



WHITE PAPER DOCUMENT

Innovative Cable Protection Method: Cable Wrapping Technology by: Cable Protect North America, Inc. (CPNA)

Markets: Renewable Energy & Power Delivery Applications

Submitted by: CPNA, Inc.

1. Introduction

CPNA believes that innovation drives safety, quality, value-added, and long-term performance. Our ongoing commitment to advancing the standards of direct-bury cable installation has led us to pioneer and invest extensively in alternative installation methods that are proven, efficient, and environmentally responsible. Through years of research, collaboration with Cable Protect Europe, and field validation, we have developed and refined a “US Patent Pending” cable wrapping system “cable protect” that elevates cable protection while significantly improving jobsite operations. This submittal introduces the system and presents it as a proven alternate to traditional sand or screening 3/8 minus bedding.

2. Purpose

This document proposes the adoption of CPNA's geotextile cable wrapping system as a superior alternative to traditional imported sand bedding for underground power cable installation on wind and solar farm projects. This method offers consistently wrapped protection, environmental benefits, costs savings and operational efficiencies.

3. Description of Proposed System

CPNA's system employs a US Patent Pending wrapping machine to apply a continuous protective wrap—either a geotextile fleece fabric, PE mesh or a hybrid fleece and bonded PE mesh wrap —around electrical cables in a controlled trefoil configuration. This innovative approach replaces the need for traditional sand bedding and associated zip ties, while providing consistent protection, durability, and heat dissipation performance.

4. Key Benefits Over Traditional Sand Bedding

- Eliminates Trucking and Imported Material Costs
- Environmental Impact Reduction
- Contamination Prevention
- Protects Cable Above and Underground
- Field-Proven Technology – Over 1,000 miles have been installed to date. 0 faults.
- Operational Efficiency & Consistency
- Heat Dissipation & Lifecycle Performance
- Safer and Smaller Footprint
- Production is not impacted by cable wrapping. Can wrap 1,700' / hour

European Market Validation

For years Cable Protect wrapping technology has been widely adopted across Europe as a sustainable and efficient alternative to traditional sand bedding. Examples include Cable Protect Europe's UK Partner - Eco Cable Protect Technology approved by Scottish and Southern Electricity Networks (SEN) and Fibertex's Fibergaine System, both of which have demonstrated significant environmental and operational benefits. Full video documentary available upon request,

5. U.S. Market Adoption

This cable wrapping method is not only field-proven but also formally approved for use by major U.S. renewable developers. Both Invenergy and NextEra Energy have authorized and installed Cable Protect's use of this geotextile wrapping system on solar and transmission projects, further affirming its viability, reliability, and acceptance within the industry.

6. Cost Considerations

While our US Patent Pending method may not result in direct cost savings in every scenario, it delivers substantial non-financial value in terms of consistency, speed, reduced environmental impact, improved site safety, and a lower risk of rework or damage-related jacket repair delays. CPNA and Cable Protect Europe have jointly established an approved US Geotextile vendor to support cable wrapping projects domestically. Furthering the commitment to drive costs and increase value added to the project(s).

7. Conclusion & Recommendation

We respectfully request the approval of CPNA's cable wrapping method as a qualified alternate to traditional sand bedding. It represents the culmination of innovation, investment, and validation—offering a safe, efficient, and environmentally superior solution that supports the goals of high-quality renewable energy infrastructure.

Technical Data Sheets

The following technical data sheets are included to support the submittal:

1. TECHNICAL DATAS HTA 1000 ENGLISH.pdf
2. Cable Protect North America CP 600NW_2025
3. FiberGaine Thermal Insulation Test Report.pdf

Field and Equipment Photos – Provided by Cable Protect Europe and CPNA











Gas pipe with a tracer wire attached.




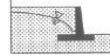








NextEra Solar project located near Gainesville, TX

Product data sheet Fibertex

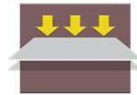
F-1000WOA

Geotextile for application standards

 ✓ Construction of roads and other trafficked areas EN 13249:2016	 ✓ Construction of railways EN 13250:2016	 ✓ Earthworks, foundations and retaining structures EN 13251:2016	 ✓ Drainage systems EN 13252:2016	 ✓ Erosion control systems EN 13253:2016
 ✓ Construction of reservoirs and dams EN 13254:2016	 ✓ Construction of canals EN 13255:2016	 Tunnels and underground structures EN 13256:2016	 ✓ Solid waste disposals EN 13257:2016	 ✓ Liquid waste containment projects EN 13265:2016

Functions / Intended uses

P



Characteristics

Characteristic	Test methods	Units	Nominal value	Tolerance
Tensile strength MD	EN ISO 10319	kN/m	37,50	-4,88
Tensile strength CD	EN ISO 10319	kN/m	77,50	-10,08
Elongation MD	EN ISO 10319	%	90	-18 +20
Elongation CD	EN ISO 10319	%	70	-14 +16
Dynamic perforation resistance	EN ISO 13433	mm	0	+2,0
Static puncture (CBR-test)	EN ISO 12236	N	11000	-1100
Opening size	EN ISO 12956	µm	63	±18
Water permeability at 50 mm WH	EN ISO 11058	m/s	0,017	-0,005
Water flow capacity at 20 kPa Hydraulic gradient: 1,0 Surface: soft / soft	EN ISO 12958	10 ⁻⁶ m ³ /s	2,5	-1,0
Protection efficiency at 300 kPa	EN 13719	%	0,8	+0
Pyramid puncture resistance	EN 14574	N	1200	-360
Durability				
To be covered within 2 weeks after installation				
Predicted to be durable for more than 100 years in natural soils with pH between 2 and 13 at a soil temperature < 25°C on the basis of the results of test method (EN 13249, section B.4.2.2 test duration 112 days)				

Characteristics not mandatory	Test methods	Units	Nominal value	Tolerance
Weight	EN ISO 9864	g/m ²	1000	-100 +100
Thickness at 2 kPa	EN ISO 9863-1	mm	4,00	± 0,2
Carbon Footprint (A1-A3)	EN 15804+A2	kg CO ₂ eq/m ²	2,88	

Material : 100% PP





INSTITUT PRO TESTOVÁNÍ A CERTIFIKACI, a. s.
třída Toinš8e Bati 299, Louky, 763 02 Zlín



Divize CSI - Centrum stavebního inženýrství
Building testing laboratory Zlín, K Cihelné 304, Louky, 763 02 Zlín

Testing laboratory No. 1007.1 accredited by the CAI according to ČSN EN ISO/IEC

L 1007.1

Page: 1/5

No. 415600920-01

TEST REPORT OF ACCREDITED LABORATORY No. 415600920-01

Client: Fibertex Nonwovens A/S
VAT: DK40098216

Address: Svendborgvej 16, DK-9220 Aalborg, Denmark

Test subject: F-1000WOA (grey)
F-1000WOA (yellow)
F-1000WOA (red)

Date of receiving specimens: 17. 7.2023

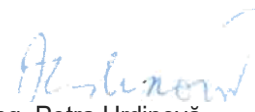
Test report elaborated by: Ing. Nizar Al-Hajar

Place and date of Issuing: Zlín, 26. 7.2023

Annexes:




Ing. Jiří Růžicka
Head of Building testing laboratory Zlín


Ing. Petra Hrdinová
head of accredited testing laboratory

*Note: The results given in this test report are only for the tested specimen as received.
Without the written consent of the Institute for Testing and Certification a.s. the test report must not be reproduced in any form!*

phone: *420 577 604 335, 572 779 901 e-mail: itc@itczlin.cz

www.ltczlin.cz



Test subject:

Table No. I - Description and identification of test subject

Registration Number ITC	Identification of test subject/specimen by client	Description
415600920/1	Fibergaine F-1000WOA, GREY 4389, Item no. 147567, Roll. No. 15231380800710	The client supplied to the laboratory 6 pieces of each plate sample of 3 kind products: Fibergaine F-1000WOA, GREY 4389; Fibergaine F-1000WOA, YELLOWQG_003271 and Fibergaine F-1000WOA, REDQGQG_003439 of (300 x 300) mm size. Condition of samples upon receipt: without apparent deficiencies.
415600920/2	Fibergaine F-1000WOA, YELLOWQG_003271, Item no. 145904, Roll. No. 15231600805506	
415600920/3	Fibergaine F-1000WOA, REDQGQG_0034391, Item no. 147844, Roll. No. 15231860806311	



Figure 1: Tested sample No. 415600920/1

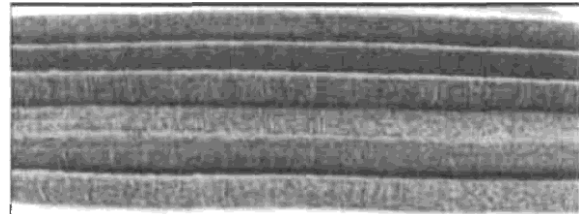


Figure 2: Tested sample No. 415600920/1

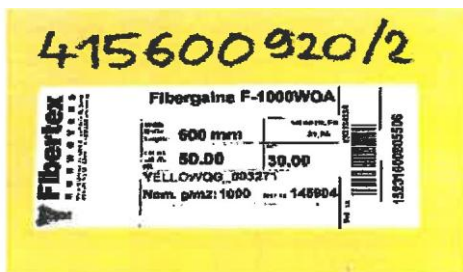


Figure 3: Tested sample No. 415600920/2



Figure 4: Tested sample No. 415600920/2

Note: The results given in this test report refer only to the tested Specimen as received.
 Without a written consent of the Institute for testing and certification a.s. the test report must not be reproduced in any form!

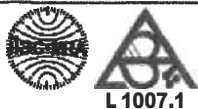


Figure 5: Tested sample No. 415000920/3



Figure 6: Tested sample No. 415600920/3

Way of sampling:

Test specimens marked as specimens No. 415600920/1, No. 415600920/2 and No. 415600920/3 was collected and supplied to the laboratory by the client. The laboratory is not responsible for the way of the specimen collecting.

Documentation given by the client:

Corrected order - see e-mail dated 10/07/2023 with a description of the tested samples and a label on each sample where specific dates are marked.

Task:

The determination of thermal resistance and thermal conductivity of the given samples.

Used testing methods:

Thermal resistance determination — Measurement performed by Guarded Hot Plate Method according to ČSN EN 12667.

Test conditions:

Three test samples of 300 mm x 300 mm size were made from 6 pieces (layers) of each product, marked as numbers: 415600920/1, 415600920/2 and 415600920/3.

Average air temperature in the laboratory during the measurement:	22 °C
Average relative humidity in the laboratory during the measurement:	48 %
Measuring area of the apparatus No. 8/T:	0.0326 m ²
The pressure used during the measurement (client request):	500 Pa
Test date:	17. 7. - 20. 7.2023

The laboratory is not responsible for information provided by the client that may have influence on the validity of the test results. Additional information that is required by the standard(s) and is not provided here is available on request from the laboratory.

Place where the tests have been carried out:

The tests have been carried out in the workplace No. 1 — K Cihelné 304, 764 32 Zlín — Louky

Note: The results given in this certificate refer only to the tested Specimen as received. Without the written consent of the institute for testing and certification a.s. the test report must not be reproduced from complete form!



Test results:

The test results are given in the following tables:

Table No. II - Measured results

Test sample No.	Thickness	MBB8	Heat flow of measured area	Mean temperature	Surface temperature difference	Thermal resistance	Thermal conductivity
	<i>d</i>	<i>M_y</i>	<i>P</i>	<i>t_m</i>	<i>Δt</i>	<i>R</i>	<i>γ</i>
	mm	kg/m ²	W	°C	K	m ²	W/(m K)
415600920/1 (F-1000WOA, grey)	23,4	1,03	0,7636	10,05	10,009	0,4185	0,05502
415600920/2 (F-1000WOA, yellow)	23,4	1,06	0,8170	10,00	9,930	0,3982	0,05877
(F-1000WOA, red)	25,8	0,964	0	10,14	10,302	0,5067	0,05062

Note 1: Specimen thickness "d" opposes the thickness of 6 layers of product material. Mass area refers to one layer of the product material.

Table No. III - Evaluated results

Measured quantity	Symbol	Unit	Result	Test sample No.	Uncertainty
			0,069T	415600920/1 (F-1000WOA, grey)	
Thermal resistance	R	m ² K/W	0,0664	415600920/2 (F-1000WOA, yellow)	3, 5X
			0,0845	415600920/3 (F-1000WOA, red)	

Note: The results given in this report refer only to the specified specimens as received. Without a written consent of the Institute for Testing and Certification a.s. this report must not be reproduced in any complete form.



Measured quantity	Symbol	Unit	Result ²⁾	Test sample No.	Uncertainty ¹⁾
Thermal conductivity	λ	W/(m K)	0,0559	415600920/1 (F-1000WOA, grey)	
			0,0588	415g00920/2 (F-1000WOA, yellow)	
			0,0509	415600920/3 (F-1000WOA, red)	

- 1) extended uncertainty for expansion coefficient $k = 2$, which for a normal distribution corresponds to a probability of coverage of about 95%.
- 2) The stated thermal resistance and thermal conductivity values of each measurement in the above table apply to one layer of the product material with a thickness of 3.9 mm for samples No. 415600920/1 and 415600920/2, and for one layer of product material with a thickness of 4.3 mm for samples No. 415600920/3.

..... Test report end

Note: The results given in this test report refer only to the tested specimen as received. The Institute for Building Testing and Certification a.s. test report must not be reproduced then compiled.

Technical Information

Page 1 of 2

Part No.: 7100.2000.MK.E



Mulfgang Ptirnbier
Systeme gegen Elektrostatik

+ Untere Gießwiesen 21 r 78247 Hilzingen t Tel.: +49-7731-86880 + Fax: +49-7731-868830

Metriso° 2000 — TEST-KIT (Part No.: 7100.2000.MK.E)

- Suitable for resistance to ground, surface and volume resistance measurements according to EN 61340-5-1, EN 61340-4-1 and EN 61340-2-3
- Suitable for measuring the electrical resistance of footwear and flooring in combination with a person according to EN 61340-4-5.
- Integrated data logger for 2500 values and infrared communication port for data transmission
- Clip-on humidity and temperature sensors
- Special guard socket reduces distortion at high value resistance measurements
- Includes two Probes Model 850 according to EN 61340-4-1 Ed. 2.0 / EN 61340-2-3



Probe
Model 850

Technical data:

Test voltage: Test range	DC 10V, 100V, 250V, 500V
Resistance:	$10^3 - 10^{12} \Omega$
Temperature:	-10°C to +50°C
Humidity:	10% to 90%
Operation:	Battery operated or with rechargeable batteries 2 x
Probes:	Model 850
Size:	1 x Handheld probe Model 45 140 x
Weight:	50 x 270 mm (W x H x D) 1120 g

Supplied with:

- Digital high resistance tester Metriso 2000 Infrared
- interface adapter (USB) Communication software
- Humidity and temperature sensor
- 2 Probes Model 850 acc. to EN 61340-4-1 Ed. 2.0
- 1 Handheld probe Model 45 acc. to EN 61340-4-5
- Connecting cables Conductive
- carrying case
- User's Manual in German / English / French

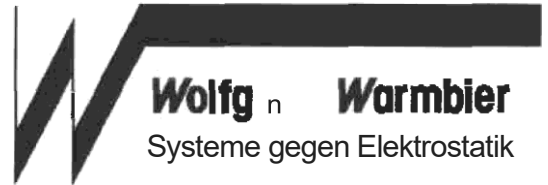
We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

V0608

Technical Information

Page 2 of 2

Part No.: 7100.2000.MK.E



s Untere Gießwiesen 21 r 78247 Hilzingen r Tel.: +49-7731-86880 + Fax: +49-7731-868830

Technical specifications

Measured Quantity	Measuring range	Test current / Impedance	Nominal values	Intrinsic Error
RES _D	1 kEt - 100 kE2		UM= 10V	1(5% rdg. + 3 d)
RES _D	>100 kEt - 10 Get	1 mA	UM' 100V	+(5% rdg. + 3 d)
RES _D	»10 GB - 100 G t	1 mA	UM' 100V	+(8% rdg. + 3 d)
RES _D	0 MED - 10 GEt	1 mA	UM' 250/500V	1(5% rdg. + 3 d)
RES _D	0 MRI - 100 GQ	1 mA	RM' 250/500V	1(8% rdg. + 3 d)
RES _D	»100 GEt - 1 TO	1 mA	UM- 100/250/SOOV	+(25% rdg. + 5 d)
UM	0 V - 720V	5 MED		+(2,5% rdg. + 3 d)
T	-10°C - +50°C			+ 2°C
F	10% - 90 %			+ 5%

Power supply, battery life expectancy:

The instrument is supplied including the batteries (4 x 1,5 V baby cells)

Battery life is about 3000 measurements at RES_D with one set of batteries.

(With 10 sec. on-time and pedormance of one measurement before each automatic instrument shutdown)

Rep/ace file hafteries by NICd rechargeagle batteries when using the battery charger part no.

7100.2000.MK.Z501.D

¥• 1 year limited warranty

¥• Recommended calibration interval: 2 years

Accessories (optional):



Part No.

7100.2000.TR50

50m Cable reel with unroll handle for floor measurement



7100.2000.MIç.Z501.D

Battery charger for rechargeable battery operation

We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

V0608

QUESTION ASKED ABOUT HEAT DISSIPATION:

Jim,

When evaluating the CPNA cable wrap product with regard to its effect on cable ampacity, it's necessary to determine the wrap's thermal resistivity (ρ_T) for input into the cable duct material properties in the ampacity simulation software, CYMCAP.

Specific Installation data: 1 cable(s) type

Select a CABLE:
(NW 1250KCMIL) 1250KCMIL AI TRXLPE_16x14AWG

Sheath/Shield Bonding: 1-CON, sheaths bonded ends, triangular configuration

Loss Factor Constant (ALOS)
Single Conductors Transposed
Duct Construction
Outer Cable Phase
Minor Section Lengths
Spacing of Cables in Section
Pipe Coating Material
Pipe Material
Duct Dimensions

Custom Duct Material

Duct thermal resistivity
 ρ_T : 19.646 C·m/W

Duct Construction type (U,V,Y)
User defined U,V,Y

Medium in duct: Air

U	V	Y
1.8700	0.3120	0.0037

Duct magnetic property
non-magnetic

Duct filling thermal resistivity
 ρ_{DF} : 1.0 C·m/W

* DLF + (1 - ALOS) * DLF²

Apply frequency per cable: 60.0 Hz

OK Cancel

It appears from the provided test report below that the worst-case conductivity is **0.0509 W/(m*K)**. The thermal resistivity is the inverse of this value: $1/0.0509 = 19.6464 \text{ K*m/W}$.



Measured quantity	Symbol	Unit	Result ²⁾	Test sample No.	Uncertainty ¹⁾
Thermal conductivity	λ	W/(m·K)	0,0559	415600920/1 (F-1000WOA, grey)	
			0,0588	415600920/2 (F-1000WOA, yellow)	
			0,0509	415600920/3 (F-1000WOA, red)	

1) extended uncertainty for expansion coefficient $k = 2$, which for a normal distribution corresponds to a probability of coverage of about 95%.

2) The stated thermal resistance and thermal conductivity values of each measurement in the above table apply to one layer of the product material with a thickness of 3.9 mm for samples No. 415600920/1 and 415600920/2, and for one layer of product material with a thickness of 4.3 mm for samples No. 415600920/3.

..... Test report end

This thermal resistivity appears to be significantly higher than that of PVC for example which is $5.0 \text{ K}\cdot\text{m}/\text{W}$ according to [IEC 60287-2-1](#) table 1, and closer to that of an insulator like fiberglass, which may be on the order of $\sim 28 \text{ K}\cdot\text{m}/\text{W}$.

Therefore, it appears that the geotextile polypropylene wrap is relatively insulative. Could you please confirm whether this interpretation of the thermal resistivity report is accurate?

Furthermore, to accurately capture the effect of the thermal resistance between the cable and the duct in the calculation of T_4 , as described in [IEC 60287-2-1](#), a U, V, Y values must also be specified for the material. Table 5 of the IEC standard lists the U, V, Y values for various materials.

Does CPNA have any recommendation regarding which installation condition most closely matches the properties of the cable wrap material?

Table 5 – Values of constants U, V and Y

Installation condition	U	V	Y
In metallic conduit	5,2	1,4	0,011
In fibre duct in air	5,2	0,83	0,006
In fibre duct in concrete	5,2	0,91	0,010
In asbestos cement:			
duct in air	5,2	1,2	0,006
duct in concrete	5,2	1,1	0,011
Gas pressure cable in pipe	0,95	0,46	0,0021
Oil pressure pipe-type cable	0,26	0,0	0,002 6
Plastic ducts	1,87	0,312	0,003 7
Earthenware ducts	1,87	0,28	0,003 6
Water filled plastic ducts	0,1	0,03	0,001

ANSWER / RESPONSE TO THIS QUESTION:

Dear Mr. OConnor,

With permission from Theo Saathoof (Cable Protect Europe and Inventor), I am writing to you regarding the issue of thermal conductivity of the cable protection.

First to my Person:

I work for the company THETA Ingenieurbüro GmbH, Dresden, Germany in the main field of thermal dimensioning of cable systems. In the past we did several investigations (calculation and experiments) about different uncertainties regarding the heating of cables buried in soil.

The experiments we did and still doing are at the University of Applied Sciences in Dresden. I know Theo Saathoof from an initial project in which the thermal influence of the cable protection will be systematically investigated under real conditions.

To the Problem:

You are correct if you will take the low values of the thermal conductivity ($\lambda \approx 0,05 \text{ Wm}\cdot\text{K}\frac{\text{W}}{\text{m}\cdot\text{K}}$) from the past investigations that you will achieve a dramatical reduction of the current ampacity of the cables.

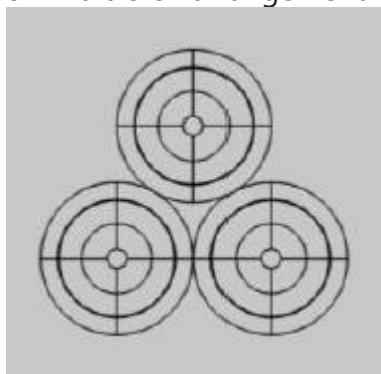
The past investigations of the testing labs were made with typicall arrangements for testing the thermal conductivity of solid and form stable materials. The cable protection is more like a foam and/or has a lattice structure which is either not form stable or a monolithic material. Thatswhy the test labs will come to a result which is close to the thermal conductivity of air (without convection plus a bit radiation). Therefore, a more practical investigation with additional recalculation and modelling has to be established.

In our first investigations we found an in situ thermal conductivity of $\lambda \approx 0,1 \text{ Wm}\cdot\text{K}$. If the cables will lay in air the cables with the cable protection will still have relative high thermal disadvantage against the cables without the cable protection.

The disadvantage will decrease if the cables are burried. Depending of the thermal properties of the soil, the thermal disadvantage of the cables with cable protection against cables without cable protection becomes not so significant.

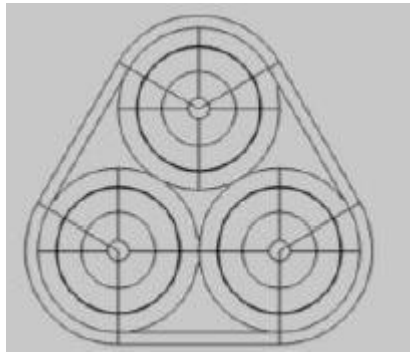
Small Example:

If the cable is burrowed in soil in a trefoil arrangement like this



a) without cable protection

or



b) with cable protection

and if the soil have standard thermal properties like $1.0 \text{ Wm}\cdot\text{K}$ (in wet condition), $0.4 \text{ Wm}\cdot\text{K}$ (in dry condition), 15 K (temperature rise where the soil dries out), $20 \text{ }^\circ\text{C}$ (unaffected soil temperature), the temperature disadvantage between both cables is approx. 8 K . That means the:

cable a) will have a conductor temperature of $90.0 \text{ }^\circ\text{C}$

cable b) will have a conductor temperature of $98.3 \text{ }^\circ\text{C}$

Important Notes

The shown results refer to our first investigation of cables wrapped with the cable protection and investigated under air conditions. These experiments were modeled / simulated and the results were transferred in a simulation model of buried cables.

Next steps of investigations will come to in soil buried cables and to investigate the behaviour of the contact of soil direct to the cable protection. We expect that the disadvantage will become a bit less. Nevertheless a wrapped cable with the cable protection has a thermal disadvantage compare to a non wrapped cable. The disadvantage strongly depends on the thermal properties of the surrounding soil. In cable calculations it is necessary to consider this fact.

--

Mit freundlichem Gruß

Carsten Loth

THETA Ingenieurbüro GmbH

Lohrmannstr. 20

01237 Dresden, Deutschland

Telefon: + 49 (0) 351 496 14 44

Mail: loth@theta-dresden.de

Homepage: <https://www.theta-dresden.de/>

Geschäftsführer: Ralf-Dieter Rogler, Gerd Kitzrow, Carsten Loth

Sitz: Dresden, HRB 25253 Dresden

UNDERGROUND NETWORKS

Datasheet

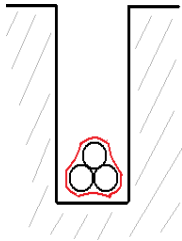
Cable Protection HTA 1000



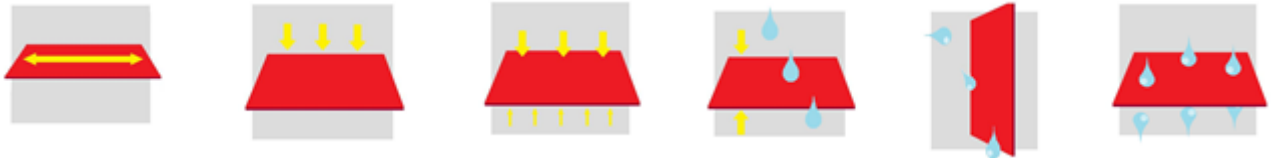
N°0334-CPR-0019

Technical data and specifications	Standards	Values	Tolerance %
Tensile strength MD/SP	EN ISO 10319	43.7 kN/m	±10
Tensile strength CD/ST	EN ISO 10319	53.5 kN/m	±10
Distortion / Tensile stress MD/SP	EN ISO 10319	101.6 %	±20
Distortion / Tensile stress CD/ST	EN ISO 10319	95.3 %	±20
Dynamic perforation	EN ISO 13433	0 mm	
Static Puncture Test (CBR test)	EN ISO 12236	6.62 kN	-10
Opening size	EN ISO 12956	60 µm	±20
Normal permeability / at right angles	EN ISO 11058	0.015 m.s ⁻¹	±20
Flow capacity : 20 kPa	EN ISO 12958	8.83 ^{e-6} m ² /s	±20
Flow capacity : 100 kPa	EN ISO 12958	3.25 ^{e-6} m ² /s	±20
Durability Bury the pipe protected by the geotextile within 2 weeks.	EN ISO 12225	A > 25 years life cycle can be obtained provided that the geotextile is used in normal grounds with 4<ph<9	
Not compulsory physical values			
Thickness		6 mm	±20
Mass density		1000 gr/m ²	-0 / +20
Resistance to penetration by water	EN 13562	60 mm	

Applications :
Electricity networks



Results of the tests according to applications
NF EN 13249... 13257 / EN 13265 for the following functions:
Filtration (F) ; Drainage (D) ; Reinforcement (R) ; Protection (P).



PROTECTION OF THE BURIED NETWORKS

Cable Protection HTA 1000

Employment authorization n°11E053/RT

Trademark :	DAFIGAINE HTA 1000
CE Marking (<i>ASQUAL</i>):	0334-CPR-0015
Type of product:	Nonwoven geotextile (<i>Polypropylene Fibre</i>)
ENEDIS Employment Authorization :	N°11E053/RT
ENEDIS Classification :	PR HTA 2.b.B
Shock resistance :	Classe 2
Puncture resistance :	Classe b
Thermal resistance * :	Classe B
Thickness ** :	+/- 5 mm
Mass density:	1000 g/m ²
Length of the reels:	100 ml
Available widths :	28/30/33/40 cm (<i>and on demand</i>)
Packaging :	- Pallets from 1000 to 1200 Linear Meters (<i>depending on the width</i>) - UV-resistant protection
Recommended use :	ENEDIS Directive G 5.2-03



* Reduction of transmission of the cable
Dafigaine® : conditions of laboratories tests : 0 to 2 % (*100 % dry conditions*)
Sand : verified conditions in laboratories : 0 to 30 %

** The product is not calendared (*at the request of ENEDIS*).
It is an advantage because the geotextile can drain water from the earth and fines to cool and improve the transmission of the cable.
In this case there is no more overheating for the cable.



**CABLE PROTECT
NORTH AMERICA**

CP 600NW
Nonwoven Geotextile

CP 600NW is a nonwoven needlepunched geotextile made of 100% black polypropylene staple filaments. **CP 600NW** is resistant to ultraviolet deterioration, rotting, biological degradation, naturally encountered bases and acids. Polypropylene is stable within a pH range of 2 to 13. **CP 600NW** is both air and water permeable. **CP 600NW** black polypropylene fibers will perform the same as the **DAFIGAINE HTA 1000** red polypropylene fibers. **CP 600NW** meets the following **M.A.R.V.** values:



PROPERTY	TEST METHOD	ENGLISH	METRIC
Grab Tensile Strength	<u>ASTM D-4632</u>	600 lbs	2,670 N
Elongation @ Break	<u>ASTM D-4632</u>	50 %	50 %
CBR Puncture	<u>ASTM D-6241</u>	2,287 lbs	10,177 N
Trapezoidal Tear	<u>ASTM D-4533</u>	270 lbs	1,201 N
UV Resistance @ 500 Hours	<u>ASTM D-4355</u>	50 %	50 %

This product is not calendared. It is an advantage because the geotextile can drain water from the earth and fines to cool and improve the transmission of the cable. In this case there is no more overheating for the cable.

SIZE (English)	SIZE (Metric)	WEIGHT
14" x 300'	<u>35.5cm x 91.4m</u>	78 lbs
18" x 300'	<u>45.72cm x 91.4m</u>	100 lbs
20" x 300'	<u>50.8cm x 91.4m</u>	111 lbs

Cable Protect Europe GmbH ~ Mengelsmatt 1a ~77728 Oppenau

Tel. +497804912236 ~ Mobil +491732113361 ~ info@cable-protect-europe.de ~ www.cable-protect-europe.de
This information is provided for reference only and is not intended as a warranty or guarantee. Cable Protect North America assumes no liability in connection with the use of this information.