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Travelling cables for elevators

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by The Japanese Electric Wire & Cable Makers' Association (JCMA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS C 3408:2000** is replaced with this Standard.

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Travelling cables for elevators

Introduction

This Japanese Industrial Standard was established in 1965 and has gone through eight revisions up to the present. Following the last revision in 2000, the revision at this time is intended to add specifications for coaxial cables and screened telecommunication units in order to respond to the subsequent advancement of the control communication function of an elevator, and to delete specifications for cables not manufactured currently.

1 Scope

This Standard specifies travelling cables for elevators, mainly used for wiring and travelling wires of lifting machines such as elevators, dumbwaiters, of not more than 300 V (hereafter referred to as “cables”).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS C 3005 *Test methods for rubber or plastic insulated wires and cables*

JIS C 3102 *Annealed copper wires for electrical purposes*

JIS C 3152 *Tin coated annealed copper wires*

JIS C 6832 *Silica glass multimode optical fibers*

JIS C 6833 *Multicomponent glass multimode optical fibers*

JIS C 6834 *Plastic cladding multimode optical fibers*

JIS C 6835 *Silica glass single-mode optical fibers*

JIS G 3502 *Piano wire rods*

JIS G 3505 *Low carbon steel wire rods*

JIS G 3506 *High carbon steel wire rods*

JIS G 4308 *Stainless steel wire rods*

3 Classification and symbols

For the purpose of this Standard, the classification and symbols shall be as given in Table 1.

Table 1 Classification and symbols

Classification	Symbol ^{a)}
Natural rubber insulated braided cable for elevator (without strain-bearing member)	ERB-L
Natural rubber insulated braided cable for elevator (with strain-bearing member)	ERB-H
Natural rubber insulated chloroprene sheathed round cable for elevator (without strain-bearing member)	ERN-L
Natural rubber insulated chloroprene sheathed round cable for elevator (with strain-bearing member)	ERN-H
EP rubber insulated braided cable for elevator (without strain-bearing member)	EPB-L
EP rubber insulated braided cable for elevator (with strain-bearing member)	EPB-H
EP rubber insulated chloroprene sheathed round cable for elevator (without strain-bearing member)	EPN-L
EP rubber insulated chloroprene sheathed round cable for elevator (with strain-bearing member)	EPN-H
Polyvinyl chloride insulated polyvinyl chloride sheathed round cable for elevator (without strain-bearing member)	EVV-L
Polyvinyl chloride insulated polyvinyl chloride sheathed round cable for elevator (with strain-bearing member)	EVV-H
Natural rubber insulated chloroprene sheathed flat cable for elevator (without strain-bearing member)	ERNF-L
Natural rubber insulated chloroprene sheathed flat cable for elevator (with strain-bearing member)	ERNF-H
EP rubber insulated chloroprene sheathed flat cable for elevator (without strain-bearing member)	EPNF-L
EP rubber insulated chloroprene sheathed flat cable for elevator (with strain-bearing member)	EPNF-H
Polyvinyl chloride insulated polyvinyl chloride sheathed flat cable for elevator (without strain-bearing member)	EVVF-L
Polyvinyl chloride insulated polyvinyl chloride sheathed flat cable for elevator (with strain-bearing member)	EVVF-H
When a product has a telecommunication unit, the following relevant symbols shall be suffixed to the symbol of the product. O: optical fiber C: coaxial cable S: screened telecommunication unit Example: Polyvinyl chloride insulated polyvinyl chloride sheathed flat cable for elevator (without strain-bearing member, with optical fiber and coaxial cable) EVVF-L-O-C Note ^{a)} The symbols of product shall be as follows. E: elevator R: natural rubber P: EP rubber V: polyvinyl chloride B: braided N: chloroprene rubber F: flat type H: with strain-bearing member L: without strain-bearing member	

4 Characteristics

The characteristics shall be as given in Table 2, when tested in accordance with clause 6.

Table 2 Characteristics

Item				Characteristics	Applicable subclause for test method	
Conductor resistance				Not more than the value in Table 3	6.3	
Dielectric withstand voltage				Withstand 1 000 V for 1 min	6.4	
Insulation resistance				Not less than the value in Table 4	6.5	
Tensile properties of insulation and sheath	Insulation	Natural rubber	Tensile strength	6 MPa min.	6.6	
			Elongation	250 % min.		
		EP rubber	Tensile strength	4 MPa min.		
			Elongation	300 % min.		
		Polyvinyl chloride	Tensile strength	10 MPa min.		
			Elongation	100 % min.		
	Sheath	Chloroprene rubber	Tensile strength	13 MPa min.		
			Elongation	300 % min.		
		Polyvinyl chloride	Tensile strength	10 MPa min.		
			Elongation	120 % min.		
Thermal ageing	Insulation	Natural rubber	Tensile strength	Not less than 60 % of the value before heating	6.7	
			Elongation			
		EP rubber	Tensile strength	Not less than 80 % of the value before heating		
			Elongation			
		Polyvinyl chloride	Tensile strength	Not less than 85 % of the value before heating		
			Elongation	Not less than 80 % of the value before heating		
		Sheath	Chloroprene rubber	Tensile strength		Not less than 60 % of the value before heating
				Elongation		
	Polyvinyl chloride		Tensile strength	Not less than 85 % of the value before heating		
			Elongation	Not less than 80 % of the value before heating		

Table 2 (concluded)

Item				Characteristics	Applicable subclause for test method
Oil resistance	Insulation	Polyvinyl chloride	Tensile strength	Not less than 85 % of the value before oil immersion	6.8
			Elongation		
	Sheath	Chloroprene rubber	Tensile strength	Not less than 60 % of the value before oil immersion	
			Elongation		
		Polyvinyl chloride	Tensile strength	Not less than 80 % of the value before oil immersion	
			Elongation	Not less than 60 % of the value before oil immersion	
Heat shock		Polyvinyl chloride insulated core and polyvinyl chloride sheathed cable	Insulation and sheath shall be free from crack or flaw.	6.9	
Cold bend				6.10	
Heat deformation		Polyvinyl chloride insulation and polyvinyl chloride sheath	Not more than 50 % of thickness reduction	6.11	
Flame retardance		Chloroprene sheathed cable and polyvinyl chloride sheathed cable	Fire shall be extinguished naturally within 60 seconds.	6.12	
Heat resistance of compound		Braided cable	Compound shall not flow down, and dropping or bubbling shall not occur at the lower part of the specimen.	6.13	

5 Material, construction and manufacturing method

The material, construction and manufacturing method shall be as given in 5.1 to 5.8. The examples of construction and dimensions of cables are as given in Annex A for reference.

The following telecommunication units may be twisted inside the cable according to 5.5.

- Optical fiber
- Coaxial cable
- Screened telecommunication unit with conductors having a nominal cross-sectional area of at least 0.5 mm²

Any telecommunication unit shall be provided with a suitable extruded non-metallic covering, or other suitable tape.

5.1 Conductor

The conductor shall be a stranded wire composed of the annealed copper wires for electrical purpose specified in **JIS C 3102**, hard-drawn copper wires stranded then annealed, or the tin coated annealed copper wires specified in **JIS C 3152**. The conductor shall be as given in Table 3.