# SOLAR CABLE



GaryLion®

www.changfenggroup.com

ChangFeng Wire & Cable Co., Ltd

ICF Cable (Vietnam) Co Ltd

ICF Trusted Solutions Pte Ltd

Hacable Singapore Enterprise

# ChangFeng Wire & Cable Co Ltd

## FACTORY IN CHINA

**CHANGFENG WIRE & CABLE CO LTD** was founded in 1996, covers with an area of 150,000 square meters, we are located in CangZhou City 200km away from Beijing in China.

We specializing in the manufacturing wire and cables supplies to the power generation & transmission, transportation, automation, building & construction, Oil & Gas, petrolchemical, onshore and offshore sectors.

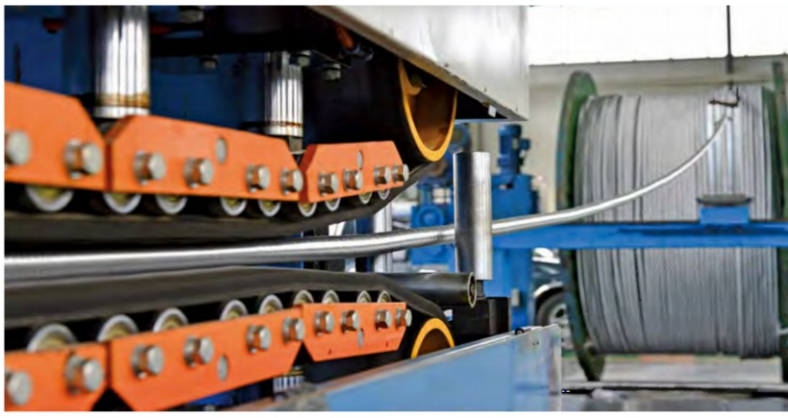
We manufacture superior quality standard products (up to 110KV) complying to international standards such as AS/NZS, IEC, BS, ASTM, UL, CSA etc. and we can also supply special cables in accordance to customers' requirements.

Changfeng equipped with the latest and most advance cables testing facilities to ensure the consisttency, long term reliability and performance of our products.

Our products are sucessfully exported to more than 30 countries around the world .







# Zertifikat *Certificate*

TÜVRheinland®

**Zertifikat Nr.** *Certificate No.*
R 50433911

**Blatt** *Sheet*
0001

| **Ihr Zeichen** *Client Reference* | **Unser Zeichen** *Our Reference* | **Ausstellungsdatum** *Date of Issue* |
|---|---|---|
| B.Y.L. | 01-Renviv-50240962 001 | 26.04.2019 *(day/mo/yr)* |

**Genehmigungsinhaber** *License Holder*
CHANGFENG WIRE & CABLE
CO., LTD.
Shaheqiao Industrial Zone, Hejian,
Cangzhou City, Hebei Province 062452
P. R. China

**Fertigungsstätte** *Manufacturing Plant*
CHANGFENG WIRE & CABLE
CO., LTD.
Shaheqiao Industrial Zone, Hejian,
Cangzhou City, Hebei Province 062452
P. R. China

**Prüfzeichen** *Test Mark*

TÜVRheinland® CERTIFIED
Type Approved
Safety
Regular Production
Surveillance
www.tuv.com
ID 1419068072

**Geprüft nach** *Tested acc. to*
EN 50618:2014

**Zertifiziertes Produkt (Geräteidentifikation)** *Certified Product (Product Identification)*

**Lizenzentgelte - Einheit** *License Fee - Unit*

Cable (Cables for Photovoltaic Systems)

| | | |
|---|---|---|
| Type Designation | : H1Z2Z2-K 1X1,5...240mm²<br>CHANGFENG WIRE & CABLE CO., LTD. | 18 |
| Rated Voltage | : DC 1,5kV<br>AC 1,0/1,0kV | |
| Ambient Temperature | : -40°C to +90°C | |
| Max.Temperature at Conductor | : 120°C | |

The labelling requirements acc. to EU Directive 2001/95 have to be observed for distribution within the EEA.

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ANLAGE (Appendix): 1.0

*Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.*
*This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and testing requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be considered additionally. The manufacturing of the certified product is subject to surveillance.*

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Fax: +49 221 806-3935 http://www.tuv.com/safety

**Zertifizierungsstelle**

TÜV Rheinland LGA Products GmbH TÜVRheinland Zertifizierungsstelle

**Bo Liu**

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# SOLAR CABLES H1Z2Z2-K 120°C



## Application
Cables are double insulated, electron-beam cross-linked cables for Photovoltaic power applications.

## Construction
Tinned Fine copper strands, acc. to EN 60228 ,class 5.
Electron-beam cross-linked polyolefin insulation, white in color, 120°C
Electron-beam cross-linked polyolefin sheath, Black/Red/Blue

## Technical data

| | |
|---|---|
| Rated voltage: | 1000 / 1000V （DC1500V） |
| Max. Conductor Temp. | 120 °C |
| Ambient Temp. : | - 40 °C to +90°C |
| Max. short circuit temp. (5 sec.) : | 250 °C |
| Bending radius: | 5 X Ø ( min. bending radius ) |
| Approval standard: | EN 50618 |

## Schedule of Guarantee Test

| | |
|---|---|
| 1) Resistance of conductor: | acc. to EN 50395 |
| 2) Voltage Test on completed cable: | acc. to EN 50395 |
| AC-Test-Voltage : | 6500V |
| DC-Test-Voltage : | 1500V |
| 3) Surface Resistance of Sheath : | acc. to EN 50395 |
| 4) Insulation Resistance : | acc. to EN 50395 |
| 5) Long term resistance of insulation To DC : | acc. to EN 50395 |
| 6) Construction & Dimensional test （for Insulation & sheath） : | acc. to EN 50396 |
| 7) Check for absence of faults on the insulation or complete cable : | acc. to EN 62230 Annex A |
| 8) Damp Heat Test : | acc. to EN 60068-2-78 |
| 9) Acid & Alkaline Resistance : | acc. to EN 60811-404 |
| 10) Mechanical Test for Insulation & Sheath | |
| Tensile strength before ageing: | acc. to EN 60811-501 |
| Elongation before ageing: | acc. to EN 60811-501 |
| Tensile strength after ageing: | acc. to EN 60811-401 |
| Elongation after ageing: | acc. to EN 60811-401 |
| Hot Set Test : | acc. to EN 60811-507 |
| Thermal Endurance test : | acc. to EN 60216-1 & EN 60216-2 |
| 11) Cold Impact Test (-40°C): | acc. to EN 60811-506 |
| 12) Cold Bending test : | acc. to EN 60811-504 |
| 13) Cold elongation test : | acc. to EN 60811-505 |
| 14) Ozne Resistance test : | acc. to EN 60811-403 |
| 15) Weathering / UV-Resistance: | acc. to EN 60811-501 &EN 50289-4-17 |
| 16) Dynamic Penetration Test: | acc. to EN 50618 Annex D |
| 17) Shrinkage Test: | acc. to EN 60811-503 |
| 18) Flame Propagation Test : | acc. to EN 60322-1-2 |
| 19) Halogen Test: | acc. to EN 50525-1 Annex B |
| 20) Smoke Test : | acc. to EN 61034-1/2 |

# SOLAR CABLES H1Z2Z2-K 120°C

## Dimensions

| Nominal Cross sectional area of conductor | Outer diaeter approx. | Cable Weight | Max. Conductor DC Resistance at 20°C | Min. Insulation Resistance at 20°C | Min. Insulation Resistance at 90°C |
|---|---|---|---|---|---|
| mm² | mm | kg /km | Ω/km | MΩ.km | MΩ.km |
| 1.5 | 5.6 | 44.6 | 13.7 | 860 | 0.86 |
| 2.5 | 6.0 | 43.7 | 8.21 | 690 | 0.69 |
| 4.0 | 7.0 | 60.0 | 5.09 | 580 | 0.58 |
| 6.0 | 7.9 | 81.0 | 3.39 | 500 | 0.50 |
| 10 | 9.1 | 126.7 | 1.95 | 420 | 0.42 |
| 16 | 10.2 | 194.0 | 1.24 | 340 | 0.34 |
| 25 | 12.4 | 276.0 | 0.795 | 340 | 0.34 |
| 35 | 13.6 | 377.0 | 0.565 | 290 | 0.29 |
| 50 | 16.3 | 600.0 | 0.393 | 270 | 0.27 |
| 70 | 18.7 | 810.6 | 0.277 | 250 | 0.25 |
| 95 | 20.8 | 1068.5 | 0.210 | 220 | 0.22 |
| 120 | 22.8 | 1328.6 | 0.164 | 210 | 0.21 |
| 150 | 25.5 | 1656.6 | 0.132 | 210 | 0.21 |
| 185 | 28.5 | 2052.5 | 0.108 | 200 | 0.20 |
| 240 | 32.1 | 2624.7 | 0.0817 | 200 | 0.20 |

## Current carrying capacity

Ambient temperature: 60 °C
Max. conductor temperature: 120 °C

| Nominal cross sectional area | Current carrying capacity according to method of installation | | |
|---|---|---|---|
| | Single cable free in air | Single cable on a surface | Two loaded cables touching, on a surface |
| mm2 | A | A | A |
| 1.5 | 30 | 29 | 24 |
| 2.5 | 41 | 39 | 33 |
| 4.0 | 55 | 52 | 44 |
| 6.0 | 70 | 67 | 57 |
| 10 | 98 | 93 | 79 |
| 16 | 132 | 125 | 107 |
| 25 | 176 | 167 | 142 |
| 35 | 218 | 207 | 176 |
| 50 | 276 | 262 | 221 |
| 70 | 347 | 330 | 278 |
| 95 | 416 | 395 | 333 |
| 120 | 488 | 464 | 390 |
| 150 | 566 | 538 | 453 |
| 185 | 644 | 612 | 515 |
| 240 | 775 | 736 | 620 |

Note : The expected period of use at a max. conductor temperature of 120°C and at a max. Ambient temperature of 90°C is limited to 20000h.

# SOLAR CABLES H1Z2Z2-K 120°C

## Conversion factor for deviating temperatures

| Ambient temperature °C | Conversion factor |
|---|---|
| Up to 60 | 1.00 |
| 70 | 0.92 |
| 80 | 0.84 |
| 90 | 0.75 |

## Groups

For installation in groups the reduction factors for current rating according to HD 60364-5-52 table B.52.17 shall apply.

# SOLAR PROJECTS

**Solar Project in Philippines**
Calatagan Solar Farm(63.3MW)
Raslag Solar Power Plant(10MW)





**Solar Project in America**
Avra Valley Solar PV Farm in Arizona(25MW)
Alpaugh Solar PV Power Plant in California(70MW)

Desoto Next Generation Solar Energy Center in Florida(25MW)

El Dorado And Copper Mountain Solar PV Power Plant in Nevada(58MW)

**Solar Projects in Japan**
Ashikita Solar Power Plant(21.52MW)
Miyagi PV Plant(26MW)
Nishiura Power Plant(2.4MW)





**Solar Projects in Australia**
Collinsville Solar Power Station (42MW)
Longreach Solar Farm (15MW)
Dubbo Solar Hub (24.2MW)
Manildra Solar Farm (42.5MW)
Whitsunday Solar Farm (57.5MW)




## SINGAPORE SALES OFFICE

**HACABLE SINGAPORE ENTERPRISE**

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## CHINA FACTORY

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## VIETNAM FACTORY

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TAY NINH PROVINCE , VIETNAM