.1 Bench level outlets

11.1.1 General

Bench outlets should be intended as connection points for apparatus mounted on or adjacent to benches, or for the delivery and disposal of fluids and gases immediately adjacent to the working area.

Modular layout should be considered for both safety and convenience. If more connections are required, multiple outlets should be used.

Electrical outlets should be positioned so as to prevent penetration by liquids.

Each water or steam outlet, except for emergency showers and eyewashes, should have an associated drip-cup, bowl or sink.

There should be no horizontal steam outlets.

Bench outlets should be designed and fitted to withstand normal wear and tear within a laboratory and should be designed with the following in mind:

- a) fixings should be rigid and capable of withstanding the force required for frequent connection and reconnection and any accidental stress caused by movement of apparatus whilst still connected to the outlets. Their design should make rigid fixing easy;