



Teknologi Inovasi / Bright new future

Composite (Polymeric) Insulator

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Composite (Polymeric) Insulator

General

As an alternative to ceramics, composite materials were developed for use in insulators for transmission systems. Such composite insulators are also referred to as non-ceramic insulators (NCI) or polymer insulators, and usually employ insulator housings made of materials such as ethylene propylene rubber (EPR), polytetra fluoro ethylene (PTFE), silicone rubber, or other similar materials. Compared with the conventional insulators manufactured homogeneously from the material ceramic or glass, composite insulators consist of two components of different materials. A number of composite insulators made from lighter weight polymeric materials have been developed for use in such high voltage installations. Such composite insulators generally include a fiberglass rod having a number of weather sheds constructed of a highly insulating polymeric material attached to the rod along its length. Composite insulators including shield layers of a synthetic material are given preference mainly because the shield layer of a synthetic material, particularly silicone, is hydrophobic, i.e. the insulators employed mostly outdoors are highly water repellent which is conducive to repelling dirt and thus to low leakage current losses. And also, this is a lightweight structure which facilitates assembly. Composite insulators are generally produced by preparing the screens individually and then fitting the required number of them onto a shank coated with extrudate and vulcanizing them with the coat, or by centrally placing a rod with a predetermined number of screens in a two-part mould and injecting all the screens at once. Composite insulators for high-tension use must conform to specific electrical requirements. The carrier rod must be electrically insulating in its axial direction and the insulating layer must be secured thereto in a manner that no electrical conduction can occur at the seam between the insulating cover and the interior carrier rod. The insulating cover performs several functions including providing resistance to weathering, UV, ozone, etcetera. The cover is also required to have good mechanical resistance to cold and good electrical tracking resistance. Desirably the insulating cover should be flexible, halogen-free and flame retardant.

High voltage composite insulators include long rod suspension composite insulator, pin type composite insulator, composite cross-arm insulator, composite post insulator, composite bushing, and composite insulator for electric railways.

For shed and housing moulding, international advanced method of whole moulding and whole injection are adopted. The connection zone between the core and end fitting is compressed with crimping machine. The products have the characteristic of artistic looking, small volume, light weight, unbreakable, high bending and torsion strength, good anti-explosive performance, easy transportation and installation. To ensure safe operation, un-puncture design is adopted. Reliable structure is applied together with advantages of high mechanical tensile load, long life span and compact size.

Composite insulators are suitable for overhead line electrical insulation of suspension or tension. They have good mechanical property, high tensile strength, invulnerability, and easy for installation.

Product Series

- (WYA) FXBW — Rod composite suspension insulator
- (WYB) FPQ — Composite pin-type insulator
- (WYC) FZSW — Composite post insulator
- (WYD) FS — Composite cross-arm insulator
- (WYE) FQB — Electrified railway with wrist composite insulator
- (WYE) FQX — Composite insulator for electrified railway

Conditions of Application

Ambient environment:

- a) Temperature: $-40^{\circ}\text{C} \leq T \leq 40^{\circ}\text{C}$
- b) Altitude above sea level: $\leq 1500\text{m}$
- c) Max. wind speed: $\leq 35\text{m/s}$
- d) Earthquake intensity: ≤ 8 degree
- e) Frequency of AC power: $\leq 100\text{Hz}$

©The filthy area should be indicated.

Rod composite suspension insulator

Aerodynamic design of silicon rubber umbrella skirt, Jacket integrally molding technology, Applicable to all climate and pollution region, High creepage distance, Good self-cleaning discharge capacity.

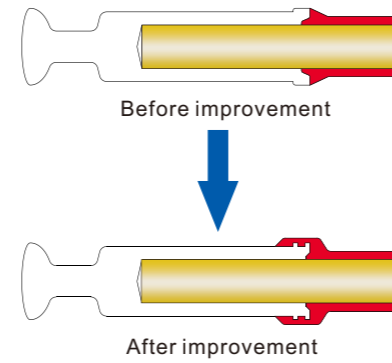
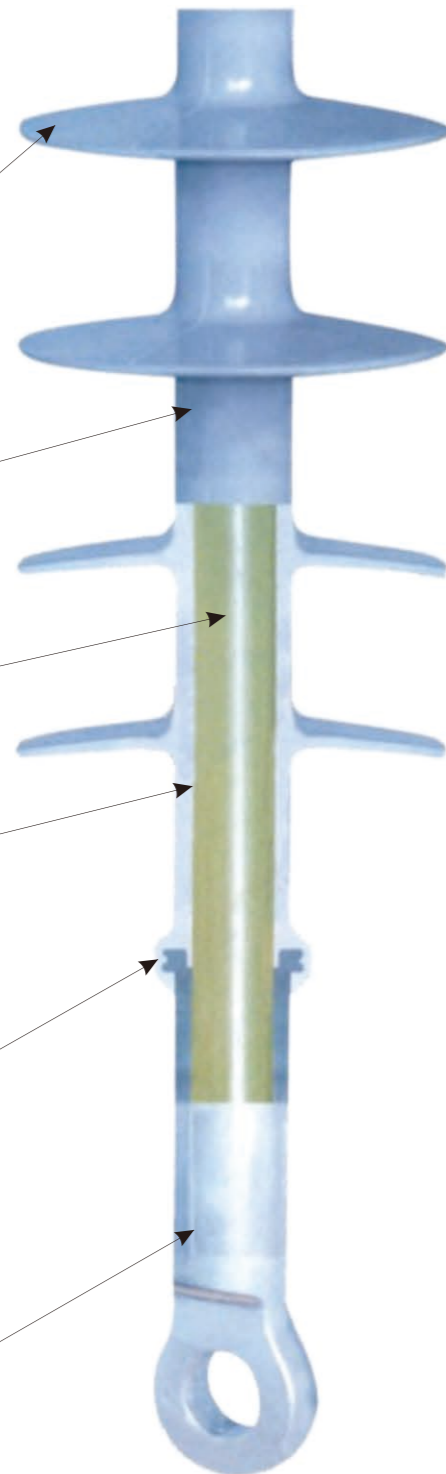
Sheath thickness: $\geq 5\text{mm}$

Rod: ECR high temperature strengthened acid-resistant

Interface: Top quality rock coupling agent.

End metal hardware adopts mazy waterproof design, and wrapped with rubber process which greatly improves insulator's waterproof and anti-permeability performance.

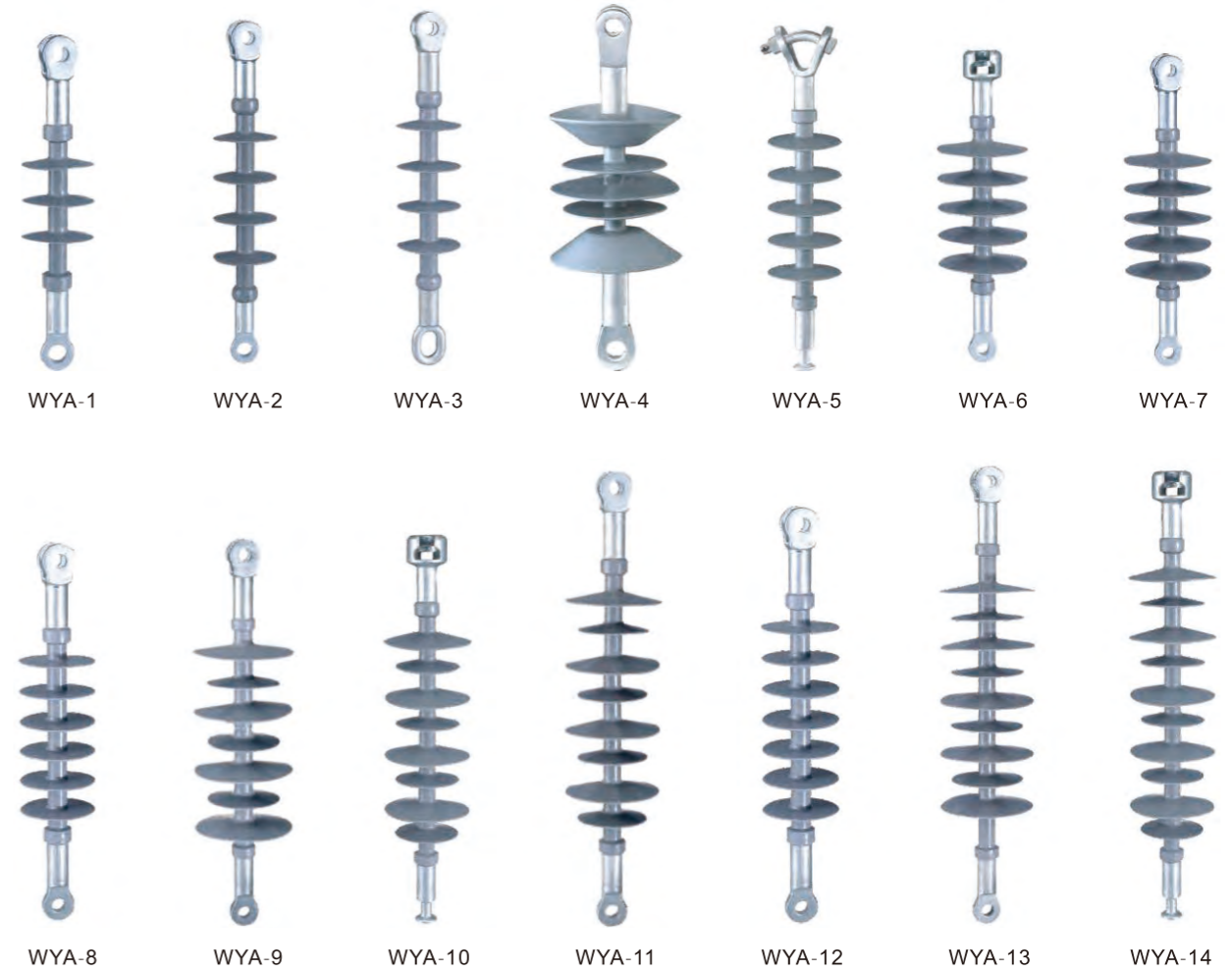
End metal hardware: Hot dip galvanized surface, UT tested for internal cracks, Computer controlled coaxial constant pressure crimping process.



Excellent quality of silicone rubber provides good hydro-phobicity and proof tracking ability.



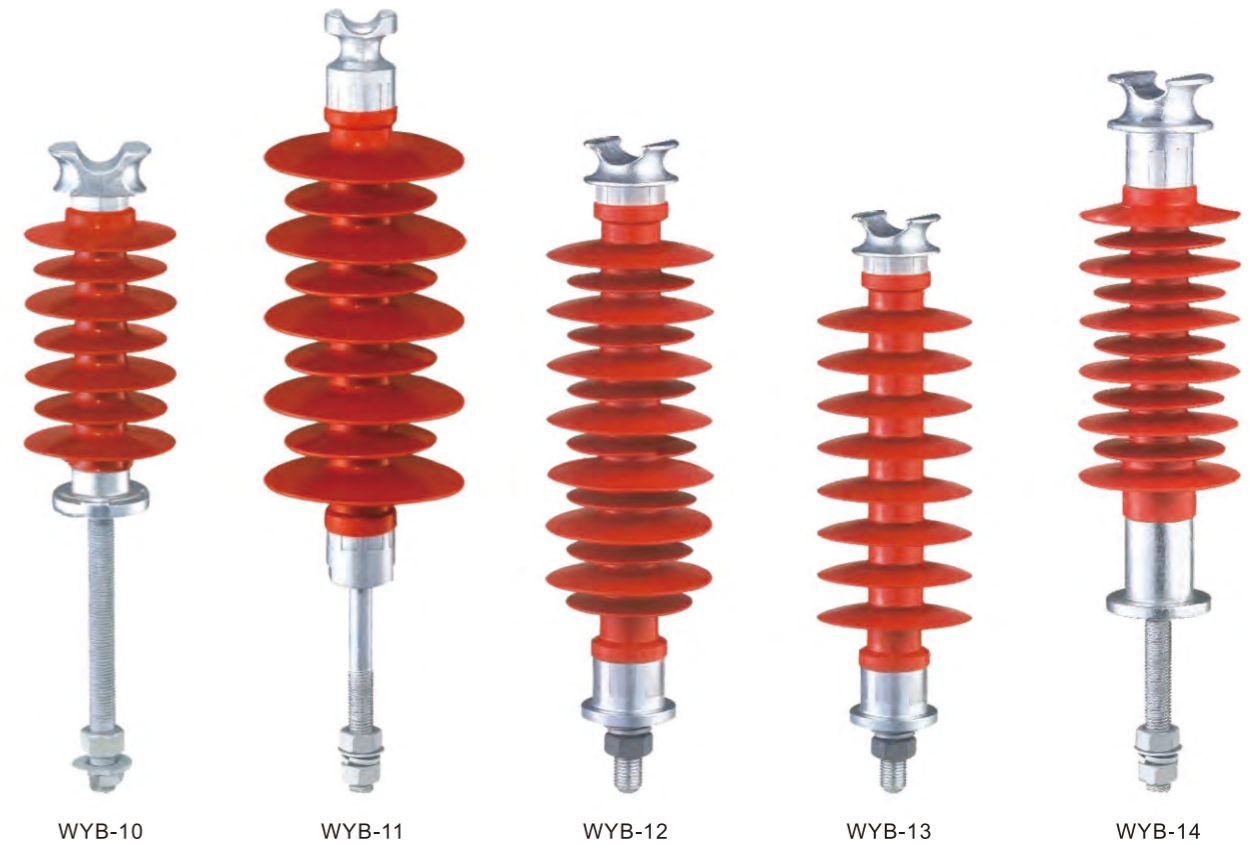
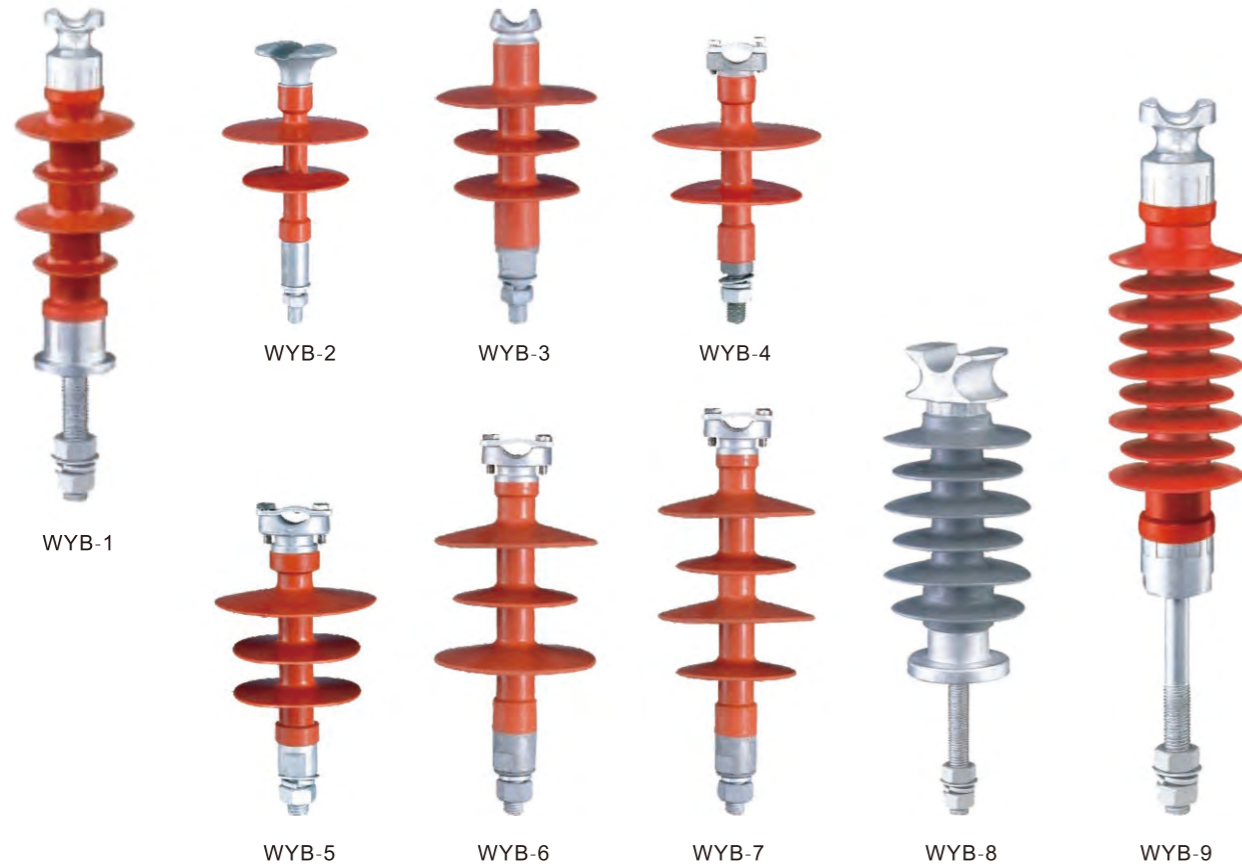
Application of special steel manufacturing facility and advanced technology for crimping in order to ensure product stability and accuracy of the fracture strength.



Key Technical Parameters

Code	Model	Rated voltage (kV)	Tensile Strength (kN)	Structure height (mm)	Insulating distance (mm)	Min nominal creepage distance (mm)	Full wave lightning impulse withstand (kV)	1min power frequency wet withstand voltage (kV)	Packing Details			
									CTN Size (mm)	G.W. (kg)	N.W. (kg)	Nos/CTN
WYA-1	FXB-12/70CT	12	70	330±15	150	355	105	45	39*28*27	16	14.5	12
WYA-2	FXB1-15/70CT	15	70	380±15	195	460	140	65	43*28*27	17.2	16	12
WYA-3	FXB1-15/70CE	15	70	425±15	240	510	145	65	50*28*27	18	16.8	12
WYA-4	FXB-21/70CT	21	70	300±15	140	530	190	92	36*28*27	16.5	15	12
WYA-5	FXB1-24/70YB	24	70	460±15	260	650	200	75	52*32*29	22	21	12
WYA-6	FXB1-24/70ST	24	70	390±15	192	650	150	70	43*37*32	21	19.5	12
WYA-7	FXB1-25/70CT	25	70	456±15	260	650	200	75	50*31*29	18	16.8	12
WYA-8	FXB1-24/70CT	24	70	455±15	260	680	155	70	51*31*28	19	17.8	12
WYA-9	FXB3-33/120SB	33	120	598±15	400	1000	150	50	63*37*32	27	25	12
WYA-10	FXB1-33/70CT	33	70	588±15	390	950	150	50	62*37*32	26	24	12
WYA-11	FXB1-33/70CT	33	70	598±15	400	1000	150	50	63*37*32	26.5	24.5	12
WYA-12	FXB-36/70CT	36	70	519±15	333	820	210	80	56*37*32	22	20	12
WYA-13	FXB1-36/70CT	36	70	630±15	430	1120	220	85	66*37*32	29	27	12
WYA-14	FXB4-36/70SB	36	70	640±15	440	1280	230	95	67*37*32	30	28	12

Composite pin-type insulator



General

Composite insulator is good at resistance to bending, torsional strength, impact resistance, shock resistance and anti explosion performance. It has good inner insulation reliability, light weight, easy installation which makes it the ideal substitute to the traditional porcelain insulator.

Product Description

FPQ 4 □/□ T □-□

Color:
H: Refers to "Grey"
G: Refers to "Green"
Y: Refers to "Yellow"

Bottom Diameter (mm)

T: Refers to "To mounted on Steel Cross Arm"
L: Refers to "To mounted on Glass Fiber Cross Arm"
M: Refers to "To mounted on Wooden Cross Arm"

Rated Voltage (kV)
Rated Bending Strength (kN)

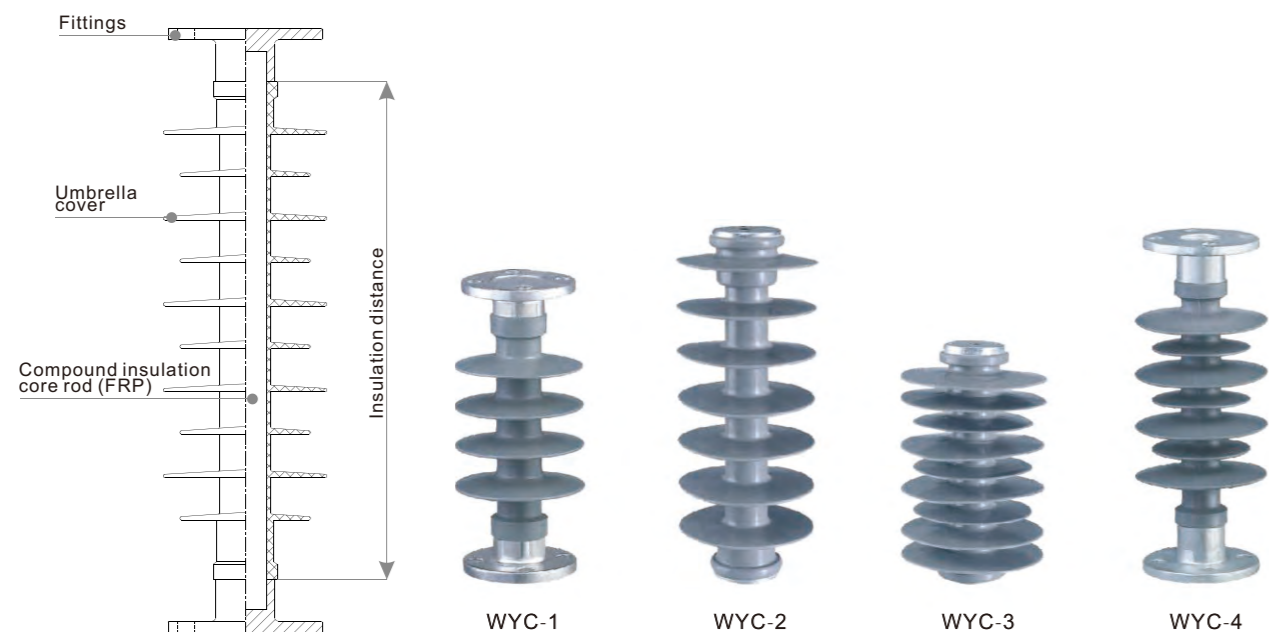
4: Refers to Anti-pollution grade

F: Refers to "Composite Insulator"
P: Refers to "Pin type"
Q: Refers to "Model"

Key Technical Parameters

Code	Model	Rated voltage (kV)	Tensile Strength (kN)	Structure height (mm)	Insulating distance (mm)	Min. nominal creepage distance (mm)	Full wave lightning impulse withstand voltage (kV)	1min power frequency wet withstand voltage (kV)
WYB-1	FPQ-11/5	11	5	260	190	395	95	38
WYB-2	FPW-10/2	10	2	195	120	300	90	40
WYB-3	FPW-10-3	10	2	215	140	400	100	45
WYB-4	FPQ1-10/4T	10	4	195	120	300	90	40
WYB-5	FPQ2-10/3T	10	3	215	140	400	100	45
WYB-6	FPQ2W-10/3	10	3	260	185	460	100	50
WYB-7	FPS-10/5	10	5	280	170	380	105	42
WYB-8	FPQ-15/12.5	15	12.5	240	170	505	125	50
WYB-9	FP-24/6	24	6	351	290	640	150	63
WYB-10	FPQ-24/11	24	11	260	196	610	145	50
WYB-11	FP-33/6	33	6	408	325	1000	200	90
WYB-12	FP-33/8	33	8	417	338	1160	200	90
WYB-13	FPQ-36/4	36	4	365	295	1000	230	95
WYB-14	FPQ-36/12.5	36	12.5	405	252	900	200	90

Composite post insulator



General

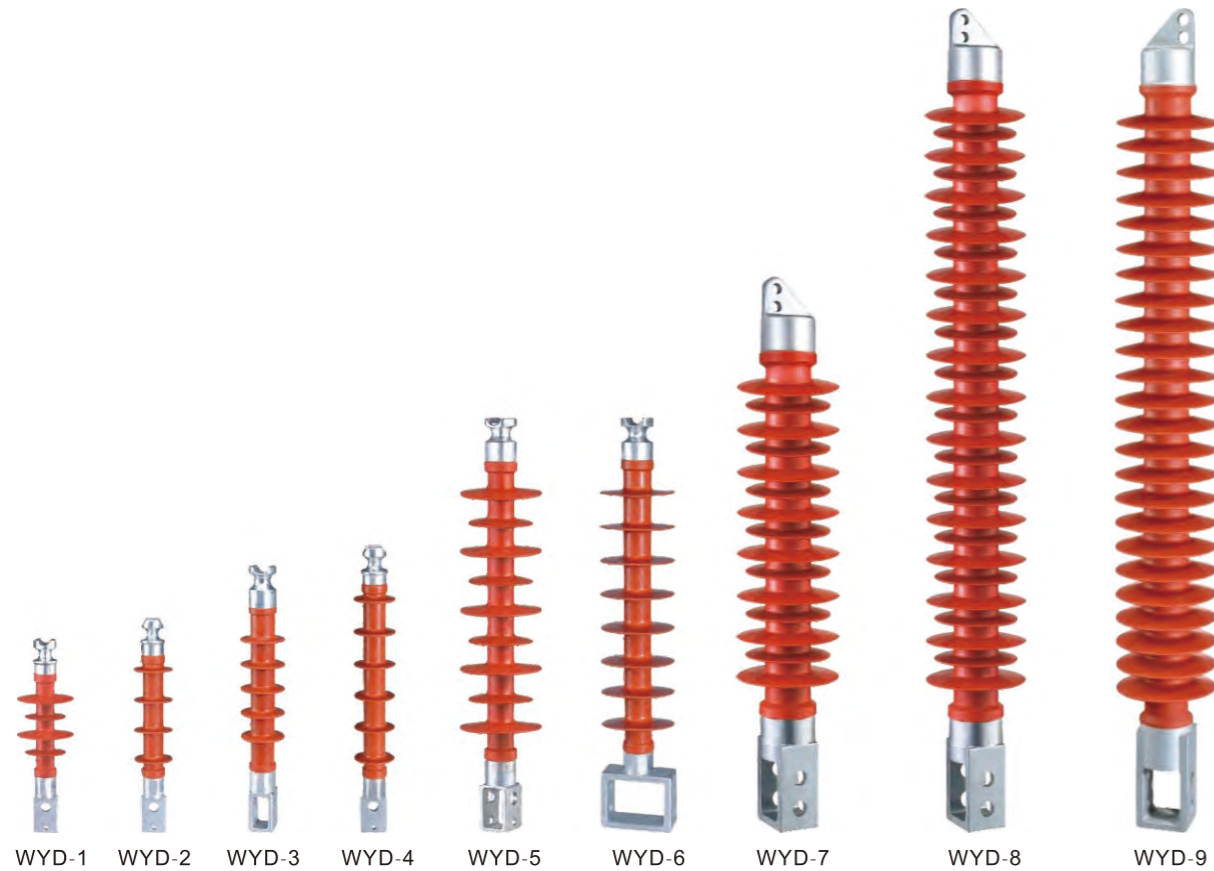
This type of insulator is applied to high voltage power station facilities. It has features of good hydro-phobicity, anti-ageing, anti-leakage trace and electrical erosion proof, high tensile strength and bending strength, strong mechanical strength, shock resistance, good quake-proof and brittle failure proof, light weight, easy for installation. The installation sizes of top and base are same with those of porcelain post type insulator.

Key Technical Parameters

Code	Model	Rated voltage (kV)	Bent Strength (KN)	Structure height (mm)	Insulating distance (mm)	Min nominal creepage distance (mm)	Full wave lightning impulse withstand	1min power frequency wet withstand voltage(kV)	Packing Details			
									CTN size (mm)	G.W. (kg)	N.W. (kg)	Nos/CTN
WYC-1	FZS-15/9	15	9	255	190	450	110	45	350*280*280	26.5	25	12
WYC-2	FZS-24/3	24	3	288	280	750	150	70	470*390*330	35	34	20
WYC-3	FZS-24/4	24	4	195	187	830	150	70	475*200*395	34	33	20
WYC-4	FZSW-24/5	24	5	286	210	630	150	70	320*320*310	20	18.5	9
WYC-5	FZSW-24/15	24	15	280	180	660	150	70	305*320*310	20	18.5	9
WYC-6	FZSW-35/10	35	10	400	340	970	210	95	400*340*350	22.5	21	12
WYC-7	FZSW-36/4	36	4	410	320	750	170	70	440*320*365	27	26	9
WYC-8	FZS-36/4	36	4	390	320	750	170	70	410*280*260	12.5	11.4	6
WYC-9	FZSW-36/8	36	8	450	411	1320	200	85	500*500*300	23	22	6
WYC-10	FZS-36/9	36	9	457	370	1000	200	80	480*300*260	22.5	21.3	6
WYC-11	FZS3-72/6	72	6	770	650	1830	325	140	810*410*180	38	33	3
WYC-12	FZS-126/10	126	10	1220	1070	3180	450	185	1300*360*210	60	50	2



Composite Cross-arm Insulator



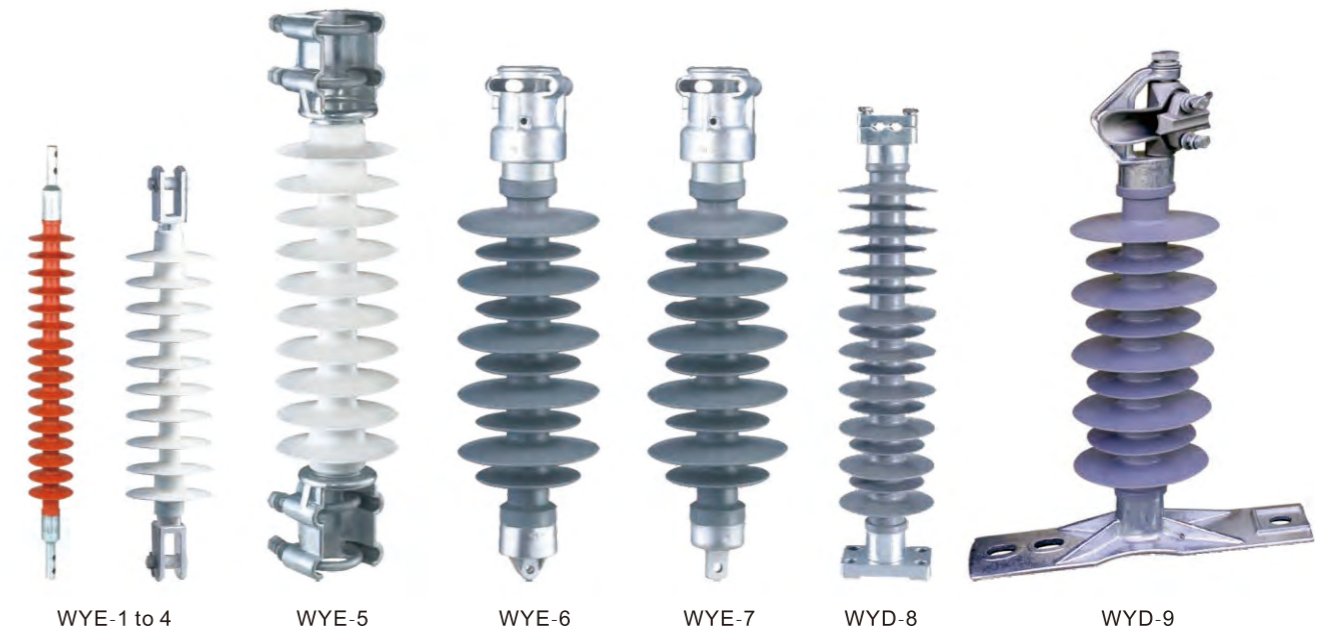
General

This type of insulator is applicable for the urban distribution network rebuild which can effectively solve the shortage of corridor in urban distribution line, reducing the pole height and optimizing financial and material resources. It can avoid concatenate breakage accident of porcelain cross-arm effectively due to the high bending strength. It has good anti-pollution ability compared with the porcelain cross-arm insulator.

Key Technical Parameters

Code	Model	Rated voltage (kV)	Bent Strength (KN)	Structure height (mm)	Insulating distance (mm)	Min. nominal creepage distance (mm)	Full wave lightning impulse withstand	1min power frequency wet withstand voltage (kV)
WYD-1	FSW-10/3	10	3	290	165	380	165	45
WYD-2	FS-10/5	10	5	320	200	340	165	45
WYD-3	FS-10/6	10	6	400	280	410	165	45
WYD-4	FS-10/3	10	3	430	310	480	165	45
WYD-5	FSW-35/5	35	5	620	490	1160	265	100
WYD-6	FS-35/5	35	5	620	490	1060	265	100
WYD-7	FSW-66/20	66	20	830	600	1820	265	100
WYD-8	FSW3-110/10	110	10	1240	1060	3180	550	230
WYD-9	FS3-110/10	110	10	1240	1060	3180	230	550

Composite Insulator for Electrified Railway



General

This type of insulator is suitable for the operation circumstances of electrified railway. It can effectively prevent flash accident and reduce the time of clear and maintenance. With compact size, it is specially suitable to install in the tunnel compared with similar porcelain and glass insulator.

Key Technical Parameters

Code	Model	Rated voltage (kV)	Bent strength (KN)	Structure height (mm)	Min. nominal creepage distance (mm)	Full wave lightning impulse withstand	1min power frequency wet withstand voltage (kV)
WYE-1	FQX1-25	25	60	650	1400	130	270
WYE-2	FQX2-25	25	60	840	1400	130	270
WYE-3	FQX3-25	25	60	930	1400	130	270
WYE-4	FQX4-25	25	60	645	1400	130	270
WYE-5	FQB1-25	25	6	760	1610	130	270
WYE-6	FQB2-25	25	5	760	1610	130	270
WYE-7	FQB3-25	25	5	760	1610	130	270
WYE-8	FQZ-27.5	27.5	8	850	1610	150	300
WYE-9		36	5	660	1560	150	300