

Prüfbericht-Nr.: <i>Test report no.:</i>	CN23KLY6 001	Auftrags-Nr.: <i>Order no.:</i>	244503451	Seite 1 von 5 Page 1 of 5
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	27.03.2023	
Auftraggeber: <i>Client:</i>	Ningbo Haishu Tianyu Cables & Wire Co., Ltd. Zhongyi Village, Gulin Town, Haishu District, 315177 Ningbo, P.R. CHINA			
Prüfgegenstand: <i>Test item:</i>	Electric Cables for Photovoltaic Systems			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	62930 IEC 131 1X4mm ²			
Auftrags-Inhalt: <i>Order content:</i>	issue test report			
Prüfgrundlage: <i>Test specification:</i>	EN 50525-2-21: 2011 Water resistance test			
Wareneingangsdatum: <i>Date of sample receipt:</i>	01.11.2022			
Prüfmuster-Nr.: <i>Test sample no.:</i>	TN23-0489E			
Prüfzeitraum: <i>Testing period:</i>	24.11.2022 – 20.03.2023			
Ort der Prüfung: <i>Place of testing:</i>	See Other below for details			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	x <u>Kairy Wei</u>		genehmigt von: <i>authorized by:</i>	x <u>Yunfei Sun</u>
Datum: <i>Date:</i>	2023-03-27		Ausstellungsdatum: <i>Issue date:</i>	2023-03-27
Stellung / Position:	Kairy Wei/PE		Stellung / Position:	Yunfei Sun/Reviewer
Sonstiges / <i>Other:</i>	Place of testing: Shanghai Intelligent Service and Technology Co., Ltd.: East zone, Building 14, No.1000, Jinhai Road, Pudong New District, Shanghai, P.R. China			
See more information on page 2.				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

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Produktbeschreibung
Product description

1	Produktdetails <i>Product details</i>	See coverpage
2	Maße / Gewicht <i>Dimensions / Weight</i>	N/A
3	Bedienelemente <i>Operating elements</i>	N/A
4	Ausstattung / Zubehör <i>Equipment / Accessories</i>	N/A
5	Verwendete Materialien <i>Used Materials</i>	N/A
6	Sonstiges <i>Other</i>	On request of the client, the test of Presence of water test AD8 test according to Annex D and Annex E of EN 50525-2-21:2011 were performed on the specimens provided 62930 IEC 131 1X4mm² by the client with 60m. This test report contains 5 pages and an attachment 1 with 1 page for testing equipment list.

H1Z2Z2-K 1X6mm² H1Z2Z2-K 1X10mm²

1 Water resistance test – Electrical test

Test method was EN 50525-2-21: 2011 Annex D.

1.1 Voltage test on completed cable

Test conditions

Sample effective length : 20m
 Temperature of water : 20°C
 Immersion duration : 1h
 Test voltage : 2,5kV a.c.
 Test duration : 15min

Test result : 62930 IEC 1X4mm² No breakdown **P**

1.2 Voltage test on completed cable at 50°C

A 5 m sample were taken from the 20 m length tested in 1.1.

Test conditions:

Sample effective length : 5m
 Temperature of water : 50°C
 Test voltage : 1 kV a.c.
 Test duration : 100days

Test result : 62930 IEC 1X4mm² No breakdown **P**

1.3 Insulation resistance test after pre-voltage test

Three samples of core each 5 m sample were taken from the 20 m length tested in 1.1

1.3.1 Voltage test on cores

The three samples were immersed in potable tap water at 50 °C for 24 h. The voltage test on cores and insulation resistance test were carried in water at 50 °C.

Test conditions:

Test voltage : 2.5kV a.c.
 Test duration : 5 min

Type	Obtained value of 1# core (Ω·cm)	Obtained value of 2# core (Ω·cm)	Obtained value of 3# core (Ω·cm)	Specified Value (Ω·cm) (min.)	
62930 IEC 1X4mm ²	1,2x10 ¹⁶	1,3x10 ¹⁶	1,3x10 ¹⁶	10 ¹²	P

Test result : 62930 IEC 1X4mm² No breakdown **P**

1.3.2 Voltage test on cores at 50 °C

The three samples were immersed in potable tap water at 50 °C for 336 h. During this period an a.c. test voltage of 1000 V was applied between each conductor and the water. Immediately after voltage test the insulation resistance were measured.

H1Z2Z2-K 1X6mm² H1Z2Z2-K 1X10mm²

Type	Obtained value of 1# core ($\Omega \cdot \text{cm}$)	Obtained value of 2# core ($\Omega \cdot \text{cm}$)	Obtained value of 3# core ($\Omega \cdot \text{cm}$)	Specified Value ($\Omega \cdot \text{cm}$) (min.)	
62930 IEC 1X4mm ²	1,0x10 ¹⁶	1,1x10 ¹⁶	9,7x10 ¹⁵	10¹¹	P

Test result : 62930 IEC 1X4mm²

No breakdown

P**2 Water resistance test – Mechanical properties of sheath after water immersion**

Test method was EN 50525-2-21: 2011 Annex E.

2.1 Water absorption test of sheath after water immersion

Test conditions:

The temperature of water : 50°C

Duration : 100 days

Type	Item	Unit	Requirement	Test Result	Verdict
62930 IEC 1X4mm ²	Increase in mass	%	≤40	2	P

2.2 Mechanical properties of sheath after water immersion**2.2.1 Mechanical properties of sheath before water immersion**

Test conditions:

Test temperature : 23 °C

Separation rate : 250mm/min

Type	Item	Unit	Requirement	Test Result	Verdict
62930 IEC 1X4mm ²	Before water immersion				
	- tensile strength	N/mm ²	/	15,1	N
	- elongation at break	%	/	190	N

2.2.2 Mechanical properties of sheath after water immersion at 50 °C for 28 days

Test conditions:

The temperature of water : 50 °C

Duration : 28days

Test temperature : 23 °C

Separation rate : 250mm/min

Item	Item	Unit	Requirement	Test Result	Verdict
62930 IEC 1X4mm ²	After water immersion for 28 days				
	- tensile strength	N/mm ²	/	12,6	N
	- elongation at break	%	/	210	N

H1Z2Z2-K 1X6mm ² H1Z2Z2-K 1X10mm ²
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2.2.3 Mechanical properties of sheath after water immersion at 50 °C for 100 days

Test conditions

The temperature of water	:	50 °C
Duration	:	100 day
Test temperature	:	23 °C
Separation rate	:	250mm/min

Item	Item	Unit	Requirement	Test Result	Verdict
62930 IEC 1X4mm ²	After water immersion for 100 days				
	- tensile strength	N/mm ²	≥7,0	12,0	P
	- elongation at break	%	≥200	200	P
	- variation of tensile strength between 28 days immersion and 100 days immersion	N/mm ²	≤±15	+5	P
	- variation of elongation at break between 28 days immersion and 100 days immersion	%	≤±20	+5	P

- End of Test Report -

Equipment List

Contract No.: ISTCW22-2657

Equipment No.	Equipment Name	Calibration Date
ISTCW-M-022-2016	Electronic scales	2022/06/25 ~ 2023/06/24
ISTCW-M-042-2016	Automatic measuring system for wire and cable structure parameters	2022/07/01 ~ 2023/06/30
ISTCW-M-053-2016	AC dielectric strength tester	2022/06/21 ~ 2023/06/20
ISTCW-M-139-2017	Ageing chamber	2022/06/18 ~ 2023/06/17
ISTCW-M-207	Tensile testing machine	2022/07/01 ~ 2023/06/30
ISTCW-M-223	Digital display constant temperature water bath	2022/06/21 ~ 2023/06/20
ISTCW-M-234	High insulation resistance measuring device	2022/07/16 ~ 2023/07/15
ISTCW-M-235	AC dielectric strength tester	2022/06/20 ~ 2023/06/19
ISTCW-M-245	AC dielectric strength tester	2022/06/21 ~ 2023/06/20

