SLOVENSKI STANDARD
SIST EN 50290-2-35:2016

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Komunikacijski kabli - 2-35. del: Skupna pravila za snovanje in konstruiranje - Poliamidna zmes za oplaščenje

Communication cables - Part 2-35: Common design rules and construction - Polyamide sheathing compound

Câbles de communication - Partie 2-35: Règles de conception communes et construction - Mélange pour gainage en polyamide

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Communication cables - Part 2-35: Common design rules and construction - Polyamide sheathing compound

Câbles de communication - Partie 2-35: Règles de conception communes et construction - Mélange pour le gainage en polyamide

Kommunikationskabel - Teil 2-35: Gemeinsame Regeln für Entwicklung und Konstruktion - Polyamid-Mantelmischung

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

This document (EN 50290-2-35:2016) has been prepared by CLC/TC 46X, "Communication cables".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2017-07-22
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2019-07-22

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1 Scope

This Part 2-35 of EN 50290 gives specific requirements for Polyamide and Polyamide alloys to be used for the inner and outer sheathing of cables.

It is essential to read this European Standard in conjunction with Part 2-20 of EN 50290, the product standards EN 50288-7 and EN 61158 and other applicable product standards.

Using raw material and type test data as outlined in this standard, the raw material supplier will have sufficient data to demonstrate compliance and warrant that the material is suitable for the specified application.

Table 1 — Polyamide sheathing compound

Type	Maximum operating temperature
PA	90 °C

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 60811-401, *Electric and optical fibre cables — Test methods for non-metallic materials — Part 401: Miscellaneous tests — Thermal ageing methods — Ageing in an air oven (IEC 60811-401)*

EN 60811-404, *Electric and optical fibre cables — Test methods for non-metallic materials — Part 404: Miscellaneous tests — Mineral oil immersion tests for sheaths (IEC 60811-404)*

EN 60811-501, *Electric and optical fibre cables — Test methods for non-metallic materials — Part 501: Mechanical tests — Tests for determining the mechanical properties of insulating and sheathing compounds (IEC 60811-501)*

EN 60811-605, *Electric and optical fibre cables — Test methods for non-metallic materials — Part 605: Physical tests — Measurement of carbon black and/or mineral filler in polyethylene compounds (IEC 60811-605)*

EN 60811-606, *Electric and optical fibre cables — Test methods for non-metallic materials — Part 606: Physical tests — Methods for determining the density (IEC 60811-606)*

EN 60811-607, *Electric and optical fibre cables — Test methods for non-metallic materials — Part 607: Physical tests — Test for the assessment of carbon black dispersion in polyethylene and polypropylene (IEC 60811-607)*

EN ISO 62, *Plastics — Determination of water absorption (ISO 62)*

EN ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868)*

3 Compound requirements

The tests are to be carried out on granules or moulded plaques (or other suitable forms) produced from granules of the supplied compound. This data shall describe the general performance of Polyamide compounds. The data shall be provided by the compound supplier and therefore can be included in any supply specification of the raw material. Test methods, relevant requirements and limits are shown in Table 2. In the case of special applications, additional requirements could be specified.

4 Cable test requirements

The anticipated performance assumes standard cable design and conventional process technology and is specified in Table 3. In case of specific applications, additional requirements could be specified.

5 Health, Safety and Environmental Regulations

The materials are subject to Health, Safety and Environmental (HSE) requirements as defined in EN 50290-2-20. Any deviations or compliance failures must be identified by the raw material supplier and necessary corrective actions to be undertaken agreed with the cable maker.

Table 2 — Polyamide sheathing compound – physical properties on granules

	Characteristics [a]	Test method	Unit	Value
1	Density (base polymer)	EN 60811-606	g/cm^3	<1,06
2	Hardness (Shore D, 15 s)	EN ISO 868	-	65-80
3	Moisture absorption (23°C; 50% HR)	EN ISO 62	%	<2,5
4	Water absorption (23 °C, in water)	EN ISO 62	%	<7
5	Carbon black content [b]	EN 60811-605	%	2,0 ± 0,5
6	Carbon black dispersion - agglomerate [b]	EN 60811-607	-	≤3

[a] All values of Table 2 shall be provided by the compound supplier, see Clause 3.

[b] Test is to be applied only for black compounds to be used for outer sheathings.

Table 3 — Polyamide sheathing compound – properties on cable

	Characteristics	Test method	Unit	PA
1	Mechanical properties			
1.1 1.1.1	Before ageing Tensile strength – median, min.	EN 60811-501	 MPa	 40
1.1.2	Elongation at break – median, min.		 %	 250
1.2	After ageing Ageing conditions – temperature – duration	EN 60811-401	 °C h	 110±2 14x24
1.2.1	Elongation at break – median, min. – variation, max.		 % %	 250 ±20
2	Mineral oil immersion test[a] Test conditions – temperature – duration Results to be obtained after oil immersion Tensile strength – variation of values before and after immersion, max. Elongation at break – variation of values before and after immersion, max.	EN 60811-404	 °C h % % 	 90 7x24 ±25 ±25

NOTE As an optimal protection of outer sheathings against UV radiation the use of black compounds complying with the requirements of Clauses 5 and 6 of Table 2 is highly recommended. For outer sheathings in other colors than black, if required, the adding of suitable UV stabilisers is to be provided.

[a] The mineral oil to be used shall be oil No. 2 (IRM 902) as mentioned in part 404