

INSULATED LIGHTNING PROTECTION CONDUCTOR

LICON 35



ULTRA LOW IMPEDANCE



Tested By Independent
Institutes...

APPROVED !

LICON 50

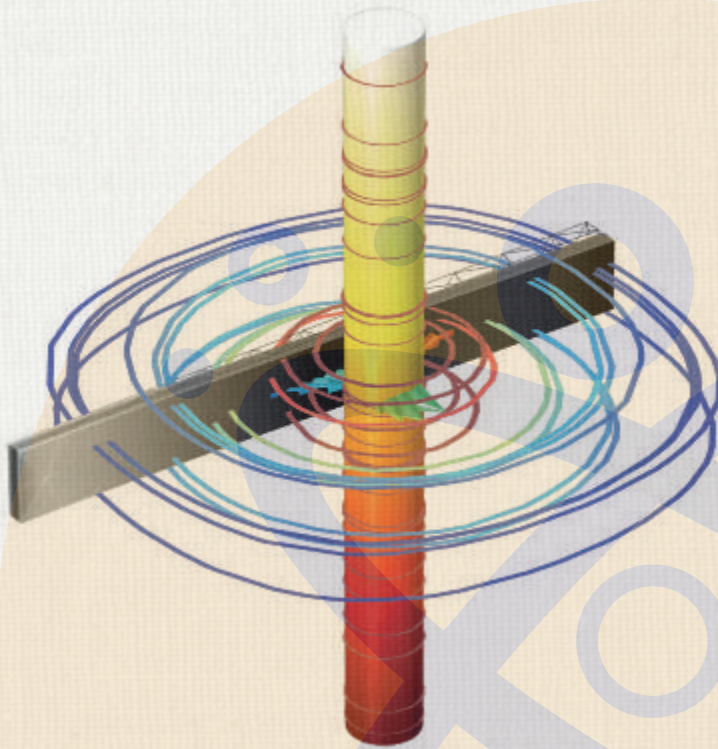


HIGH DURABILITY

nova

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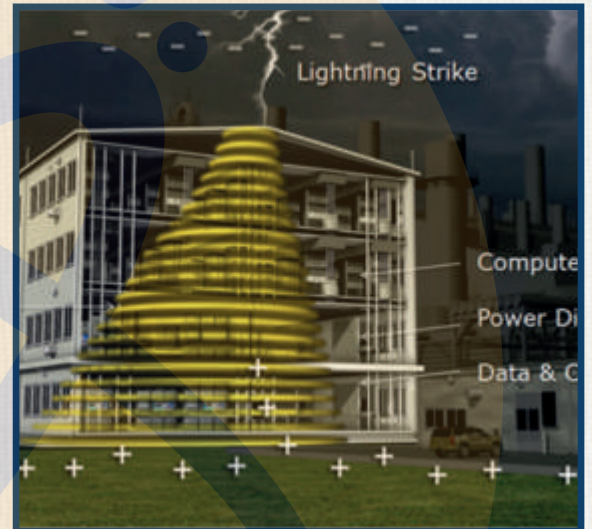
WHY INSULATED CONDUCTOR?



“

Lightning strikes caught by external Lightning systems are transferred to the ground. During this transfer, there is a possibility that fire caused by the electromagnetic field around the conductor and loss of life due to contact with the conductor.

”



Importance of Using Insulated Conductor in Buildings

The main purpose of Lightning Protection systems is to transfer of Lightning discharge to ground through the shortest and safest way. Lightning strikes that are caught by external Lightning systems are conducted to the ground by conductors. During this conduction, the plain conductors adhered to the building may cause severe damage to the energy and data lines because of the electromagnetic

field around them. Besides, it may cause a fire and loss of life. Especially the insulated conductors that are used in external Lightning systems have a significant place in the Lightning Protection systems in terms of some advantages they provide. These conductors isolate the energy that will be conducted from the environment and prevent it from being creepage to other energy and data lines.

Licon insulated lightning protection conductors are designed to reduce all kinds of life and property losses that may occur inside and outside the building by reducing the electromagnetic effect that can occur while transferring the lightning strike to the ground. Besides, it has superiority to its competitors with its high strength and easy processability.

The four significant features of an insulated conductor

INSULATED
PROTECTION

1

LOW
IMPEDANCE

2

HIGH
DURABILITY

3

EASY
INSTALLATION

4

LICON 35 LABORATORY ANALYSIS

(ODTU UNIVERSITY)

Samples (L=1 m)

1. 35 mm² PLAIN COPPER CONDUCTOR (Ø=6.5 mm)
2. 50 mm² PLAIN COPPER CONDUCTOR (Ø=8.0 mm)
3. 35 mm² (4x7.865 mm²) LICON 35

Lightning Impulse Current Test

The conductor samples are exposed to an impulse current by a lightning impulse generator (500 kV, 10 KJ) and a current regulation coil. Each sample has been visually examined after 3 impulses current; however, any damage or physical instability are not observed.

Impedance Measurements

SAMPLES	V _{pp} (Voltage Amplitude) Kvolt	I _{pp} (Current Amplitude) kA	Z (Impedance) Ohm
35 mm ² Copper	122,58	15,22	8,054
50 mm ² Copper	126,07	16,06	7,85
35 mm² Licon	36,52	16,34	2,235

TEST RESULT

After the tests and measurements, it has been observed that any of the samples are not damaged, the results of the impedance measurements made at 1,25 MHz is shown much higher values than the measurements made at lower frequencies; and it has been tested and confirmed that "LICON 35 mm²" conductor one of the samples provide a vital impedance decrease, and the conductor has the lowest impedance value.



LCOE

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C. Escorial, 1 - 28002 Getafe (Madrid)
Teléfono: +34 91 491 01 00
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TEST REPORT

2016113F0495

TESTED DEVICE Lightning impulse current withstand test:
100 kA of 10/350µs waveform

MODEL FRND-LICON-50mm²; FRND-LICON-35mm²; DIGITAL
LIGHTNING STRIKE COUNTER; ANALOG LIGHTNING
STRIKE COUNTER.

SERIAL NUMBER s/n

REQUESTED BY FOREND Elektrik Malz. Ve Dis. Tic. A.Ş
Halaskargazi cad. no:141 K:4 D:7 - Osmanbey - Sisli / Istanbul

APPLIED STANDARDS See page 3 of this report

Beginning of tests date 07/11/2016
End of tests date 08/11/2016

The test report consists of pages 8 and 2 appendices

Authorized signatory Date of issue: 18th November, 2016

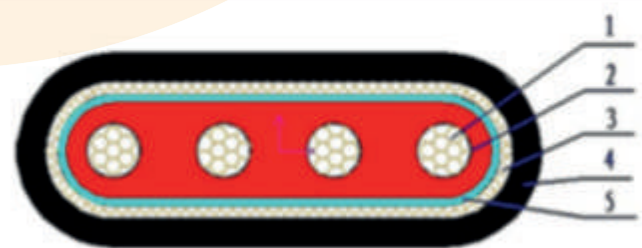
Mr. Abderrahim Khamlichi Technical Responsible of HV Testing

Tested by: Mr. Juan Pablo Vega HV Test Technician

CONDITIONS OF VALIDITY FOR THIS DOCUMENT:

- The results of the tests refer exclusively to the sample which was tested.
- If the tested sample is described in this report, if any modification of the sample has been received, the details will also be given in the report and further documented in the report.
- The use of the report is prohibited if it is altered in any way without prior authorization.

Tested according to
UNE - EN
62561-1



1. copper conductor
2. XLPE insulation
3. copper braid screening
4. LSZH sheath
5. semi-conductive

LICON 35-50

LABORATORY ANALYSIS

(HIZAL LABORATORIES)

Samples

1. 35 mm² (4x7.865 mm²) LICON 35
2. 50 mm² (4x7.865 mm²) LICON 50

Lightning Impulse Current Test

The conductor samples are exposed to an impulse current by a lightning impulse generator (1200 kV, 20 KJ) and a current regulation coil. Each sample has been visually examined after 3 impulses current; however, any damage or physical instability are not observed.

Applied Energy

SAMPLES	I max kA	I peak-avg KA	Δt mS
35 mm ² Licon	151	75,5	2
50 mm ² Licon	151	75,5	2

TEST RESULT

As a result of the tests and measurements made, it was observed that no sample was damaged, and the samples were tested and approved to conform with the TS EN 62561-1 standard.

hizal HIZAL ELEKTROENERJİ YATIRIM VE TİCARİET LTD.
HIGH VOLTAGE LABORATORY - TEST EQUIPMENT AND SERVICES - CONSULTANCY
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Tarih: 25/10/2016
Sıra: 2100-6-Inf-2

DENEY RAPORU

Konu:
Korunulmuş Elektrik Malzeme Üretim ve Dağıtım A.Ş.
İncelenecek Ürünün Konusu: sisizimi topraklama kablosunun uygulanması
Yüksek Gerilim Darbe Akım Testleri

**Tested according to
UNE - EN
62561-1**

176 H.V. Laboratory Consultant for



1, copper conductor 2, Semi-conductive nylon tape
3, natural XLPE insulation 4, black semi-conductive layer
5, grey LSZH sheath

MORE THAN A CLAMP...

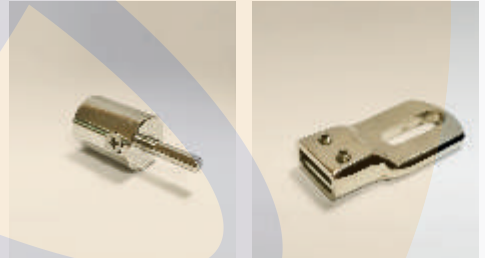
In the Protection of an effective Lightning strike, a qualified air terminal and a strong down conductor is not enough alone. As in all combined systems, every material used in the Lightning protection system has to be integrated with each other. There are a number of system elements that seem to be insignificant but have important functions in providing the unity and integrity of the system. These apparatuses, which we refer to as "fixing clamps," are appeared to be hidden heroes of a lightning protection system when they viewed from this aspect.

In addition to the stability of Licon, we show the best sensitivity in designing a perfect lightning protection system without giving any slightest question mark with its "fixing clamps".

- ✓ **GALVANIZED FIXING BASE**
- ✓ **PLASTIC HOLDER**
- ✓ **STAINLESS STEEL SCREW**



- ✓ **TIN CLAD COPPER**











*Licon 35
Test Clamp*



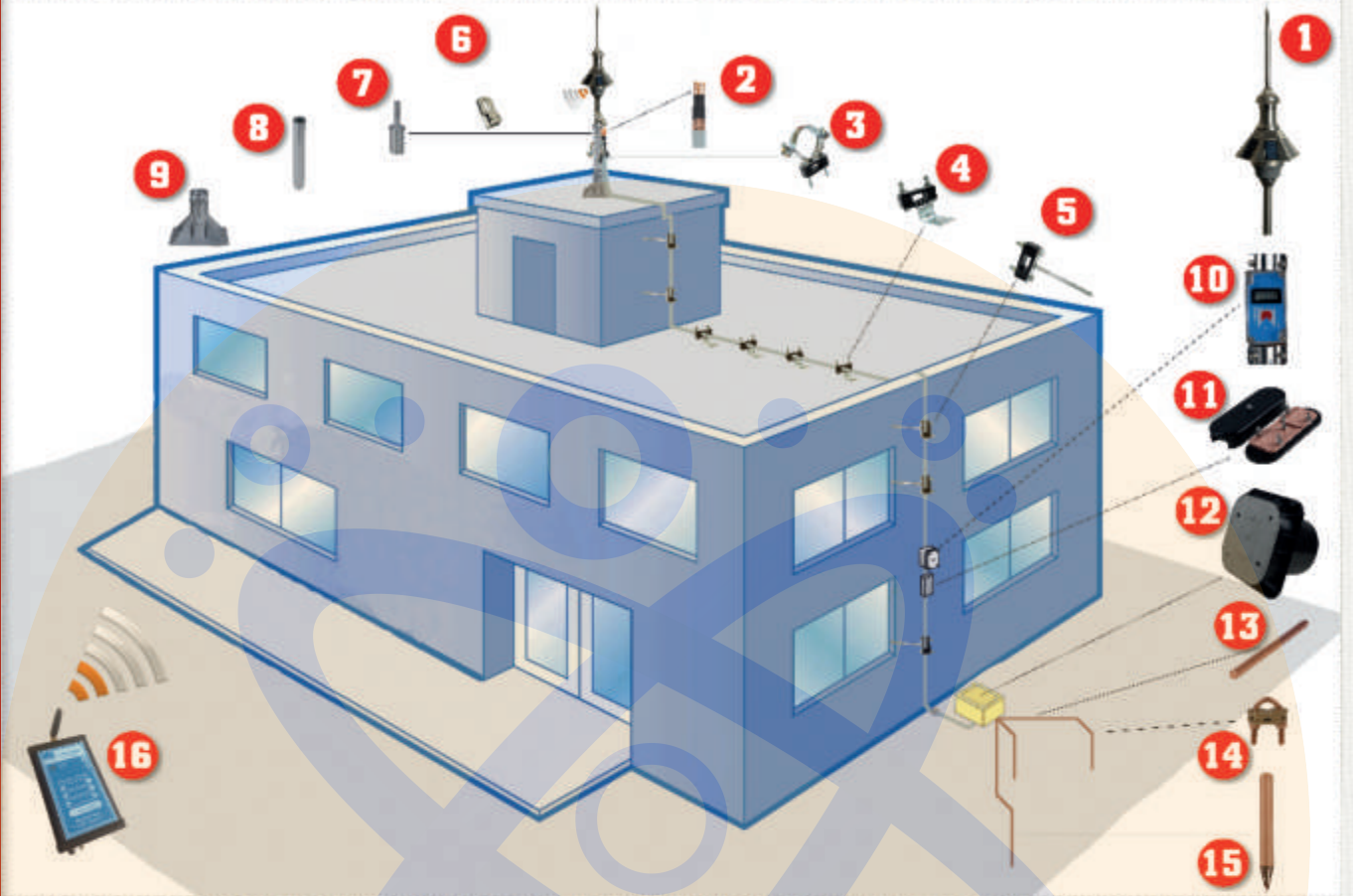
INSULATED LIGHTNING PROTECTION CONDUCTOR & ACCESSORIES

PRODUCT CODE	PRODUCT NAME	MATERIAL	TYPE	PRODUCT IMAGE
NV-AE 21182	LICON 50	Hva Insulated Copper	Round (50 mm ²)	
NV-AE 21179	LICON 35	Hva Insulated Copper	Flat (35 mm ²)	
NV-AE 21205	Air Terminal Connection Lug	Tin Clad Copper	Round (50 mm ²)	
NV-AE 21206	Air Terminal Connection Lug	Tin Clad Copper	Flat (35 mm ²)	
NV-AE 12405	Test Clamp	Copper with Pvc Cover	Round (50 mm ²)	
NV-AE 12420	Test Clamp	Copper with Pvc Cover	Flat (35 mm ²)	
NV-AE 21207	Pole Fixing Clamp	Galvanized with Plastic Holder	Round (50 mm ²)	
NV-AE 21208	Pole Fixing Clamp	Galvanized with Plastic Holder	Flat (35 mm ²)	

INSULATED LIGHTNING PROTECTION CONDUCTOR & ACCESSORIES

PRODUCT CODE	PRODUCT NAME	MATERIAL	TYPE	PRODUCT IMAGE
NV-AE 21209	Screwed Type Clamp	Galvanized with Plastic Holder	Round (50 mm ²)	
NV-AE 21210	Screwed Type Clamp	Galvanized with Plastic Holder	Flat (35 mm ²)	
NV-AE 21211	Trapeze Type Clamp	Galvanized with Plastic Holder	Round (50 mm ²)	
NV-AE 21212	Trapeze Type Clamp	Galvanized with Plastic Holder	Flat (35 mm ²)	
NV-AE 21213	Z Type Clamp	Galvanized with Plastic Holder	Round (50 mm ²)	
NV-AE 21214	Z Type Clamp	Galvanized with Plastic Holder	Flat (35 mm ²)	
NV-AE 56354	Eco Type Wall Clamp	Plastic	Round (50 mm ²)	
NV-AE 56272	Connection Coupling	Tin Clad Copper	Round (50 mm ²)	

LICON INSTALLATION GUIDE



Remote Controlled Active Air Terminal (**F.France ACTIVE 4D**) + Lightning Protection Accessories (Including **LICON** Down Conductor)

- | | |
|--|---|
| 1. F.France Active 4D | 9. Pole Base |
| 2. Licon Isolated Lightning Protection Conductor | 10. Digital Lightning Strike Counter |
| 3. Pole Fixing Clamp | 11. Test Clamp with Pvc Cover |
| 4. Z Type Fixing Clamp | 12. Pvc Inspection Pit (5 Tons Loaded Rate) |
| 5. Screwed Type Fixing Clamp | 13. Earthing Conductor |
| 6. Air Terminal Connection Lug | 14. Rod to cable clamp |
| 7. Pole Joint Adapter Insulated Type | 15. Earthing Rods 250 microns Copper Clad Steel |
| 8. Air Terminal Pole | 16. Wireless Active Air Terminal Test Device |



Nova Paratoner Topraklama İnşaat ve San. Tic. Ltd. Şti.

İvedik OSB Mah. 1419. Cad. No: 11/21 YENİMAHALLE-ANKARA-TURKEY

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