



**SLOVENSKI STANDARD**  
**SIST EN 12385-5:2003**  
**01-maj-2003**

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Steel wire ropes - Safety - Part 5: Stranded ropes for lifts

Drahtseile aus Stahldraht - Sicherheit - Teil 5: Litzenseile für Aufzüge

Câbles en acier - Sécurité - Partie 5: Câbles a torons pour ascenseurs

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**Ta slovenski standard je istoveten z: EN 12385-5:2002**

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**ICS:**

77.140.65	Jeklene žice, jeklene vrvi in verige	Steel wire, wire ropes and link chains
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**SIST EN 12385-5:2003**

**en**

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ICS 77.140.65

English version

## Steel wire ropes - Safety - Part 5: Stranded ropes for lifts

Câbles en acier - Sécurité - Partie 5: Câbles à torons pour ascenseurs

Drahtseile aus Stahldraht - Sicherheit - Teil 5: Litzenseile für Aufzüge

This European Standard was approved by CEN on 12 November 2001.

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.

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## Foreword

This document (EN 12385-5:2002) has been prepared by Technical Committee CEN/TC 168, "Chains, ropes, webbing, slings and accessories – Safety", 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of an identical text or by endorsement, at the latest by April 2003, and conflicting national standards shall be withdrawn at the latest by April 2003.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

For relationship of this Part with EU Directives, see informative Annex ZA, which is an integral Part of this document.

The other Parts of EN 12385 are:

Part 1: General requirements

Part 2: Definitions, designation and classification

Part 3: Information for use and maintenance

Part 4: Stranded ropes for general lifting applications

Part 6: Stranded ropes for mine shafts

Part 7: Locked coil ropes for mine shafts

Part 8: Stranded hauling and carrying-hauling ropes for cableway installations designed to carry persons

Part 9: Locked coil carrying ropes for cableway installations designed to carry persons

Part 10: Spiral ropes for general structural applications

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Part 1 provides the general requirements of Parts 4 to 10.

This is the first edition of this Part.

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, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## Introduction

This Part of this European Standard has been prepared to be a harmonized standard to provide one means of complying with the essential safety requirements of the Lift Directive.

This Part of this European Standard is a type C standard as stated in EN 292.

During the preparation of this standard, it was assumed that a negotiation would take place between the purchaser and the manufacturer concerning the intended purpose of the rope.

Although tables of breaking forces and masses are provided for a number of the more common classes, diameters and rope grades, this Part of this standard is not limited to those given, providing all of the other requirements are met.

## 1 Scope

This Part of this European Standard specifies the particular materials, manufacturing and testing requirements for stranded ropes for suspension, compensating and governor duties for traction drive and hydraulic lifts moving between guides.

The particular hazards covered by this Part are identified in Clause 4.

This Part of this European Standard does not establish requirements for information for use other than those given in clause 7 of Part 1. Neither does it cover the requirements for ropes fitted with terminations.

Minimum breaking force values for the more common classes, sizes and grades of rope are provided in tables 6 to 10.

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## 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 10264-2:2002, *Rope wire – Part 2: Round cold drawn non-alloyed steel wire for ropes for general applications.*

EN 12385-1:2002, *Steel wire ropes – Safety – Part 1: General requirements.*

EN 12385-2, *Steel wire ropes – Safety – Part 2: Definitions, designation and classification.*

ISO 4346, *Steel wire ropes for general purposes – Lubricants – Basic requirements.*

### 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 12385-2 apply.

### 4 List of hazards

In addition to the general hazards identified in clause 4 of Part 1, Table 1 contains all the particular hazards which require action to reduce risk as being specific and significant for steel wire ropes for lifts.

**Table 1- Hazards and associated requirements**

Hazards identified in annex A of EN 1050:1996		Relevant clause of annex A of EN 292-2:1991/A1:1995	Relevant clause of this standard
27.4	Mechanical hazard from insufficient strength of parts	4.1.2.3	5 and 6
27.6	Mechanical hazard from inadequate selection of ropes and their inadequate integration into the machine	4.3.1	7

NOTE For the purposes of this Part of EN 12385-5:2002, insufficient strength of parts means failure to achieve the minimum breaking force of the rope. <https://standards.iteh.ai/catalog/standards/sist/f07c2c1c-a8e7-4c68-8da6-afd60093d0a5/sist-en-12385-5-2003>

## 5 Safety requirements and/or measures

### 5.1 General

In addition to the requirements given in 5.2 to 5.6, the requirements shall also conform to those given in part 1 of this standard.

### 5.2 Materials

#### 5.2.1 Wire

All wires, before ropemaking, shall conform to EN 10264-2.

For rope grades 1180/1770 (dual tensile), 1370/1770 (dual tensile) and 1570/1770 (dual tensile), the tensile strength grades of the outer wires shall be 1180 N/mm<sup>2</sup>, 1370 N/mm<sup>2</sup> and 1570 N/mm<sup>2</sup> respectively. The tensile strength grade of the inner wires shall be 1770 N/mm<sup>2</sup>.

For rope grades 1570 (single tensile) and 1770 (single tensile), the wire tensile strength grades shall be 1570 N/mm<sup>2</sup> and 1770 N/mm<sup>2</sup> respectively.

The tensile strength grades of centre wires, filler wires and core wires shall be determined by the manufacturer.

### **5.2.2 Core**

The core shall be one of the following types:

- a) fibre;
- b) steel, as an independent wire rope (IWRC);
- c) steel based composite e.g. steel plus fibre, steel plus polymer; or
- d) non-metallic other than only of fibre.

### **5.2.3 Lubricant**

Where used, the lubricant shall comply with ISO 4346.

## **5.3 Rope manufacture**

### **5.3.1 Lubrication**

Lubrication shall be limited to the strands.

### **5.3.2 Construction**

The rope construction shall be either:

- a) one of those covered by Tables 6, 7, 8, 9 and 10; or
- b) another construction as specified by the manufacturer.

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### **5.3.3 Rope grade**

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#### **5.3.3.1 General**

The rope grade shall reflect the tensile strength grades of the outer and inner wires respectively, e.g. rope grade 1370/1770 signifies a dual tensile rope having outer wires of tensile strength grade 1370 N/mm<sup>2</sup> and inner wires of tensile strength grade 1770 N/mm<sup>2</sup> and rope grade 1570 signifies a single tensile rope having outer and inner wires of tensile strength grade 1570 N/mm.

For the more common classes of rope the rope grade,  $R_r$ , shall be used in the calculation of minimum breaking force of single tensile ropes and the rope value  $R_{dt}$  shall be used in the calculation of minimum breaking force of dual tensile ropes, see annex A for values of  $R_{dt}$ .

The rope grades for the various duties shall be in accordance with 5.3.3.2 to 5.3.3.4.

#### **5.3.3.2 Suspension ropes**

The rope grade shall be one of the following:

- a) for traction drive lifts see Tables 6 to 8

Rope with fibre core: 1180/1770; 1370/1770; 1570; 1770

Rope with steel core: 1370/1770; 1570/1770; 1570; 1770

- b) for roped hydraulic lifts see Tables 6 to 8

Rope with fibre core: 1370/1770; 1770

Rope with steel core: 1370/1770; 1570/1770; 1770



### 5.3.3.3 Governor ropes

The rope grade shall be one of the following 1370/1770; 1570/1770; 1570 or 1770, see Tables 6 to 8.

### 5.3.3.4 Compensating ropes

The ropes grade shall be one of the following 1370/1770; 1570 or 1770, see Tables 6, 7, 9 and 10.

## 5.4 Diameter

### 5.4.1 Tolerances

When measured in accordance with 6.3.1 of EN 12385-1:2002, the actual diameter under no load and under a load equivalent to 5 % or 10 % of the minimum breaking force of the rope shall not vary from the nominal diameter by more than the values given in Tables 2, 3 or 4, as appropriate.

**Table 2 — Tolerances on diameter for suspension ropes for traction drive lifts and governor ropes with fibre and other non-metallic cores**

Nominal rope diameter mm	Tolerances as percentage of nominal diameter		
	Maximum at no load	Minimum at	
		5 % of $F_{min}$	10 % of $F_{min}$
up to 10	+ 6	+ 1	0
greater than 10	+ 5	+ 1	0

**Table 3 — Tolerances on diameter for suspension ropes for traction drive lifts and governor ropes with steel and steel based composite cores**

Nominal rope diameter mm	Tolerances as percentage of nominal diameter		
	Maximum at no load	Minimum at	
		5 % of $F_{min}$	10 % of $F_{min}$
up to 10	+ 3	0	- 1
greater than 10	+ 2	0	- 1

**Table 4 — Tolerances on diameter for suspension ropes of roped hydraulic lifts and compensating ropes**

Nominal rope diameter mm	Tolerance as percentage of nominal rope diameter
From 6 to < 8	+6
	0
8 and greater	+5
	0

### 5.4.2 Differences between diameter measurements

The difference between any two of the four measurements stated in 6.3.1 of EN 12385-1:2002 at a load equivalent to 5 % or 10 % of the minimum breaking force shall not exceed the values given in Table 5 for diameter ovality.

The difference between the average of the two measurements taken at each of the two positions stated in 6.3.1 of EN 12385-1:2002 at a load equivalent to 5 % or 10 % of the minimum breaking force shall not exceed the values given in Table 5 for average diameter variation.