



**SLOVENSKI STANDARD**  
**SIST EN 1147:2010**

**01-julij-2010**

**Nadomešča:**  
**SIST EN 1147:2001**

---

**Prenosne lestve za gasilce**

Portable ladders for fire service use

Tragbare Leitern für die Verwendung bei der Feuerwehr

Echelles portables à l'usage des services d'incendie

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

**Ta slovenski standard je istoveten z: ~~SIST EN 1147~~ EN 1147:2010**

<https://standards.iteh.ai/catalog/standards/sist/0697334a-ae1f-4142-970b-1a4881549e1/sist-en-1147-2010>

---

**ICS:**

13.220.10	Gašenje požara	Fire-fighting
97.145	Lestve	Ladders

**SIST EN 1147:2010**

**en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 1147:2010

<https://standards.iteh.ai/catalog/standards/sist/0697334a-ae1f-4142-970b-1a4ff81549e1/sist-en-1147-2010>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 1147**

May 2010

ICS 13.220.10

Supersedes EN 1147:2000

English Version

## Portable ladders for fire service use

Échelles portables à l'usage des services d'incendie

Tragbare Leitern für die Verwendung bei der Feuerwehr

This European Standard was approved by CEN on 29 April 2010.

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 CEN 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 CEN 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

(standards.iteh.ai)

SIST EN 1147:2010

<https://standards.iteh.ai/catalog/standards/sist/0697334a-ae1f-4142-970b-1a4ff81549e1/sist-en-1147-2010>



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

## Contents

Page

Foreword.....	4
Introduction .....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions .....	6
4 Categorization .....	8
5 Dimensions and total masses .....	9
5.1 Length .....	9
5.2 Width between stiles .....	9
5.3 Mass .....	9
6 Rungs .....	9
7 Extending ladder requirements .....	11
7.1 Force .....	11
7.2 Lines .....	11
7.3 Cables .....	11
7.4 Additional safety requirements .....	11
7.5 Pawls .....	11
8 Fittings .....	11
8.1 Hooks .....	11
8.2 Feet .....	12
8.3 Wheels .....	12
9 Stabilizing means.....	12
10 Poles .....	12
11 Materials and finishes .....	12
12 Marking .....	13
13 Performance requirements .....	14
13.1 Deflection – All ladders .....	14
13.2 Deflection – Compulsory pole .....	15
13.3 Other tests .....	15
14 General test parameters.....	15
<b>Annex A (normative) Deflection test: applicable to all ladders not covered by Annex B except hook ladders (non-destructive) .....</b>	<b>17</b>
<b>Annex B (normative) Deflection test: applicable to 3-person compulsory pole ladder (non-destructive).....</b>	<b>20</b>
<b>Annex C (normative) Rung torque test: all ladders (non-destructive) .....</b>	<b>23</b>
<b>Annex D (normative) Pole test (non-destructive) .....</b>	<b>24</b>
<b>Annex E (normative) Horizontal test: applicable to all ladders not covered by Annex F except hook ladders (destructive).....</b>	<b>25</b>
<b>Annex F (normative) Horizontal test: applicable to 3-person compulsory pole ladder (destructive) .....</b>	<b>26</b>
<b>Annex G (normative) Pawl test: applicable to all extension ladders (destructive) .....</b>	<b>27</b>

<b>Annex H</b> (normative) <b>Rescue ladder rung test: applicable to all rescue ladders (destructive)</b> .....	<b>28</b>
<b>Annex I</b> (normative) <b>Access ladder rung test: applicable to all access ladders (destructive)</b> .....	<b>29</b>
<b>Annex J</b> (normative) <b>Hook rung and ladder integrity test: for tip-loaded hooks (destructive)</b> .....	<b>30</b>
<b>Annex K</b> (normative) <b>Hook rung and ladder integrity test: for mid-loaded hooks (destructive)</b> .....	<b>31</b>
<b>Annex L</b> (normative) <b>Foot side strength test: ground standing ladders (destructive)</b> .....	<b>32</b>
<b>Annex M</b> (informative) <b>Recommendations for test frequency, repair, servicing and design considerations</b> .....	<b>33</b>
<b>M.1</b> <b>Inspection and maintenance</b> .....	<b>33</b>
<b>M.2</b> <b>Non-destructive test schedule</b> .....	<b>33</b>
<b>M.3</b> <b>Design</b> .....	<b>34</b>
<b>Annex N</b> (informative) <b>Information and recommendations for user safety</b> .....	<b>35</b>
<b>Annex O</b> (informative) <b>A-deviations</b> .....	<b>36</b>
<b>Bibliography</b> .....	<b>37</b>

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 1147:2010](https://standards.iteh.ai/catalog/standards/sist/0697334a-ae1f-4142-970b-1a4ff81549e1/sist-en-1147-2010)

<https://standards.iteh.ai/catalog/standards/sist/0697334a-ae1f-4142-970b-1a4ff81549e1/sist-en-1147-2010>

**EN 1147:2010 (E)****Foreword**

This document (EN 1147:2010) has been prepared by Technical Committee CEN/TC 192 “Fire service equipment”, 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 November 2010, and conflicting national standards shall be withdrawn at the latest by November 2010.

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

This document supersedes EN 1147:2000.

Annexes A, B, C, D, E, F, G, H, I, J, K and L are normative; Annexes M, N and O are informative.

This European Standard contains A-deviations referring to Clauses 6 and 9.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

SIST EN 1147:2010

<https://standards.iteh.ai/catalog/standards/sist/0697334a-ae1f-4142-970b-1a4ff81549e1/sist-en-1147-2010>

## Introduction

This European Standard is based on the performance of portable fire and rescue service ladders in normal use and includes safety requirements. A safety factor of the order of 3:1 has been used and the mass of a firefighter including personal equipment and breathing apparatus has been taken as 108 kg.

The standard sets out minimum and/or maximum values within which the customer may specify his own requirements.

In preparing this standard it has been recognized that the operational use of portable ladders varies throughout Europe.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 1147:2010](https://standards.iteh.ai/catalog/standards/sist/0697334a-ae1f-4142-970b-1a4ff81549e1/sist-en-1147-2010)

<https://standards.iteh.ai/catalog/standards/sist/0697334a-ae1f-4142-970b-1a4ff81549e1/sist-en-1147-2010>

**EN 1147:2010 (E)****1 Scope**

This European Standard specifies requirements, test methods and performance criteria for portable ladders for fire and rescue service use and associated purposes.

The tests in this European Standard are type tests and not periodical tests.

Non-portable ladders for fire and rescue service use are excluded from this standard.

NOTE For ladders for other uses see EN 131 (all parts).

**2 Normative references**

The following referenced documents are indispensable for the application 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 131-2:1993, *Ladders — Requirements, testing, marking*

**3 Terms and definitions**

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

**3.1 access ladder**

ladder designed for gaining access

NOTE Access ladders are not recommended for rescue by carry-down or carry-up.

**3.2 angle of pitch**

angle between the horizontal plane and the underside of the stiles of the ladder in use

**3.3 cable**

wire rope for mechanically extending and housing an extension ladder

**3.4 carry-down and carry-up**

lifting of the whole weight of another person

**3.5 compulsory pole ladder**

ladder where the use of poles to support the ladder is mandatory

**3.6 distance between rungs**

distance measured in the middle line between the stiles from the upper edge of a rung to the upper edge of an adjacent rung

**3.7 extending ladder**

ladder consisting of two or more sliding sections



**3.8****extending line**

rope for manually extending and housing extending ladder sections

**3.9****foot, anti-skid device**

device fitted to the bottom of ladders to prevent slipping

**3.10****hook ladder**

ladder which has (a) hook(s) from which it is suspended in use

**3.11****internal ladder**

narrow ladder primarily for use inside buildings or restricted spaces

**3.12****length overall**

distance measured from the bottom of the foot to the top of a ladder at its maximum length

**3.13****mechanically operated extending ladder**

extending ladder where the upper parts are extended by mechanical means for example by extending lines or cables

**3.14****multifunction ladder**

ladder which can be configured to serve more than one function

**3.15****one-piece ladder**

ladder consisting of one section only

**3.16****pawl**

load-bearing mechanism which holds the sections of an extending ladder in the extended position

**3.17****pole**

device used for handling and/or support and to improve the stability of the ladder

**3.18****pulley sheave**

wheel with a groove in its rim for a rope or cable

**3.19****push-up extending ladder**

extending ladder where the upper parts are extended by hand

**3.20****rescue ladder**

ladder designed for rescue by carry-down or carry-up

**3.21****roof ladder**

ladder which follows the surface of a roof and has a hook which hooks over the ridge of the roof

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

SIST EN 1147:2010

<https://standards.iteh.ai/catalog/standards/sist/0697334a-ae1f-4142-970b-1a4ff81549e1/sist-en-1147-2010>

**EN 1147:2010 (E)****3.22****rung**

horizontal climbing support with a walking surface attached to stiles to form a ladder

**3.23****sectional ladder**

ladder consisting of several sections that can be fitted together by means of connection devices but the length can only be varied by one whole section at a time

**3.24****stabilizing means**

device or part of the ladder the function of which is to improve the stability of the ladder in use

**3.25****step in/step out**

distance between adjacent rung centres where ladder sections overlap

**3.26****stile**

lateral part of a ladder which supports the rungs

**3.27****stick ladder**

ladder with hinged rungs enabling the stiles to fold together

**3.28****total mass**

mass of the ladder complete with all extras and fittings as specified

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

**4 Categorization**

<https://standards.iteh.ai/catalog/standards/sist/0697334a-ae1f-4142-970b-1a4ff81549e1/sist-en-1147-2010>

Ladders shall be categorized by their type, the maximum number of persons and mode of use (see Table 1).

**Table 1 — Ladder categories**

Type of ladder	Maximum number of persons	Mode of use
Extending	3	Rescue and access
	2	Rescue and access
	1	Access
Hook	1	Access
One piece	3	Rescue and access
	2	Rescue and access
	1	Access
Roof	1	Access
Sectional	3	Rescue and access
	2	Rescue and access
	1	Access
Stick	1	Access

NOTE For multifunction ladders reference should be made to the manufacturer's instructions.

## 5 Dimensions and total masses

### 5.1 Length

The maximum length of a hook ladder shall be 5 000 mm.

### 5.2 Width between stiles

**5.2.1** The minimum width between stiles for different types of ladder (see Figure 1) shall be:

- for roof ladders 240 mm;
- for hook ladders 170 mm;
- for stick and internal ladders 230 mm;
- for all other ladders 295 mm.

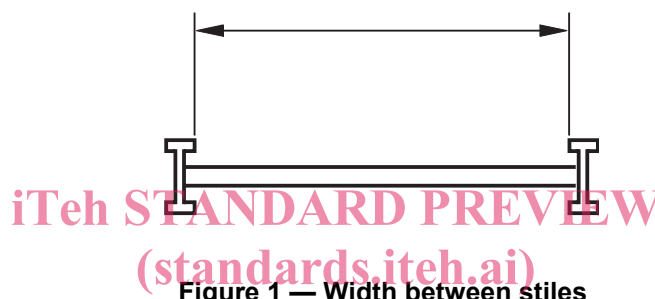


Figure 1 — Width between stiles

**5.2.2** The maximum width between stiles on hook ladders shall be 250 mm.  
<https://standards.iteh.ai/catalog/standards/sist/0697334a-ae1f-4142-970b-1a4ff81549e1/sist-en-1147-2010>

### 5.3 Mass

The mass for different types of ladders shall not be more than:

- 25 kg for a ladder operated by one person;
- 15 kg for hook ladders;
- 8 kg/m of overall length for all other ladders.

## 6 Rungs

**6.1** The distance between rungs shall remain constant throughout a ladder except where the hook is attached on a hook ladder:

- for hook ladders the distance between rungs shall be a maximum of 365 mm and a minimum of 280 mm except for the rungs supporting the hook where the distance may be reduced to a minimum of 180 mm;
- for all other ladders the distance between rungs shall be a maximum of 305 mm and a minimum of 250 mm.

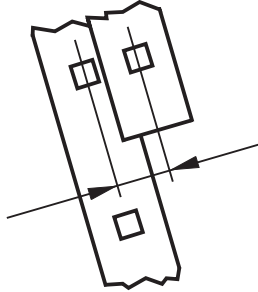
**6.2** Rungs shall have a flat or arched non-slip tread surface. Where the non-slip tread surface is a rung covering, the covering shall not move (see also Annex O).

**6.3** Roof ladder rungs shall have a flat or arched non-slip surface on all sides.

## EN 1147:2010 (E)

**6.4** The minimum width/diameter for rungs shall be 25 mm except for wooden rungs where the minimum width shall be 20 mm.

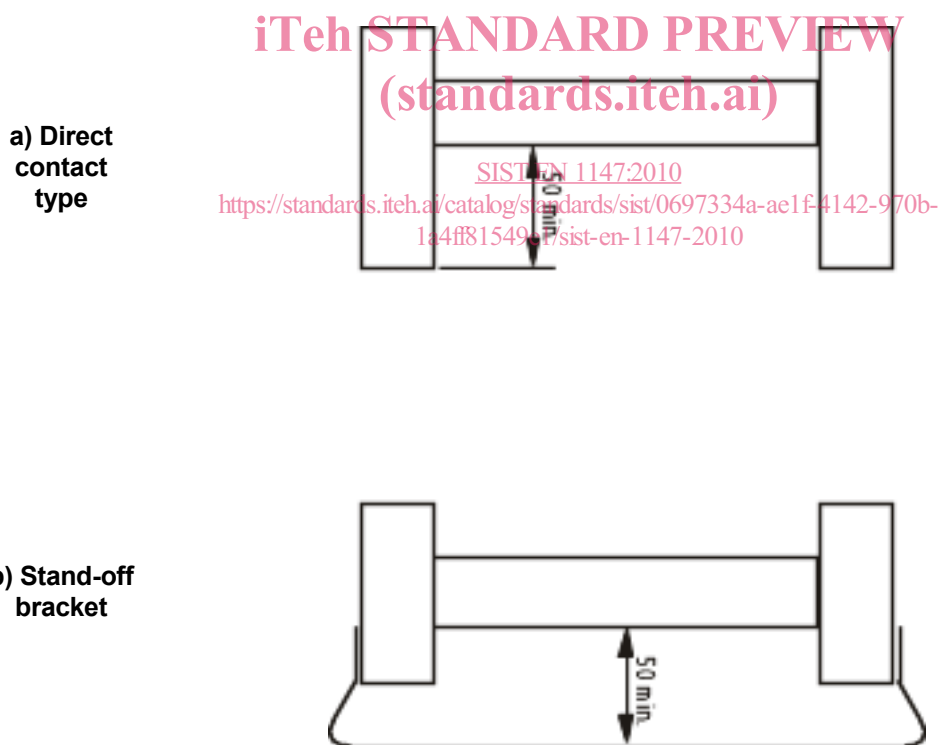
**6.5** Where ladder sections overlap, maximum step-in and step-out shall be 90 mm between adjacent rung centres (see Figure 2).



**Figure 2 — Position of adjacent rung centres**

**6.6** Rungs shall be fitted with their tread surface perpendicular to the stile axis (see Figure 2).

**6.7** For hook and roof ladders, the minimum clearance between the underside of a rung and a flat surface roof or wall shall be 50 mm in the user position (see Figures 3a) and 3b)) (see also Annex O).



**Figure 3 — Roof/wall clearance**