



(99) 量认(国)字(A0396)号

Reference No. CT03-0601-2

## Test Report

Name of products : XLPE insulated PVC inner sheath  
HDPE outer sheath power cable

Type : CAL XLPE/CWS/PVC/HDPE (YJLVY)

Consigner : Tianjin PIRELLI Power Cables Co., Ltd

Kind of test : Commission Test



**CHINA NATIONAL CENTRE FOR QUALITY  
SUPERVISION AND TEST OF ELECTRIC  
WIRE AND CABLE**

# 电缆试验报告 Cable Test Report



QES-18-002-B

型号规格: Type	PRYSMIAN 120MM2 3/C XLPE/SWA/LSOH 11KV CU CABLE BS7835	mm <sup>2</sup>	轮号: Drum No.	M1308006
电压等级: Voltage	11	KV	长度: Length	500 m
标准依据: Standard	IEC60502.2		报告日期: Date of	2013.08.23

## 试验内容 Test Contents

项 目 Items	标准要求 Standard	试验结果 Test Results	单项判定 Verdict
导体直流电阻试验 DC resistance test for conductor	20℃时导体直流电阻应不大于 0.153Ω/km at 20℃, DC resistance of conductor shall not exceed 0.153Ω/km	20℃时 at 20℃ A相/phase A: 0.1510Ω/km B相/phase B: 0.1511Ω/km C相/phase C: 0.1511Ω/km	P
交流电压试验 AC voltage test	施加交流电压 22.5kV, 5min 应不击穿 No breakdown at AC voltage 22.5kV, 5min	导体与铜带屏蔽间交流22.5kV/5min 电压试验, 未击穿 AC 22.5kV/5minute between cores and copper tape screen, without failure	P
局部放电试验 Partial discharge test	施加交流电压 11KV 灵敏度 ≤ 10pC	灵敏度 sensitivity: 2.5pC A相/phase A: 通过 pass B相/phase B: 通过 pass C相/phase C: 通过 pass	P

检验结论: 所测项目符合标准规定 IEC60502.2

Conclusion: The items tested comply with requirements IEC60502.2

注: “单项判定”符号含义—— P: 检验结果符合要求; F: 检验结果不符合要求;

Note: “Verdict” means - “P” means this item does meet the requirement, “F” means this item does not meet the requirement.

试验人:

Tested by:



Checked by:



# 电缆试验报告 Cable Test Report



QES-18-002-B

型号规格: Type	PRYSMIAN 150MM2 3/C XLPE/SWA/LSOH 11KV CU CABLE BS7835	mm <sup>2</sup>	轮号: Drum No.	M1308003
电压等级: Voltage	11	KV	长度: Length	372 m
标准依据: Standard	IEC60502.2		报告日期: Date of	2013.08.23

## 试验内容 Test Contents

项 目 Items	标准要求 Standard	试验结果 Test Results	单项判定 Verdict
导体直流电阻试验 DC resistance test for conductor	20℃时导体直流电阻应不大于 0.124Ω/km at 20℃, DC resistance of conductor shall not exceed 0.124Ω/km	20℃时 at 20℃ A相/phase A: 0.1214Ω/km B相/phase B: 0.1215Ω/km C相/phase C: 0.1215Ω/km	P
交流电压试验 AC voltage test	施加交流电压 22.5kV, 5min 应不击穿 No breakdown at AC voltage 22.5kV, 5min	导体与铜带屏蔽间交流22.5kV/5min 电压试验, 未击穿 AC 22.5kV/5minute between cores and copper tape screen, without failure	P
局部放电试验 Partial discharge test	施加交流电压 11KV 灵敏度 ≤ 10pC	灵敏度 sensitivity: 2.5pC A相/phase A: 通过 pass B相/phase B: 通过 pass C相/phase C: 通过 pass	P

检验结论: 所测项目符合标准规定 IEC60502.2

Conclusion: The items tested comply with requirements IEC60502.2

注: “单项判定”符号含义—— P: 检验结果符合要求; F: 检验结果不符合要求;

Note: “Verdict” means - “P” means this item does meet the requirement, “F” means this item does not meet the requirement.

试验人:

Tested by:

成检  
2



审核:

Checked by:






China National Centre for Quality Supervision  
and Test of Electric Wire and Cable

(99)登认(国)字(A0396)号

Test Report

Reference No. CT03-0601-2

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Name of products		XLPE insulated PVC inner sheath HDPE outer sheath power cable			
Type and size		CAL XLPE/CWS/PVC/HDPE(YJLVY) 6.35/11kV 240*3C			
Kind of test		Commission Test			
Consigner	Tianjin PIRELLI Power Cables Co., Ltd	Address	Nan Kai District-West End Huanghe Road Tianjin , P. R. China		
		Zip.	300112	Tel.	022-27524186
Manufacturer	Tianjin PIRELLI Power Cables Co., Ltd	Address	Nan Kai District-West End Huanghe Road Tianjin , P. R. China		
		Zip.	300112	Tel.	022-27524186
Test standard		Refer to: IEC 60502-2-1997			
Date of test		From 06.02, 2003 to 09.18, 2003			
Conclusion		The items tested comply with the requirements of standard IEC 60502-2-1997.			
Note					
Editor	Zhu Yonghua				
Date	Oct. 15, 2003	Date	Oct. 16, 2003	Date	Oct. 16, 2003



99) 量 ( 国 ) 字 (A0306) 号

Test Items		Standard Requirements			Test Results		
1. Construction 1) Conductor Conductor material Number of wires in conductor  2) Insulation Average thickness Minimum thickness  3) Non-metallic sheath Average thickness of inner layer Average thickness of out layer Average thickness of combined layers Minimum thickness of combined layers  4) Overall diameter  2. Electrical properties 1) Conductor resistance (20°C)  2) Partial discharge test --discharge at 1.73U <sub>0</sub>  3) Bending test, followed by partial discharge test --discharge at 1.73U <sub>0</sub>  4) tan δ (95-100°C, ≥2kV )  5) Volume resistivity of insulation screen (90°C)	Cable cores and cross-section Inspected cores identification				3*240 whitel white2 white3		
	Number of wires in conductor	min	30		36	36	36
	Average thickness	min.	3.4	mm	3.5	3.5	3.5
	Minimum thickness	min.	2.96	mm	3.30	3.24	3.32
	Average thickness of inner layer			mm		2.04	
	Average thickness of out layer			mm		2.36	
	Average thickness of combined layers			mm		4.3	
	Minimum thickness of combined layers			mm		4.12	
	Overall diameter			mm		72.9	
	Conductor resistance (20°C)	max.	0.125	Ω/km	0.123	0.123	0.123
	--discharge at 1.73U <sub>0</sub>	max.	5	pC	2.9	2.7	2.8
	--discharge at 1.73U <sub>0</sub>	max.	5	pC	3.1	2.9	3.1
	tan δ (95-100°C, ≥2kV )	max.	0.0080		0.0003	0.0003	0.0003
	Volume resistivity of insulation screen (90°C)	max.	500	Ω.m		37.0	



	Test Items	Standard Requirements			Test Results		
3.	Mechanical properties of insulation						
1)	Without ageing						
	-tensile strength	min.	12.5	N/mm <sup>2</sup>	19.2	21.1	18.8
	-elongation at break	min.	200	%	520	510	520
2)	After ageing in air oven(135°C, 7d)						
	-variation of tensile strength	max.	±25	%	+11	+7	+20
	-variation of elongation at break	max.	±25	%	+8	+4	+4
3)	Shrinkage test (130°C, 1h)						
	--shrinkage	max.	4	%	0.5	0.5	0.5
4)	Hot set test (200°C, 15min, 20 N/cm <sup>2</sup> )						
	-elongation under load	max.	175	%	30	30	33
	-permanent elongation after cooling	max.	15	%	0	0	0
5)	Water absorption (85°C, 14d)						
	--increase of mass	max.	1	mg/cm <sup>2</sup>	0.02	0.02	0.02
4.	Mechanical properties of inner sheath						
1)	Without ageing						
	-tensile strength	min.	12.5	N/mm <sup>2</sup>	18.4		
	-elongation at break	min.	150	%	250		
2)	Pressure test at high temperature						
	-depth of indentation( 90°C )	max.	50	%	23		
5.	Mechanical properties of outer sheath						
1)	Without ageing						
	-tensile strength	min.	12.5	N/mm <sup>2</sup>	28.4		
	-elongation at break	min.	300	%	870		
2)	After ageing in air oven(110°C, 14d)						
	-elongation at break	min.	300	%	880		
6.	Strippability test for insulation						
	screen-before ageing	4 - 45 N			24	24	23

## 1 Scope

This European Standard specifies the test method for cables designed to have intrinsic resistance to fire and intended for use as emergency circuits for alarm, lighting and communication purposes.

This standard is applicable to cables, for emergency circuits, of rated voltage not exceeding 600/1 000 V, including those of rated voltage below 80 V, and for emergency circuit optical cables.

NOTE Although test procedures for electronic data and communication cables and optical fibre cables are given in this document, these areas are under active development and the given procedures may be subject to future review.

This standard is not applicable to cables intended for use in public telecommunications networks.

The test method is limited to cables with an overall diameter not exceeding 20 mm.

The test method, which is based on the direct impingement of flame from a propane burner giving a constant temperature attack of a notional 842 °C, can be used for cables for emergency circuits required to comply with Subclause 4.3.1.4.6 (a) of the Interpretative Document for Essential Requirement No. 2 'Safety in Case of Fire' (94/C62/01) of the Construction Products Directive (89/106/EEC). In such cases the test method only applies, for metallic conductor cables, to those with conductor sizes up to and including 2,5 mm<sup>2</sup>. For optical cables, only the 20 mm diameter limit applies.

This standard includes (Annex D) a means of linking the measured survival time to the fire resistance classification for these cables, as required by Subclause 4.3.1.4.6(a) of 94/C62/01.

The standard also includes (Annex E) a means of applying a water spray to the cable during the test. Although there is no requirement under the Construction Products Directive for cables to withstand water spray when assessing resistance to fire, such a requirement may be a feature of particular product standards.

## 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.

HD 60269-3-1	Low-voltage fuses Part 3-1: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household and similar applications) Sections I to IV: Examples of types of standardized fuses (IEC 60269-3-1:2004, modified)
EN 60584-1	Thermocouples - Part 1: Reference tables (IEC 60584-1)
EN 60695-4	Fire hazard testing - Part 4: Terminology concerning fire tests (IEC 60695-4)
IEC 60793-1-4 1995	Optical fibres - Part 1: Generic specification - Section 4: Measuring methods for transmission and optical characteristics

## 3 Definitions

For the purposes of this standard the definitions given in EN 60695-4 apply.