



SLOVENSKI STANDARD
SIST EN 17736:2023

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Razvedrilna tehnologija - Specifikacije za projektiranje in izdelavo aluminijastih odrov in okvirjev

Entertainment technology - Specifications for design and manufacture of aluminium stage decks and frames

Veranstaltungstechnik - Anforderungen an die Bemessung und Herstellung von Podesten und Zargen aus Aluminium

Technologies du spectacle - Spécifications pour la conception et la fabrication de praticables de scène en aluminium

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Entertainment technology - Specifications for design and manufacture of aluminium stage decks and frames

Technologies du spectacle - Spécifications pour la conception et la fabrication de praticables de scène en aluminium

Veranstaltungstechnik - Anforderungen an die Bemessung und Herstellung von Podesten und Zargen aus Aluminium

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EN 17736:2022 (E)

European foreword

This document (EN 17736:2022) has been prepared by Technical Committee CEN/TC 433 “Entertainment Technology - Machinery, equipment and installations”, 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of an identical text or by endorsement, at the latest by May 2023, and conflicting national standards shall be withdrawn at the latest by May 2023.

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 is a type C standard as specified in EN ISO 12100.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: 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 the United Kingdom.

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Introduction

The object of this document is to achieve a minimum level of quality in the design and manufacture of aluminium stage decks and frames in the entertainment industry.

Entertainment technology is an interdisciplinary field with specific technology and unique safety requirements. Entertainment technology is used in places of assembly, staging and production areas for events and theatrical productions. Such locations include but are not limited to theatres, multi-purpose halls, exhibition halls, film-, television-, photography- and radio-studios as well as facilities in concert halls, museums, schools, bars, discotheques, open-air stages and other places for shows and events. In some cases, atypical non-performance places are also used.

This document has been developed based on the previous requirements of DIN 15921:2015-09.

This document has been drawn up according to past experience and risk analysis.

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EN 17736:2022 (E)**1 Scope**

This document specifies the requirements for the design and manufacture of aluminium decks and frames used in the entertainment industry.

This document does not apply to scaffolding used as substructures in stage and studio environments in accordance with the EN 12810 series and the EN 12811 series or fairground rides in accordance with EN 13814-1.

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 1090 (all parts), *Execution of steel structures and aluminium structures*

EN 1990, *Eurocode - Basis of structural design*

EN 1991 (all parts), *Eurocode 1: Actions on structures*

EN 1993 (all parts), *Eurocode 3: Design of steel structures*

EN 1995 (all parts), *Eurocode 5: Design of timber structures*

EN 1999 (all parts), *Eurocode 9 - Design of aluminium structures*

EN 10204, *Metallic products - Types of inspection documents*

EN 17115, *Entertainment technology - Specifications for design and manufacture of aluminium and steel trusses*

EN 17206, *Entertainment technology - Machinery for stages and other production areas - Safety requirements and inspections*

EN ISO 3834 (all parts), *Quality requirements for fusion welding of metallic materials (ISO 3834 (all parts))*

EN ISO 9606-1, *Qualification testing of welders - Fusion welding - Part 1: Steels (ISO 9606-1)*

EN ISO 9606-2, *Qualification test of welders - Fusion welding - Part 2: Aluminium and aluminium alloys (ISO 9606-2)*

EN IEC/IEEE 82079-1, *Preparation of information for use (instructions for use) of products - Part 1: Principles and general requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 17115 and EN 17206 and the following apply.

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

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

3.1**stage deck**

frame construction predominantly made from aluminium profiles with a load bearing infill

3.2**frame**

closed frame construction made of aluminium profiles; depending on model with mounting for legs and/or substructure (without load bearing infill)

3.3**substructure**

structure, independently placed on the market, intended to support decks or frames

EXAMPLE scaffolding, lattice beams, truss.

3.4**plug leg**

detachable straight profile generally mounted in the corners of a deck or frame and perpendicular to the said deck or frame

3.5**foldable leg**

generally non-detachable straight profile with a hinging action mounted in the corners of a deck or frame

3.6**scissor leg**

generally non-detachable profiles with a scissor-like action mounted on the bottom side of a deck or frame

3.7**guardrail**

physical barrier to protect persons against falling off raised areas

3.8**load bearing infill**

load bearing structure, for example timber, metal, polymer, attached to the frame

3.9**toeboard**

board placed around the outer edges of stage decks to prevent objects from falling off the deck when required

4 List of significant hazards

Table 1 contains some examples of typical hazards associated with the application of stage decks and frames.

Table 1 — List of significant hazards

	Hazards	Relevant clause(s) in this document
1	Mechanical hazards due to:	
1.1	Inadequate mechanical strength	5
1.2	Instability	5
1.3	Gravity and stability	5
1.4	Height from the ground	7.3
1.5	Slippery surface	6.2.3, 7.1, 7.2
1.6	Surface geometry	5, 6
1.7	Potential energy	5, 8
1.8	Sharp edges	6.2.3
1.9	Trip hazard	6.2.3
1.10	Transport	5, 8, 10
2	Electrical hazards	
2.1	Contact of persons with parts which have become live under faulty conditions	8, 10
3	Thermal hazards	
3.1	Objects or materials with a high or low temperature	5, 10
4	Noise hazards	
4.1	Mechanical noise	10
5	Vibration hazards	
5.1	Loosening of components due to dynamic actions	5, 10
6	Ergonomic hazards	
6.1	Manual handling	5, 10
6.2	Inadequate working light level	10
6.3	Constricted room during assembly	8, 10
7	Hazards associated with the environment in which the product is used	
7.1	Weather conditions (temperature, wind, rain, ice, lightning, etc.)	6.2.3, 10
7.2	Humidity	6.2, 10
7.3	Corrosion	6.2, 10
7.4	Seismic activity	10

5 Engineering

5.1 General

Stage decks, frames and their accessories shall be engineered in accordance with this document.

5.2 Design

The design of stage decks, frames and their accessories shall be in accordance with EN 1990, the relevant parts of the EN 1991 series, EN 1993 series, EN 1995 series and EN 1999 series and the related national application documents as well as EN 1090-2 and EN 1090-3.

Physical testing may be used to support calculation in accordance with the relevant standards. Physical testing shall not be used to replace structural calculation.

5.3 Analysis

5.3.1 General

Analysis shall include but not be limited to the following:

- a) influence of height and type of supports (e.g. legs, scissors, etc.);
- b) supporting substructure;
- c) connection to supports and supporting substructure;
- d) interaction between stage decks and frames with supporting substructure;
- e) influence of adjacent stage decks and frames;
- f) allowable deflection;
- g) welding process.

5.3.2 Load assumptions

5.3.2.1 General

Analysis shall prove the following minimum load assumptions.

5.3.2.2 Uniformly distributed load

A minimum uniformly distributed vertical load of 5 kN/m² shall be assumed.

5.3.2.3 Point load

A minimum single vertical point load of 1,5 kN on an area of 2 500 mm² in a square or round shape shall be assumed in all instances.

For deck surfaces exceeding the dimensions of 1 000 mm in any direction, vertical point loads of 1,5 kN shall be assumed for every additional started meter. The centers of the point loads shall have a maximum distance of 500 mm to each other.

The point load shall be assumed at the most unfavourable position of the load bearing infill.

NOTE This is necessary to ensure that the load bearing infill is not affected by punching shear or bending of any supporting profile caused by the point load.