# GROUP A

## 폴리머애자 Polymeric Insulators





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### Silicone Dead-end Insulator

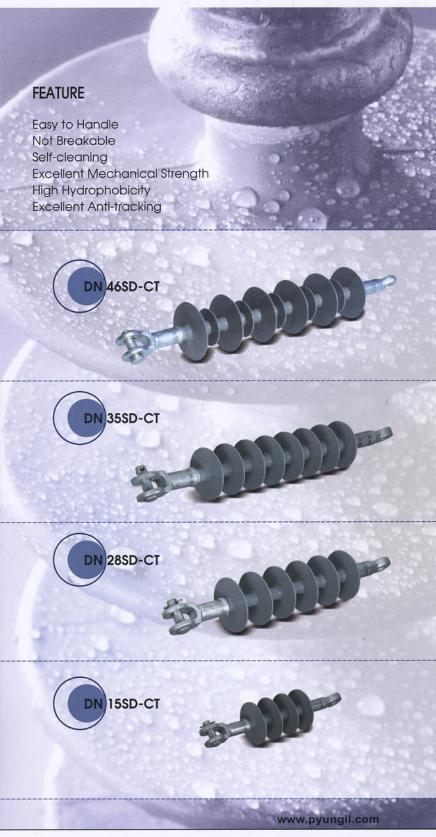
#### **APPLICATION**

Polymeric Dead-end insulators made of silicone rubber used for distribution line for 15kV~46kV

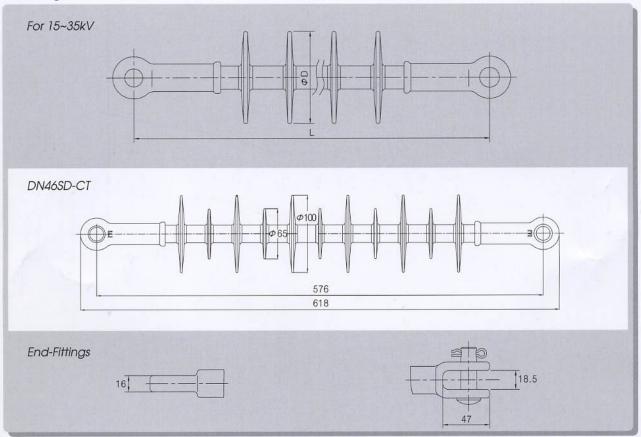
**PYUNGIL silicone** rubber dead-end insulators for 15~46kV have a superior self-cleaning function with the high hydrophobicity, compared with EPDM rubber one, and this can eliminate the need of periodical water washing operations. For ultra violet, the silicone rubber is considered as one of the best dielectric materials, which can withstand and endure UV deterioration. Also compared with the porcelain insulator, the PYUNGIL dead-end silicone insulators are light-weighted, easy to handle, breakage-resistant, free from crack and also durable.

The PYUNGIL insulators are composed of three basic parts of fiberglass rod, which guarantees the high tensile strength, silicone rubber weather sheds, having excellent dielectric performance and ultra violet resistant characteristics, and metal end fittings swaged directly on to the fiberglass rod. PYUNGIL silicone dead-end insulators have been designed and tested to meet the requirements of ANSI, IEEE, IEC and CEA LWIWG-01 (91) at Kinectrics Incorporation in Ontario, Canada.

**The PYUNGIL** dead-end insulators are manufactured under the rigid quality compliance of the ISO 9001 quality assurance program.



### Drawing



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M	Unit	DN15SD-CT	DN28SD-CT	DN35SD-CT	DN46SD-CT		
Class	kV	15	28	35	46		
of Sheds		4	6	8	11(6/5)		
ength(L)	mm	336	446	532	576		
meter(D)	mm	95	92	86	100/65		
Distance	mm	414	634	796	990		
Dry Arcing Distance		204	317	383	440		
DRY	kV	100	130	145	180		
WET	kV	70	110	130	145		
ver(POSITIVE)	kV	140	190	250	280		
TEST	kV	10	20	25	30		
AT 1000kHz	μV		10				
echanical Load	kN(lb)	70(15,000)					
nal Load	N-m(ft-lb)	55(40)					
	Class of Sheds ength(L) meter(D) Distance Distance DRY WET Ver(POSITIVE) TEST AT 1000kHz echanical Load	Unit Class kV  Class kV  Of Sheds  ength(L)  mm  meter(D)  Distance  mm  DRY  kV  WET  kV  Ver(POSITIVE)  AT 1000kHz  echanical Load  kN(lb)	Unit DN15SD-CT Class kV 15 of Sheds 4 ength(L) mm 336 meter(D) mm 95 Distance mm 414 Distance mm 204 DRY kV 100 WET kV 70 Ver(POSITIVE) kV 140 TEST kV 10 AT 1000kHz   echanical Load kN(lb)	M         Unit         DN15SD-CT         DN28SD-CT           c Class         kV         15         28           of Sheds         4         6           ength(L)         mm         336         446           ength(L)         mm         95         92           Distance         mm         414         634           Distance         mm         204         317           DRY         kV         100         130           WET         kV         70         110           Ver(POSITIVE)         kV         140         190           TEST         kV         10         20           AT 1000kHz         μN         10         20           echanical Load         kN(lb)         70(15)	M         Unit         DN15SD-CT         DN28SD-CT         DN35SD-CT           e Class         kV         15         28         35           of Sheds         4         6         8           ength(L)         mm         336         446         532           eneter(D)         mm         95         92         86           Distance         mm         414         634         796           Distance         mm         204         317         383           DRY         kV         100         130         145           WET         kV         70         110         130           Ver(POSITIVE)         kV         140         190         250           TEST         kV         10         20         25           AT 1000kHz $\mu$ N         10         70(15,000)		

### **EPDM Dead-end Insulator**

#### **APPLICATION**

Polymeric Dead-end insulators made of EPDM rubber used for distribution line for 15kV~35kV

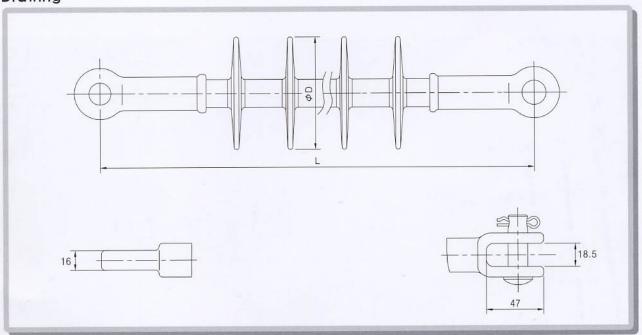
**PYUNGIL EPDM** rubber dead-end insulators for 15~35kV have been introduced to cover the weak points of the existing porcelain insulators. Compared with porcelain ones, PYUNGIL polymerics insulators are light-weighted, easy to handle, breakage-resistant, free from crack and also durable. The EPDM rubber that PYUNGIL uses has been made under its special knowhow for raw material. It has been used for the cable connectors for over 20 years, which proves that the EPDM rubber has dependable quality.

The PYUNGIL dead-end insulators are composed of three basic parts of fiberglass rod, which guarantees the high tensile strength, EPDM rubber weather sheds, having excellent dielectric performance and metal end fittings are crimped directly on to the fiberglass rod. The profile and the dimension of the dead-end insulator are obtained and optimized using CAD simulation by experienced engineers.

The PYUNGIL EPDM rubber dead-end insulators have been designed and type-tested at the Korean Electrotechnology Research Institute in accordance with ANSI, IEEE, IEC and Canadian Electrical Association LWIWG-01 (91). The PYUNGIL dead-end insulators are manufactured under the rigid quality compliance of the ISO 9001 quality assurance program.



### Drawing



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ITEM		Unit	DN15ED-CT	DN28ED-CT	DN35ED-CT	
Voltage	Class	kV	15	15 28		
Number o	of Sheds		4	6	8	
Net We	eight	kg	1.26	1.40	1.55	
Section Le	ength(L)	mm	336	446	531	
Shed Diameter(D)		mm	95	92	92	
Leakage Distance		mm	415	643	851	
Dry Arcing Distance		mm	204	314	389	
60Hz	DRY	kV	100	130	145	
Flashover	WET	kV	70	110	130	
Impulse	POSITIVE	kV	140	190	250	
Flashover	NEGATIVE	kV	175	230	275	
Radio	TEST	kV	10	20	25	
Influence	AT 1000kHz	μN		10		
Min.Specified Mechanical Load		kN(lb)	70(15,000)			
Min.Torsional Load		N-m(ff-lb)	55(40)			

### Polymeric Line Post Insulator with Universal Clamp

#### APPLICATION

Polymeric Line Post Insulators made of slilcone rubber for distribution line for 15kV~46kV

PYUNGIL polymeric line post insulators with universal clamp for 15~46kV are introduced to cover the weak points of the existing porcelain insulators. The insulators are installed vertically or horizontally on electric pole or structure to hold the overhead wire. Compared with

porcelain ones, PYUNGIL polymeric insulators are light-weighted, easy to handle, breakage-resistant, free from crack and also more durable.

The **PYUNGIL** line post insulators are composed of three basic parts of fiberglass rod, which guarantees the high bending strength silicone rubber weather sheds, having excellent dielectric performance and ultra violet resistant characteristics, and metal end fittings swaged directly on to the fiberglass rod.

The **PYUNGIL** silicone line post insulators have been designed and tested to meet the requirements of ANSI, IEEE, IEC and CEA LWIWG-02 at Kinectrics Incorporation in Ontario, Canada.

The new design of clamp which accommodates 6.3mm to 34mm diameter of conductor can be separated from the top end-fitting. (patent pending)

**PYUNGIL** insulators are designed and manufactured under the rigid quality compliance of the ISO 9001 quality assurance program.

### **FEATURE**

Light-weighted, Easy to Handle Not Breakable

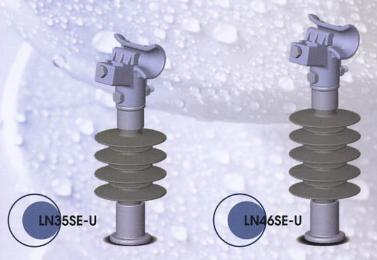
Self-cleaning Function

**Excellent Mechanical Strength** 

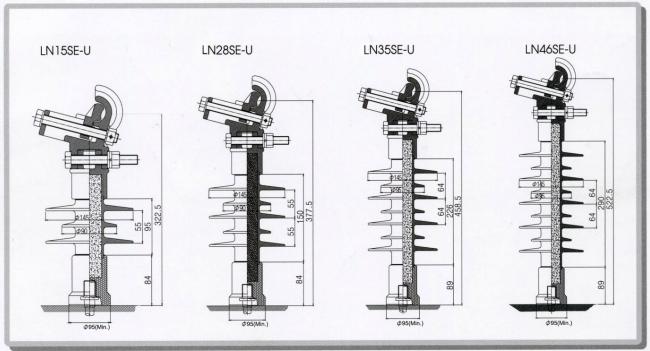
High Hydrophobicity

Wide Range of Conductor Dia.





### Drawing



#### Ratings

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ITEM		UNIT	LN15SE-U	LN28SE-U	LN35SE-U	LN46SE-U	
Rated Volt	age	kV	15	25	35	46	
Number of Big	g Sheds		2	3	4	5	
Diameter of Big	Shed (A)	mm	145	145	145	145	
Number of Sm	all Sheds		1	2	3	4	
Diameter of Smo	all Shed (B)	mm	90	90	95	95	
Section Length (C)		mm	322.5	377.5	458.5	522.5	
Insulation Length (D)		mm	95	150	226	290	
Leakage Dis	tance	mm	300	420	664	846	
Dry Arcing Di	stance	mm	140	195	283	348	
60Hz Dry Flashover \	/oltage (1Min)	kV	75	95	120	145	
60Hz Wet Flashover V	oltage (15Sec)	kV	40	75	80	100	
Critical Impulse	Positive	kV	130	150	180	240	
Flashover Voltage	Negative	kV	155	205	285	350	
Radio Influence Voltage		kV	10	15	22	30	
Max. Design Cantilev	er Load(MDCL)	kN		6 (612kgf)			
Specified Cantilev	er Load(SCL)	kN		12 (1,224kgf)			

### 철도용 장간애자 Silicone Railway Insulator

### 용도 APPLICATION

25kV 전차선로 노변 전주에 취부되어 가동 브래킷을 지지하는 고분자제 애자 (**M TYPE**) 25kV 전화성로의 이자 개소에

25kV 전차선로의 인장 개소에 사용되는 고분자제 애자 (**N-A TYPE**)

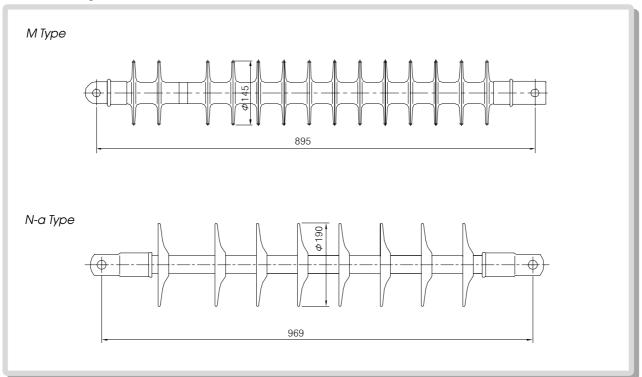
### **PYUNGIL** polymeric railway insulators

employ silicone rubber for main insulation material, an FRP rod with high mechanical strength and galvanized steel for anti-corrosion. Compared to the existing railway insulators, the insulators are light-weighted and accordingly easy to handle, though they offer reliable quality mechanically and electrically. Moreover ultimate compression and tensile strengths of

**PYUNGIL** insulators ensure dependable quality and security. PYUNGIL polymeric railway insulators are used for a hinged cantilever installed in AC railway or high-speed railway system to insulate the electrical pole from the feed system and to support messenger wire and trolley wire. Currently two types of railway insulators are available with respect to their application. M-type insulator is used for where severe compressive load and bending load occur, and N-A type is designed for the application of where tensile load is subjected.

**PYUNGIL** insulators are designed and manufactured under the rigid quality compliance of the ISO 9001 quality assurance program.





	ITEM	Unit	М Туре	N-a Type
Section Length		mm	895±5	969±5
Efficie	ent Insulation Distance	mm	680	700
[	Diameter of Shed	mm	145	190
	No. of Sheds		14	8
	Surface Leakage Distance	mm	1,640	1,480
Mechanical Characteristics	Bending Failure Load	kgf • m	350	190
	Tensile Withstand Load(1 min.)	kgf	6,000	5,600
	Dry Voltage	kV	300	330
Electrical Characteristics	Wet Voltage	kV	230	255
	50% Impulse Voltage	kV	480	510
Radio Voltage	Frequency to Ground	rms kV	25	25
Radio vollage	Max. Radio Voltage	μV at 1000kHz	10	10

## 철도용 급전선 지지애자 Polymeric Feeder Wire Support Insulator for Railway

### 용도 APPLICATION

25kV 전차선로의 지하구간 내 급전선을 지지하는 고분자제 애자

PYUNGIL polymeric feeder wire support insulators for railway (NSP-50) employ silicone rubber for main insulation material, an FRP rod with high mechanical strength and aluminum alloy in accordance with ASTM B26M. Compared to the existing railway insulators, the insulators are light- weighted and accordingly easy to handle, though they offer reliable quality mechanically and electrically. Moreover ultimate compression and tensile strengths of NSP-50 ensures dependable quality and security.

**NSP-50** is used to hold feeder wire reversely at electrical railway system for 25kV. The bottom fitting has 4 holes to be fixed onto ceiling and the other clamp fitting is designed to securely hold the feeder wire. According to the customer's requirement on the creepage distance, the number of weather sheds is changeable.

**PYUNGIL** insulators are designed and manufactured under the rigid quality compliance of the ISO 9001 quality assurance program.

### 특징

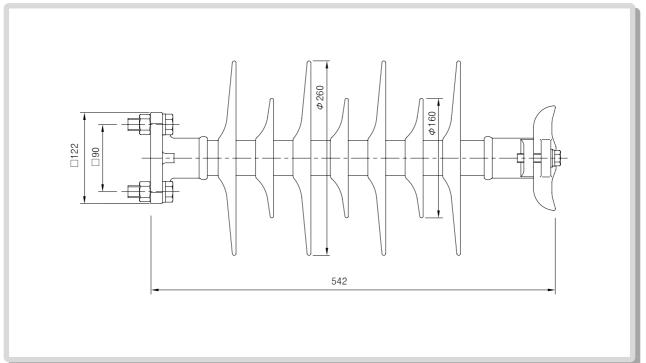
경량으로 시공 편리 깨지지 않음 자기 세척 기능 우수한 기계적 특성 고 발수성

#### **FEATURE**

Light-weighted, Easy to Handle Not Breakable Self-cleaning Function Excellent Mechanical Strength High Hydrophobicity



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### 정격 / Ratings

ITEM		UNIT	VALUE
Dimension	Section Length	mm	542
Diffiction	Creepage Distance	mm	1,100
Mechanical	Bending Failure Load Mechanical		710
Characteristics	Tensile Withstand Load (1Min.)	kgf	4,000
	60Hz Dry FO Voltage	kV	200
Electrical Characteristics	60Hz Wet FO Voltage	kV	150
	50% Impulse FO Voltage	kV	320
Radio Influence	Test Voltage	rms kV	25
Voltage	Max. Radio Voltage	μN at 1000kHz	10

## 절연봉 Fiberglass Guy Strain Insulator for Railway

### 용도 APPLICATION

25kV 전차선로의 조가선의 절연거리 유지를 위하여 사용되는 테프론으로 표면이 코팅된 절연봉

**PYUNGIL fiberglass guy strain** insulator for railway is teflon-coated and employs high tensile silicone rubber. The Fiberglass guy strain insulator is mainly used to maintain the clearance distance between contact wire and messenger wire in 25kV electric railway system. The insulator has strong tensile load strength enough to withstand 110kN, has a long working life, and weighs one tenth of guy strain insulators made of porcelain. The PYUNGIL guy strain insulator consists of 3parts: metal fittings made of stainless steel, FRP rod for core and PTEF(Teflon) for main insulation body and is made in accordance with the international industrial standards such as Korea Standard, IEC, ASTM and ANSI/IEEE.

**PYUNGIL** insulators are designed and manufactured under the rigid quality compliance of the ISO 9001 quality assurance program.

### 특징

뛰어난 절연 성능 우수한 인장 강도 경량으로 시공 편리 테프론 코팅으로 오손 방지

### **FEATURE**

High Dielectric Strength
Excellent Tensile Strength
Light-weighted and Easy to Handle
Teflon-coated, Contaminant-free



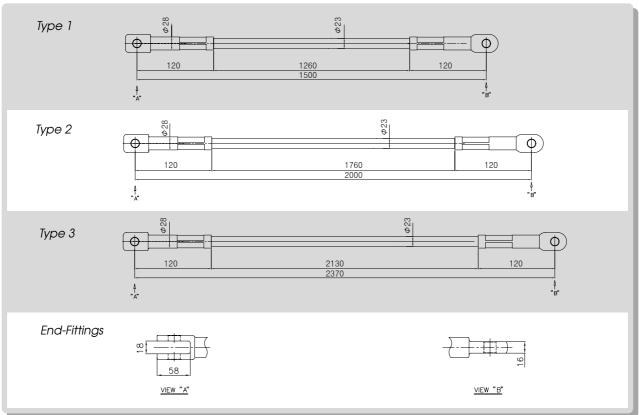




www.pyungil.com 동 1475-10번지 평일빌딩

주 등일 PYUNGIL Co., Ltd.

절 연 봉 FIBERGLASS GUY STRAIN INSULATOR FOR RAILWAY



O 17 Kamigo					
	VALUE				
ITEM	TYPE 1	TYPE 2	TYPE 3		
Section Length	1,500mm	2,000mm	2,370mm		
Efficient Insulation Distance	1,130mm	1,630mm	2,000mm		
60Hz Dry Withstand Voltage	300kV	380kV	400kV		
60Hz Wet Withstand Voltage	150kV	190kV	230kV		
Lightning Impulse Withstand Voltage (1.2 $\times$ 50 $\mu s$ )	350kV	470kV	570kV		
Specified Mechanical Load		110kN			
Routine Test Load	55kN				
Buckling Strength	35kgf/mm²				

## 내오손 결합에자 Polymeric Coupling Insulator

### 용도 APPLICATION

염진해 오손지역에서 특고압 COS 또는 피뢰기의 절연성능을 보강하기 위하여 이들과 조합 사용되는 중간결합애자

### **PYUNGIL** polymeric coupling

insulators are used to connect protection devices such as surge arrester and cutouts to electric pole. The coupling insulator has been introduced to cover the weak points of the existing porcelain insulator and bracket. Compared with conventional coupling insulators of porcelain, the polymeric insulators have higher mechanical and electrical performance. The polymeric material (EPDM rubber) that PYUNGIL currently uses has been formulated under its special knowhow for raw material.

The PYUNGIL polymeric coupling insulator has been used for the cable connectors for over 20 years, which proves that the EPDM rubber has dependable quality. The coupling insulator is composed of three basic parts of fiberglass rod, which guarantees the high tensile strength. EPDM rubber weather sheds, having excellent dielectric performance and metal end-fittings are crimped directly on to the fiber glass rod.

**PYUNGIL** insulators are designed and manufactured under the rigid quality compliance of the ISO 9001 quality assurance program.

### 특징

경량으로 시공 편리 깨지지 않음 자기 세척 기능 우수한 기계적 특성 고 발수성

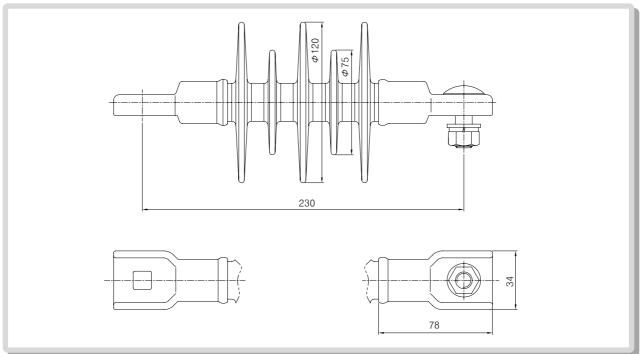
### **FEATURE**

Light-weighted, Easy to Handle Not Breakable Self-cleaning Function Excellent Mechanical Strength High Hydrophobicity





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	ITEM	UNIT	VALUE
	Section Length	mm	230
Dimension	Big Shed Diameter	mm	120
	Small Shed Diameter	mm	75
	Leakage Distance	mm	420
Electrical	Withstand Voltage	kV	7
Characteristics	60Hz Dry FO Voltage (1Min)	kV	42
	Impulse Withstand Voltage (1.2 $ imes$ 50 $\mu$ s)	kV	125
	Bending Failing Load	kgf	1,000
Mechanical Characteristics	Bending Withstand Load	kgf	100
	Tensile Failing Load	kgf	1,000

### Polymeric Line Post Insulator with Universal Clamp

#### APPLICATION

Polymeric Line Post Insulators made of slilcone rubber for distribution line for 15kV~46kV

PYUNGIL polymeric line post insulators with universal clamp for 15~46kV are introduced to cover the weak points of the existing porcelain insulators. The insulators are installed vertically or horizontally on electric pole or structure to hold the overhead wire. Compared with

porcelain ones, PYUNGIL polymeric insulators are light-weighted, easy to handle, breakage-resistant, free from crack and also more durable.

The **PYUNGIL** line post insulators are composed of three basic parts of fiberglass rod, which guarantees the high bending strength silicone rubber weather sheds, having excellent dielectric performance and ultra violet resistant characteristics, and metal end fittings swaged directly on to the fiberglass rod.

The **PYUNGIL** silicone line post insulators have been designed and tested to meet the requirements of ANSI, IEEE, IEC and CEA LWIWG-02 at Kinectrics Incorporation in Ontario, Canada.

The new design of clamp which accommodates 6.3mm to 34mm diameter of conductor can be separated from the top end-fitting. (patent pending)

**PYUNGIL** insulators are designed and manufactured under the rigid quality compliance of the ISO 9001 quality assurance program.

### **FEATURE**

Light-weighted, Easy to Handle Not Breakable

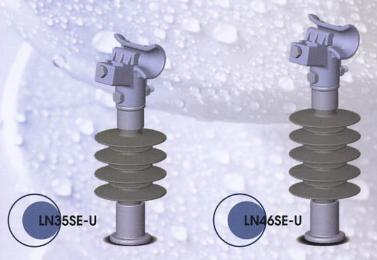
Self-cleaning Function

**Excellent Mechanical Strength** 

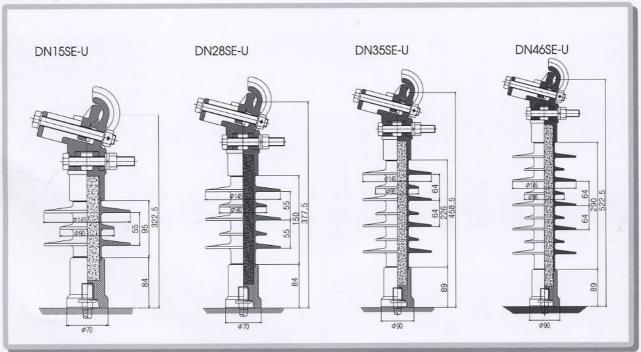
High Hydrophobicity

Wide Range of Conductor Dia.





### Drawing



#### Ratinas

ITEM		UNIT	DN15SE-U	DN28SE-U	DN35SE-U	DN46SE-U	
Rated Volt	age	kV	15	25	35	46	
Number of Big	g Sheds		2	3	4	5	
Diameter of Big	Shed (A)	mm	145	145	145	145	
Number of Smo	all Sheds		1	2	3	4	
Diameter of Smo	ıll Shed (B)	mm	90	90	95	95	
Section Length (C)		mm	322.5	377.5	458.5	522.5	
Insulation Length (D)		mm	95	150	226	290	
Leakage Dis	tance	mm	300	420	664	846	
Dry Arcing Di	stance	mm	140	195	283	348	
60Hz Dry Flashover V	oltage (1Min)	kV	75	95	120	145	
60Hz Wet Flashover V	oltage (15Sec)	kV	40	75	80	100	
Critical Impulse	Positive	kV	130	150	180	240	
Flashover Voltage	Negative	kV	155	205	285	350	
Radio Influence Voltage		kV	10	15	22	30	
Max. Design Cantilever Load(MDCL)		kN		6 (612kgf)			
Specified Cantileve	er Load(SCL)	kN		12 (1,224kgf)			

### 수평형 라인포스트 애자

### Polymeric Horizontal Line Post Insulator

### 용도 APPLICATION

전주 또는 구조물에 수평으로 설치되어, 15kV~46kV 특고압 가공 배전선로에 사용하는 폴리머 라인 포스트 (Line Post) 애자

**PYUNGIL** polymeric horizontal line post insulators for 15~46kV are introduced to cover the weak points of the existing porcelain insulators. The insulators are installed onto the side of electric pole or structure to hold the overhead wire. Compared with porcelain ones, PYUNGIL polymeric insulators are light-weighted, easy to handle, breakage-resistant, free from crack and also durable.

The PYUNGIL line post insulators are composed of three basic parts of fiberglass rod, which guarantees the high bending strength., silicone rubber weather sheds, having excellent dielectric performance and ultra violet resistant characteristics, and metal end fittings crimped directly on to the fiberglass rod. The PYUNGIL silicone line post insulators have been designed and tested to meet the requirements of ANSI, IEEE, IEC and CEA LWIWG-02 at Kinectrics Incorporation in Ontario, Canada.

**PYUNGIL** insulators are designed and manufactured under the rigid quality compliance of the ISO 9001 quality assurance program.

### 특징

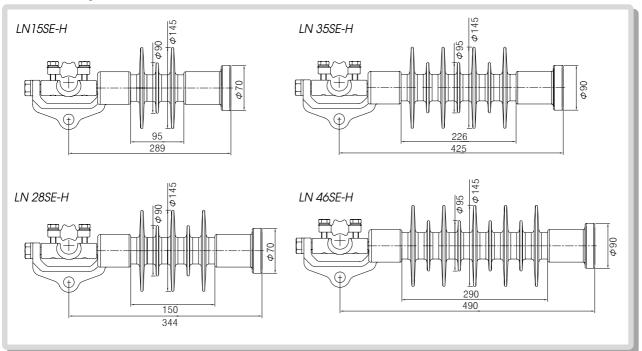
경량으로 시공 편리 깨지지 않음 자기 세척 기능 우수한 기계적 특성 고 발수성

### **FEATURE**

Light-weighted, Easy to Handle Not Breakable Self-cleaning Function Excellent Mechanical Strength High Hydrophobicity







#### 정격 / Ratinas

ITEM		UNIT	LN15SE-H	LN28SE-H	LN35SE-H	LN46SE-H
Rated Volt	tage	kV	15	25	35	46
Number of Bi	g Sheds		2	3	4	5
Diameter of Big	g Shed (A)	mm	145	145	145	145
Number of Sm	all Sheds		1	2	3	4
Diameter of Smo	all Shed (B)	mm	90	90	95	95
Section Length (C)		mm	289	344	425	490
Insulation Length (D)		mm	95	150	226	290
Leakage Distance		mm	300	420	664	846
Dry Arcing D	Dry Arcing Distance		140	195	283	348
60Hz Dry Flashover \	/oltage (1Min)	kV	75	95	120	145
60Hz Wet Flashover V	/oltage (15Sec)	kV	40	75	80	100
Lightning Impulse	Positive	kV	130	150	180	240
Flashover Voltage	Negative	kV	155	205	285	350
Radio Influence Voltage		kV	10	15	22	30
Bending Withstand Load		kN	6 (612kgf)			
Specified Mecha	Specified Mechanical Load		12 (1,224kgf)			
Specified Bend	ling Load	kN	12 (1,224kgf)			

### 수직형 라인포스트 애자

### Polymeric Vertical Line Post Insulator

### 용도 APPLICATION

전주 또는 구조물에 수직으로 설치되어, 15kV~46kV 특고압 가공 배전선로에 사용하는 폴리머 라인 포스트 (Line Post) 애자

**PYUNGIL** polymeric vertical line post insulators for 15~46kV are introduced to cover the weak points of the existing porcelain insulators. The insulators are mounted and fixed onto the top of electric pole or structure to hold the overhead wire. Compared with porcelain ones, PYUNGIL polymeric insulators are light-weighted, easy to handle, breakage-resistant, free from crack and also durable.

The PYUNGIL line post insulators are composed of three basic parts of fiberglass rod, which guarantees the high bending strength., silicone rubber weather sheds, having excellent dielectric performance and ultra violet resistant characteristics, and metal end fittings crimped directly on to the fiberglass rod. The PYUNGIL silicone line post insulators have been designed and tested to meet the requirements of ANSI, IEEE, IEC and CEA LWIWG-02 at Kinectrics Incorporation in Ontario, Canada.

**PYUNGIL** insulators are designed and manufactured under the rigid quality compliance of the ISO 9001 quality assurance program.

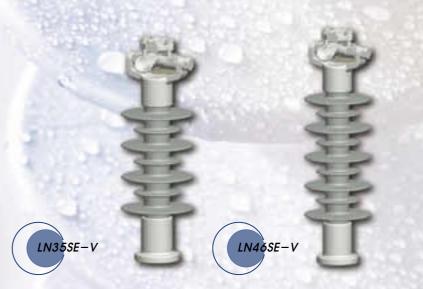
### 특징

경량으로 시공 편리 깨지지 않음 자기 세척 기능 우수한 기계적 특성 고 발수성

### **FEATURE**

Light-weighted, Easy to Handle Not Breakable Self-cleaning Function Excellent Mechanical Strength High Hydrophobicity

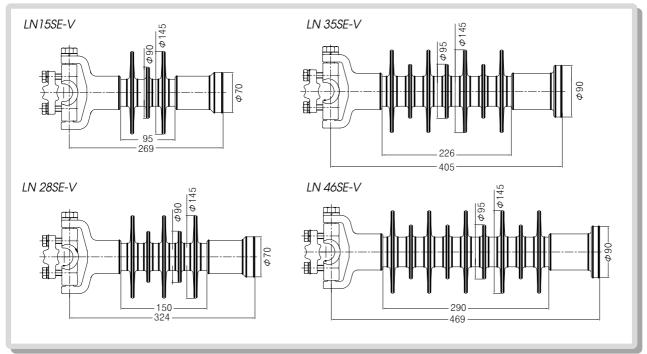




www.pyungil.com



경기도 안양시 동안구 관양2동 1475-10번지 평일빌딩 Tel: 031,420,6600 Fax: 031,424,7300



UNIT	LN15SE-V	LN28SE-V	LN35SE-V	LN46SE-V	
kV	15	25	35	46	
	2	3	4	5	
mm	145	145	145	145	
	1	2	3	4	
mm	90	90	95	95	
mm	269	324	405	470	
mm	95	150	226	290	
mm	300	420	664	846	
mm	140	195	283	348	
) kV	75	95	120	145	
c) kV	40	75	80	100	
kV	130	150	180	240	
kV	155	205	285	350	
kV	10	15	22	30	
kN		6 (612kgf)			
kN	12 (1,224kgf)				
kN	12 (1,224kgf)				
	MV	kV 15 2 mm 145 1 mm 90 mm 269 mm 95 mm 300 mm 140 ) kV 75 c) kV 40 kV 130 kV 155 kV 10 kN	kV       15       25         2       3         mm       145       145         1       2         mm       90       90         mm       269       324         mm       95       150         mm       300       420         mm       140       195         c)       kV       75       95         c)       kV       40       75         kV       130       150         kV       155       205         kV       10       15         kN       6 (61)         kN       6 (61)         kN       12 (1,2)	kV       15       25       35         2       3       4         mm       145       145       145         1       2       3         mm       90       90       95         mm       269       324       405         mm       95       150       226         mm       300       420       664         mm       140       195       283         0       kV       75       95       120         c)       kV       40       75       80         kV       130       150       180         kV       155       205       285         kV       10       15       22         kN       6 (612kgf)         kN       12 (1,224kgf)	