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About Us

Sichuan Yibin Global Group Co,.Ltd. Insulator division (referred as SYGG Insulators) was established in July 2004, specialized in research & design, manufacture and market toughened glass insulators. The manufactory is located in the national-level economic and technological development zone of Chengdu (Longquanyi District), with a net area of 17.87 hectares and fixed assets of \$ 123 million. The Company has established complete management systems, including quality management system of ISO9001, environmental management system of ISO14001 and occupational health and safety management of GB/T28001. Company has automated major production process and real-time monitor, due to advanced equipment was imported from Germany, Italy, and Switzerland etc. The annual capacity of SYGG is over 9,000,000 AC and DC glass insulators. SYGG's insulators have been operating on AC transmission lines from 10kV to 1000kV and DC lines of \pm 500kV \downarrow \pm 800kV \downarrow \pm 1100kV, specifically, there are 2.6 million pieces running on \pm 800kV DC lines.



Glass insulator Advantages

• What is toughened glass?

Toughened or tempered glass bells are produced with a process of controlled thermal treatment to increase its strength compared to normal glass. There are pre-stresses induced to the glass bell via a quick but controlled cooling of the heated glass. This tempering puts the outside surface into compression and inside surface into tension. Sudden excessive mechanical or electrical shock causes the bell to break into small defined particles and not into splinters like regular glass.

• High mechanical reliability

As shown in simulation tests, the toughened glass insulator can



guarantee its mechanical and electrical properties and maintain its normal operation in such various conditions as lightning, icing, temperature difference and fatigue vibration; even with the stub after shattering, it can still maintain sufficient mechanical strength (the residual strength quality index Qs is higher than 0.75) without line-drop accident and ensure the safe operation of lines. So it has a high reliability.

Reduced aging

The tests were carried out on the insulators after having serviced on line for 46 years, it is shown that the test results is complied with that when it left the factory. There is no obvious difference on the mechanical and electrical properties of toughened glass insulators after 46 years of operation, which indicates that the glass insulator has no obvious aging phenomenon and its service life depends on the service life of metal parts. The service life of porcelain and composite insulators is unpredicted due to the complex aging phenomena happened, which can be impacted by various factors such as phase voltage, stress, operation time and atmospheric condition etc.

Easy inspection

Once the toughened glass insulator fails, the glass shell will shatter completely. This is known as self-shattering with zero insulation resistance. Because of this feature, the failed toughened glass insulator can be found and easily sorted out just by visual inspection. Compared with porcelain insulators or composite insulators, glass insulators have no hidden defect and you can 100% sure the insulation and mechanical strength are good if it is intact, which is more convenient to maintain and more safety for line operation.

• Long-term stability

Compare with other type insulators, glass insulators own better stability for long term. During line operation, the annual average failure rate of the insulators is QTY of failed insulators to the total QTY of the insulators on line and divided by operation year. For glass insulators, it is usually called as annual self- shattering rate. Contrary to the failure rate of porcelain and composite insulators, the self shattering rate of glass insulators may revealed in the earlier years, in general, the first 1~3 years after the line starts up, and thereafter decreases year by year.



Our Products

The company has comprehensive product range, is capable to address requirements of both AC and DC system, 40kN-840kN mechanical rating ranges, and complex environment. All products has passing the type tests and sampling tests according to relative standards such as IEC, GB/T(Chinese standards), ANSI or other owner's special specifications at the third party labs. We have a provincial level R & D center, with sophisticated researchers; can make study on customized requirements.

Standard profile insulators

These are the general type largely used on low pollution lines, where they perform well due to a creepage distance which exceeds the requirements of the ANSI C29.2 standards and CSA C411 standards. We also can offer Standard profile insulators with IEC standard.

Anti-pollution or Anti-fog profile insulators

The Anti-pollution is designed for heavily polluted environment with a high creepage than standard profile to give the line better performance. The shell is designed with IEC standard, can apply ANSI C29.2 standards coupling.

Open profile or Aerodynamic insulators

This type of insulator is highly recommended for desert areas because the absence of ribs helps to reduce the accumulation of residues, particularly on the inner surface of the dielectric. These can also be used in areas of critical industrial or mixed pollution.

DC standard profile insulators

This type of insulator is used for DC transmission line. It has better creepage than Anti-pollution profile and higher bulk resistivity. The sacrifice electrode (zinc ring) is set on the pin for better anti-corrosion property.







CSA 加标球窝型





悬式钢化玻璃绝缘子 Cap and pin toughened glass insulators

CSA Ball and Socket Type

| 绝缘子型号 Insulator Type | 皂绿子型号 nsulator Type | | U120B/146CS | U160B/146CS | U160B/170CS | U230B/156CS | U230B/171CS | U300B/195CS | U420B/205CS | U550B/240CS |
|--|---------------------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 公称直径D | mm | 255 | 255 | 280 | 280 | 280 | 280 | 320 | 360 | 360 |
| Diameter D | inches | 10 | 10 | 11 | 11 | 11 | 11 | 12-5/8 | 14-3/16 | 14-3/16 |
| 结构高度H | mm | 146 | 146 | 146 | 171 | 156 | 171 | 195 | 205 | 240 |
| Spacing H | inches | 5-3/4 | 5-3/4 | 5-3/4 | 6-3/4 | 6-1/8 | 6-3/4 | 7-8/12 | 8 | 9-4/9 |
| 公称爬电距离L | mm | 320 | 320 | 400 | 400 | 400 | 400 | 485 | 550 | 635 |
| Creepage distance L | inches | 12-5/8 | 12-5/8 | 15-3/4 | 15-3/4 | 15-3/4 | 15-3/4 | 19-1/11 | 21-13/20 | 25 |
| ANSI级别 CSA Level | | CS-3 | CS-5 | CS-8 | CS-8A | CS-11 | CS-11A | CS-13 | CS-14 | CS-15 |
| 连接标记 Connection type | | B&S Type B | B&S Type J | B&S Type K | B&S Type K | B&S Type K | B&S Type K | B&S IEC 24 | B&S IEC 28 | B&S IEC 32 |
| 机电强度 | kN | 70 | 120 | 160 | 160 | 230 | 230 | 300 | 420 | 550 |
| Mechanical & electrical strength | lbs | 15000 | 25000 | 36000 | 36000 | 50000 | 50000 | | | |
| 拉伸负荷试验 | kN | 35 | 60 | 80 | 80 | 115 | 115 | 150 | 210 | 275 |
| Tension proof | lbs | 7500 | 12500 | 18000 | 18000 | 25000 | 25000 | | | |
| 机械打击强度 | N-m | 6 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Mechanical impact strength | inch-pounds | 55 | 60 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| 工频干闪络电压(kV) Low frequency dry flashover volta | ge | 80 | 80 | 85 | 85 | 85 | 85 | 95 | 100 | 105 |
| 工频湿闪络电压(kV) Low frequency wet flashover volta | ige | 50 | 50 | 55 | 55 | 55 | 55 | 50 | 50 | 60 |
| 临界冲击闪络电压 | 正极性(kV) Positive polarity | 125 | 125 | 130 | 130 | 140 | 140 | 145 | 150 | 160 |
| Critical impulse flashover voltage | 负极性(kV) Negative polarity | 130 | 130 | 135 | 135 | 140 | 140 | 150 | 160 | 170 |
| 冲击过电压击穿耐受电压(p.u.) Impulse puncture voltage | | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| 最小工频击穿耐受电压(kV) Min low frequency puncture volta | ge | 130 | 130 | 130 | 130 | 130 | 130 | 140 | 140 | 140 |
| 无线电干扰10kV;1MHz(µV) Radio influence voltage under 10 | κV | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 |
| 绝缘子单片重量(kg) Net weight per unit | | 3.8 | 4.0 | 6.3 | 6.3 | 7.0 | 7.0 | 10.8 | 13.0 | 17.5 |







| 绝缘子型号 Insulator Type | | U70C/146CS | U120C/146CS | U160C/165CS | U230C/156CS |
|---|---------------------------|------------|-------------|-------------|-------------|
| 公称直径D | mm | 255 | 255 | 280 | 280 |
| Diameter D | inches | 10 | 10 | 11 | 11 |
| 结构高度H | mm | 146 | 146 | 165 | 178 |
| Spacing H | inches | 5-3/4 | 5-3/4 | 6-1/2 | 7 |
| 公称爬电距离L | mm | 320 | 320 | 400 | 400 |
| Creepage distance L | inches | 12-5/8 | 12-5/8 | 15-3/4 | 15-3/4 |
| ANSI级别 ANSI Level | | CS-4 | CS-6 | CS-10 | CS-12 |
| 连接标记 Connection type | | Clevis | Clevis | Clevis | Clevis |
| 机电强度 | kN | 70 | 120 | 160 | 230 |
| Mechanical & electrical strength | lbs | 15000 | 25000 | 36000 | 50000 |
| 拉伸负荷试验 | kN | 35 | 60 | 80 | 115 |
| Tension proof | lbs | 7500 | 12500 | 18000 | 25000 |
| 机械打击强度 | N-m | 6 | 7 | 10 | 10 |
| Mechanical impact strength | inch-pounds | 55 | 60 | 90 | 90 |
| 工频干闪络电压(kV) Low frequency dry flashover volta | ge | 55 | 80 | 85 | 85 |
| 工频湿闪络电压(kV) Low frequency wet flashover volta | age | 50 | 50 | 55 | 55 |
| 临界冲击闪络电压 | 正极性(kV) Positive polarity | 125 | 125 | 130 | 140 |
| Critical impulse flashover voltage | 负极性(kV) Negative polarity | 130 | 130 | 135 | 140 |
| 冲击过电压击穿耐受电压(p.u.) Impulse puncture voltage | | 2.8 | 2.8 | 2.8 | 2.8 |
| 最小工频击穿耐受电压(kV) Min low frequency puncture volta | 130 | 130 | 130 | 130 | |
| 无线电干扰10kV;1MHz(µV) Radio influence voltage under 10k | ≤50 | ≤50 | ≤50 | ≤50 | |
| 绝缘子单片重量(kg) Net weight per unit | 4.0 | 4.0 | 7.0 | 7.0 | |

ANSI 美标球窝型 ANSI Ball and Socket Type



| 绝缘子型号 Insulator T | уре | U70B/146A | U100B/146A | U120B/146A | U120BP/146HA | U140B/146A | U160B/146A | U160BP/171HA | U180B/146A | U230B/156A |
|---|--------------------------|-----------|------------|------------|--------------|------------|------------|--------------|------------|------------|
| 公称直径D | mm | 255 | 255 | 255 | 280 | 255 | 280 | 330 | 280 | 280 |
| Diameter D | inches | 10 | 10 | 10 | 11 | 10 | 11 | 13 | 11 | 11 |
| 结构高度H | mm | 146 | 146 | 146 | 146 | 146 | 146 | 171 | 146 | 156 |
| Spacing H | inches | 5-3/4 | 5-3/4 | 5-3/4 | 5-3/4 | 5-3/4 | 5-3/4 | 6-3/4 | 5-3/4 | 6-1/8 |
| 公称爬电距离L | mm | 320 | 320 | 320 | 450 | 320 | 400 | 550 | 400 | 400 |
| Creepage distance L | inches | 12-5/8 | 12-5/8 | 12-5/8 | 17-1/2 | 12-5/8 | 15-3/4 | 21-1/2 | 15-3/4 | 15-3/4 |
| ANSI级别 ANSI Level | | 52-3-L | 52-3-H | 52-5-L | 52-5 | 52-5-H | 52-8-L | 52-8 | 52-8-H | 52-11 |
| 连接标记(B&S) Connection typ | pe | Туре В | Type B | Type J | Type J | Type J | Type K | Type K | Type K | Type K |
| 机电强度 | kN | 70 | 100 | 120 | 120 | 140 | 160 | 160 | 180 | 230 |
| Mechanical & electrical strength | lbs | 15000 | 22000 | 25000 | 25000 | 30000 | 36000 | 36000 | 40000 | 50000 |
| 拉伸负荷试验 | kN | 35 | 50 | 60 | 60 | 70 | 80 | 80 | 90 | 115 |
| Tension proof | lbs | 7500 | 11000 | 12500 | 12500 | 15000 | 18000 | 18000 | 20000 | 25000 |
| 机械打击强度 | N-m | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Mechanical impact strength | inch-pounds | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| 工频干闪络电压(kV) Low frequency dry flashover voltag | je | 80 | 80 | 80 | 100 | 80 | 85 | 105 | 85 | 85 |
| 工频湿闪络电压(kV) Low frequency wet flashover voltage | je | 50 | 50 | 50 | 60 | 50 | 55 | 65 | 55 | 55 |
| 临界冲击闪络电压 正极 | tt(kV) Positive polarity | 125 | 125 | 125 | 140 | 125 | 130 | 160 | 130 | 140 |
| Critical impulse flashover voltage 负极 | tt(kV) Negative polarity | 130 | 130 | 130 | 140 | 130 | 135 | 160 | 135 | 140 |
| 冲击过电压击穿耐受电压(p.u. Impulse puncture voltage |) | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| 最小工频击穿耐受电压(kV) Min power frenquency puncture ve | oltage | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| 无线电干扰10kV;1MHz(屮\ Radio influence voltage under 10k\ | /) v | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 |
| 绝缘子单片重量(kg) Net weight per unit | | 3.8 | 3.8 | 4.0 | 5.5 | 4.0 | 7.0 | 9.0 | 7.0 | 7.0 |

ANSI 美标槽型 ANSI Clevis Type





悬式钢化玻璃绝缘子

Cap and pin toughened glass insulators

| 绝缘子型号 Insulato | гТуре | U70C/146A | U100C/146A | U120C/146A | U140C/146A | U160C/146A | U180C/146A | U230C/156A |
|---|---------------------------|-----------|------------|------------|------------|------------|------------|------------|
| 公称直径D | mm | 255 | 255 | 255 | 255 | 2280 | 280 | 280 |
| Diameter D | inches | 10 | 10 | 10 | 10 | 11 | 11 | 11 |
| 结构高度H | mm | 146 | 146 | 146 | 146 | 146 | 146 | 156 |
| Spacing H | inches. | 5-3/4 | 5-3/4 | 5-3/4 | 5-3/4 | 5-3/4 | 5-3/4 | 6-1/8 |
| 公称爬电距离L | mm | 320 | 320 | 320 | 320 | 400 | 400 | 400 |
| Creepage distance L | inches | 12-5/8 | 12-5/8 | 12-5/8 | 12-5/8 | 15-3/4 | 15-3/4 | 15-3/4 |
| ANSI级别 ANSI Level | | 52-4-L | 52-4-H | 52-6-L | 52-6-H | 52-10-L | 52-10-H | 52-12 |
| 连接标记 Connection type | | Clevis | Clevis | Clevis | Clevis | Clevis | Clevis | Clevis |
| 机电强度 | kN | 70 | 100 | 120 | 140 | 160 | 180 | 230 |
| Mechanical & electrical strengt | h Ibs | 15000 | 22000 | 25000 | 30000 | 36000 | 40000 | 50000 |
| 拉伸负荷试验 | kN | 35 | 50 | 60 | 70 | 80 | 90 | 115 |
| Tension proof | lbs | 7500 | 11000 | 12500 | 15000 | 18000 | 20000 | 25000 |
| 机械打击强度 | N-m | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Mechanical impact strength | inch-pounds | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| 工频干闪络电压(kV) Low frequency dry flashover vo | sltage | 80 | 80 | 80 | 80 | 85 | 85 | 85 |
| 工频湿闪络电压(kV) Low frequency wet flashover v | oltsge | 50 | 50 | 50 | 50 | 55 | 55 | 55 |
| 临界冲击闪络电压 | 正极性(kV) Positive polarity | 125 | 125 | 125 | 125 | 130 | 130 | 140 |
| Critical impulse flashover voltage | 负极性(kV) Negative polarity | 130 | 130 | 130 | 130 | 135 | 135 | 140 |
| 冲击过电压击穿耐受电压(p.u.) Impulse puncture voltage | | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| 最小工频击穿耐受电压(kV Min power frenquency punctur | 130 | 130 | 130 | 130 | 130 | 130 | 130 | |
| 无线电干扰10kV;1MHz Radio influence voltage under | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | |
| 绝缘子单片重量(kg) Net weight per unit | 4.0 | 4.0 | 4.0 | 4.0 | 7.0 | 7.0 | 7.0 | |

IEC GB 标准型 Standard Profile



| 绝缘子型号 Insulator Type | U40B/110 | U70B/146 | U100B/146 | U120B/146 | U160B/155 | U210B/170 | U240B/170 | U300B/195 | U300B2/195 | U420B/205 | U550B/240 | U760B/280 | U840B/300 |
|--|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|
| 公称直径D(mm) Diameter D | 175 | 255 | 255 | 255 | 280 | 280 | 280 | 320 | 330 | 360 | 360 | 400 | 400 |
| 结构高度H(mm) Specing H | 110 | 146 | 146 | 146 | 155 | 170 | 170 | 195 | 195 | 205 | 240 | 280 | 300 |
| 公称爬电距离L(mm) Creepage distance L | 200 | 320 | 320 | 320 | 400 | 400 | 400 | 485 | 550 | 550 | 635 | 710 | 710 |
| 连接标记(mm) Designated size of coupling | 11 | 16 | 16 | 16 | 20 | 20 | 24 | 24 | 24 | 28 | 32 | 36 | 40 |
| 额定机械破坏负荷(kN) Mechanical failing load | 40 | 70 | 100 | 120 | 160 | 210 | 240 | 300 | 300 | 420 | 550 | 760 | 840 |
| 逐个拉伸负荷试验(kN) Mechanical routine test | 20 | 35 | 50 | 60 | 80 | 105 | 120 | 150 | 150 | 210 | 275 | 380 | 420 |
| 一分钟工频干耐受电压(kV) Dry power frequency withstand voltage 1 minute | 50 | 70 | 70 | 70 | 75 | 75 | 75 | 85 | 90 | 90 | 95 | 100 | 100 |
| 工频湿耐受电压单片/5片串(kV) Wet power frequency withstand voltagesingle unit /short string with 5 PCS | 32/170 | 40/180 | 40/180 | 40/180 | 45/200 | 45/200 | 45/200 | 50/200 | 55/200 | 55/200 | 55/220 | 60/260 | 60/260 |
| 雷电冲击前受电压单片/5片串(kV) Dry lightning impulse withstand voltage single unit /short string with 5PCS | 70/295 | 100/420 | 100/420 | 100/420 | 110/500 | 110/500 | 110/500 | 130/500 | 140/500 | 140/550 | 150/650 | 150/720 | 150/720 |
| 冲击过电压击穿耐受电压(p.u.) Impulse puncture voltage | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| 最小工频击穿耐受电压(kV) Min power frenquency puncture voltage | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| 无线电干扰10kV;1MHz(HV) Radio influence voltage under 10kV | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 |
| 可见电晕熄灭电压 脚/帽(kV) Visible corona extinction voltage Pin/Cap | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 |
| 绝缘子单片重量(kg) Net weight per unit | 1.7 | 3.6 | 3.6 | 3.6 | 6.5 | 7.0 | 7.2 | 9.7 | 10.8 | 13.0 | 17.5 | 26.3 | 27.0 |

IEC GB 防污型 Anti-pollution Type





| 绝缘子型号 Insulator Type | U70BP/146H | U100BP/146H | U120BP/146H | U160BP/155H | U210BP/170H | U240BP/170H | U300BP/195H | U420BP/205H | U550BP/240H |
|---|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 公称直径D(mm) Diameter D | 280 | 280 | 280 | 320 | 330 | 330 | 390 | 380 | 380 |
| 结构高度 H(mm) Spacing H | 146 | 146 | 146 | 155 | 170 | 170 | 195 | 205 | 240 |
| 公称爬电距离L(mm) Creepage distance L | 450 | 450 | 450 | 550 | 550 | 550 | 635 | 620 | 720 |
| 连接标记(mm) Designated size of coupling | 16 | 16 | 16 | 20 | 20 | 24 | 24 | 28 | 32 |
| 额定机械破坏负荷(kN) Mechanical failing load | 70 | 100 | 120 | 160 | 210 | 240 | 300 | 420 | 550 |
| 逐个拉伸负荷试验(kN) Mechanical routine test | 35 | 50 | 60 | 80 | 105 | 120 | 150 | 210 | 275 |
| 一分钟工频干耐受电压(kV) Dry power frequency withstand voltage 1 minute | 85 | 85 | 85 | 90 | 90 | 90 | 95 | 90 | 95 |
| 工频湿耐受电压 单片/5片串(kV) Wet power frequency withstand voltagesingle unit /short string with 5 PCS | 50/200 | 50/200 | 50/200 | 55/200 | 55/200 | 55/200 | 60/220 | 55/200 | 60/275 |
| 雷电冲击耐受电压 单片/5片串(kV) Dry lightning impulse withstand voltage single unit /short string with 5PCS | 125/450 | 125/450 | 125/450 | 140/500 | 140/500 | 140/500 | 150/550 | 140/550 | 145/550 |
| 冲击过电压击穿耐受电压(p.u.) Impulse puncture voltage | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| 最小工频击穿耐受电压(kV) Min power frenquency puncture voltage | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| 无线电干扰10kV;1MHz(HV) Radio influence voltage under 10kV | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 |
| 可见电晕熄灭电压 脚/帽(kV) Visible corona extinction voltage Pin/Cap | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 |
| 绝缘子单片重量(kg) Net weight per unit | 5.0 | 5.0 | 5.0 | 9.0 | 9.0 | 9.5 | 14.0 | 16.2 | 19.8 |



悬式钢化玻璃绝缘子 Cap and pin toughened glass insulators





| 绝缘子型号 Insulator Type | U70BP2/146H | U100BP2/146H | U120BP2/146H | U160BP2/155H | U210BP2/170H | U240BP2/170H | U300BP2/195H |
|---|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 公称直径D(mm) Diameter D | 255 | 255 | 255 | 280 | 280 | 280 | 320 |
| 结构高度H(mm) Spacing H | 146 | 146 | 146 | 155 | 170 | 170 | 195 |
| 公称爬电距离L(mm) Creepage distance L | 400 | 400 | 400 | 450 | 450 | 450 | 610 |
| 连接标记(mm) Designated size of coupling | 16 | 16 | 16 | 20 | 20 | 24 | 24 |
| 额定机械破坏负荷(kN) Mechanical failing load | 70 | 100 | 120 | 160 | 210 | 240 | 300 |
| 逐个拉伸负荷试验(kN) Mechanical routine test | 35 | 50 | 60 | 80 | 105 | 120 | 150 |
| 一分钟工频干耐受电压(kV) Dry power frequency withstand voltage 1 minute | 80 | 80 | 80 | 85 | 85 | 85 | 90 |
| 工频湿耐受电压 单片/5片串(kV) Wet power frequency withstand voltagesingle unit /short string with 5 PCS | 45/180 | 45/180 | 45/180 | 50/200 | 50/200 | 50/200 | 55/200 |
| 雷电冲击耐受电压 单片/5片串(kV) Dry lightning impulse withstand voltage single unit /short string with 5PCS | 110/420 | 110/420 | 110/420 | 125/500 | 125/500 | 125/500 | 140/550 |
| 冲击过电压击穿耐受电压(p.u.) Impulse puncture voltage | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| 最小工频击穿耐受电压(kV) Min power frenquency puncture voltage | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| 无线电干扰10kV;1MHz(^µ V) Radio influence voltage under 10kV | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 |
| 可见电晕熄灭电压 脚/帽(kV) Visible corona extinction voltage Pin/Cap | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 |
| 绝缘子单片重量(kg) Net weight per unit | 4.8 | 4.8 | 4.8 | 6.5 | 8.5 | 9.0 | 13.0 |







| 绝缘子型号 Insulator Type | U70BP3/146H | U100BP3/146H | U120BP3/146H | U160BP3/155H | U210BP3/170H | U240BP3/170H | U300BP3/195H |
|--|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 公称直径D(mm) Diameter D | 320 | 320 | 320 | 330 | 330 | 330 | 390 |
| 结构高度H(mm) Spacing H | 146 | 146 | 146 | 155 | 170 | 170 | 195 |
| 公称爬电距离L(mm) Creepage distance L | 550 | 550 | 550 | 615 | 615 | 615 | 690 |
| 连接标记(mm) Designated size of coupling | 16 | 16 | 16 | 20 | 20 | 24 | 24 |
| 额定机械破坏负荷(kN) Mechanical failing load | 70 | 100 | 120 | 160 | 210 | 240 | 300 |
| 逐个拉伸负荷试验(kN) Mechanical routine test | 35 | 50 | 60 | 80 | 105 | 120 | 150 |
| 一分钟工频干耐受电压(kV) Dry power frequency withstand voltage 1 minute | 90 | 90 | 90 | 90 | 90 | 90 | 100 |
| 工频湿耐受电压单片/5片串(kV) Wet power frequency withstand voltagesingle unit /short string with 5 PCS | 55/200 | 55/200 | 55/200 | 55/200 | 55/200 | 55/200 | 60/220 |
| 雷电冲击耐受电压单片/5片串(kV) Dry lightning impulse withstand voltage single unit /short string with 5PCS | 140/500 | 140/500 | 140/500 | 140/500 | 140/500 | 140/500 | 155/550 |
| 冲击过电压击穿耐受电压(p.u.) Impulse puncture voltage | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| 最小工频击穿耐受电压(kV) Min power frenquency puncture voltage | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| 无线电干扰10kV;1MHz(^µ V) Radio influence voltage under 10kV | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 |
| 可见电晕熄灭电压 脚/帽(kV) Visible corons extinction voltage Pin/Cap | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 |
| 绝缘子单片重量(kg) Net weight per unit | 7.5 | 7.5 | 7.5 | 10.0 | 10.5 | 11.0 | 15.5 |



悬式钢化玻璃绝缘子 Cap and pin toughened glass insulators





| 绝缘子型号 Insulator Type | U70BP/146M | U100BP/146M | U120BP/146M | U160BP/155M | U210BP/170M | U240BP/170M | U300BP/195M | U300BP2/195M |
|---|------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| 公称直径D(mm) Diameter D | 380 | 380 | 380 | 420 | 420 | 420 | 420 | 455 |
| 结构高度H(mm) Specing H | 146 | 146 | 146 | 155 | 170 | 170 | 195 | 195 |
| 公称爬电距离L(mm) Creepage distance L | 365 | 365 | 365 | 380 | 380 | 380 | 380 | 450 |
| 连接标记(mm) Designated size of coupling | 16 | 16 | 16 | 20 | 20 | 24 | 24 | 24 |
| 額定机械破坏负荷(kN) Mechanical failing load | 70 | 100 | 120 | 160 | 210 | 240 | 300 | 300 |
| 逐个拉伸负荷试验(kN) Mechanical routine test | 35 | 50 | 60 | 80 | 105 | 120 | 150 | 150 |
| 一分钟工频干耐受电压(kV) Dry power frequency withstand voltage 1 minute | 55 | 55 | 55 | 60 | 60 | 60 | 60 | 65 |
| 工頻還耐受电压单片/5片串(kV) Wet power frequency withstand voltagesingle unit /short string with 5 PCS | 45/200 | 45/200 | 45/200 | 50/200 | 50/200 | 50/200 | 50/200 | 55/200 |
| 雷电冲击耐受电压 单片/5片串(kV) Dry lightning impulse withstand voltage single unit /short string with 5PCS | 90/450 | 90/450 | 90/450 | 95/450 | 95/450 | 95/450 | 95/450 | 100/500 |
| 冲击过电压击穿耐受电压(p.u.) Impulse puncture voltage | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| 最小工频击穿耐受电压(kV) Min power frenquency puncture voltage | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| 无线电干扰10kV;1MHz(^µ V) Radio influence voltage under 10kV | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 |
| 可见电晕熄灭电压 脚/帽(kV) Visible corona extinction voltage Pin/Cap | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 | 18/22 |
| 绝缘子单片重量(kg) Net weight per unit | 6.0 | 6.0 | 6.0 | 8.5 | 8.5 | 9.0 | 10.0 | 10.7 |







| 绝缘子型号 Insulator | Гуре | U160BP/146HADC | U160BP/171HADC | U230BP/171HADC |
|--|-------------|----------------|----------------|----------------|
| 公称直径D | mm | 330 | 330 | 330 |
| Diameter D | inches | 13 | 13 | 13 |
| 结构高度H | mm | 146 | 171 | 171 |
| Spacing H | inches | 5-3/4 | 6-3/4 | 6-3/4 |
| 公称爬电距离L | mm | 550 | 550 | 550 |
| Creepage distance L | inches | 21-5/8 | 21-5/8 | 21-5/8 |
| 连接标记(B&S) Connection type | | Туре К | Туре К | Туре К |
| 机电强度 | kN | 160 | 160 | 230 |
| Mechanical & electrical strength | lbs | 36000 | 36000 | 50000 |
| 拉伸负荷试验 | kN | 80 | 80 | 115 |
| Tension proof | lbs | 18000 | 18000 | 25000 |
| 机械打击强度 | N-m | 45 | 45 | 45 |
| Mechanical impact strength | inch-pounds | 400 | 400 | 400 |
| 直流1min干耐受电压(kV) 1 min dry d.c. withstand voltage | | ± 150 | ± 150 | ± 150 |
| 直流1min湿耐受电压(kV) 1 min wet d.c. withstand voltage | | ± 65 | ± 65 | ± 65 |
| 雷电全波冲击耐受电压(kV) Dry lighting impulse withstand vol | Itage | 140 | 140 | 140 |
| 冲击过电压击穿耐受电压(p. Impulse puncture voltage | u.) | 2.8 | 2.8 | 2.8 |
| SF ₆ 击穿耐受电压(kV) SF ₆ puncture withstand voltage | | 225 | 225 | 225 |
| 直流可见电晕熄灭电压(kV) D.C. Visible corona extinction vo | ltage | ≥50 | ≥50 | ≥50 |
| 绝缘子单片重量(kg) Net weight per unit | | 9.0 | 9.1 | 10.0 |



悬式钢化玻璃绝缘子 Cap and pin toughened glass insulators

DC

直流钟罩型



】 悬式钢化玻璃绝缘子 Cap and pin toughened glass insulators

Anti-pollution Type for DC Application

| 绝缘子型号 Insulator Type | U160BP /170HDC | U210BP /170HDC | U240BP /170HDC | U300BP /195HDC | U300BP2 /195HDC | U300BP3 /195HDC | U420BP /205HDC | U420BP2 /205HDC | U550BP /240HDC | U550BP2 /240HDC | U550BP3 /240HDC | U760BP /280HDC | U840BP /300HDC |
|---|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|-------------------|--------------------|-------------------|--------------------|--------------------|-------------------|-------------------|
| 公称直径D(mm) Diameter D | 330 | 330 | 330 | 390 | 330 | 380 | 360 | 380 | 360 | 380 | 380 | 400 | 400 |
| 结构高度H(mm) Spacing H | 170 | 170 | 170 | 195 | 195 | 195 | 205 | 205 | 240 | 240 | 240 | 280 | 300 |
| 公称爬电距离L(mm) Creepage distance L | 550 | 550 | 550 | 635 | 550 | 710 | 550 | 620 | 635 | 720 | 650 | 710 | 710 |
| 连接标记(mm) Designated size of coupling | 20 | 20 | 24 | 24 | 24 | 24 | 28 | 28 | 32 | 32 | 32 | 36 | 40 |
| 额定机械破坏负荷(kN) Mechanical failing load | 160 | 210 | 240 | 300 | 300 | 300 | 420 | 420 | 550 | 550 | 550 | 760 | 840 |
| 逐个拉伸负荷试验(kN) Mechanical routine test | 80 | 105 | 120 | 150 | 150 | 150 | 210 | 210 | 275 | 275 | 275 | 380 | 420 |
| 直流干耐受电压(kV) Dry d.c. withstand voltage | ± 150 | ± 150 | ± 150 | ± 150 | ± 150 | ± 170 | ± 150 | ± 160 | ± 160 | ± 160 | ±160 | ± 165 | ± 165 |
| 直流湿耐受电压(kV) Wet d.c. withstand voltage | ± 65 | ± 65 | ± 65 | ± 65 | ± 65 | ± 75 | ± 65 | ± 70 | ± 70 | ± 70 | ± 70 | ± 75 | ± 75 |
| 雷电冲击耐受电压 单片/5片串(kV) Dry lightning impulse withstand voltage single unit /short string with 5PCS | 140/500 | 140/500 | 140/500 | 140/550 | 140/500 | 155/550 | 140/550 | 150/550 | 150/650 | 150/550 | 150/650 | 150/720 | 150/720 |
| 冲击过电压击穿耐受电压(p.u.) Impulse puncture voltage | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| SF ₆ 击穿耐受电压(kV) SF ₈ puncture withstand voltage | 225 | 225 | 225 | 225 | 225 | 255 | 225 | 240 | 240 | 240 | 240 | 250 | 250 |
| 无线电干扰10kV;1MHz(µV) Redio influence voltage under 10kV | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 | ≤50 |
| 直流可见电晕熄灭电压(kV) D.C. Visible corona extinction voltage | ≥50 | ≥50 | ≥50 | ≥50 | ≥50 | ≥50 | ≥50 | ≥50 | ≥50 | ≥50 | ≥50 | ≥50 | ≥50 |
| 绝缘子单片重量(kg) Net weight per unit | 9.7 | 10.2 | 10.5 | 13.0 | 11.5 | 14.6 | 13.5 | 16.3 | 18.0 | 20.6 | 18.5 | 27.5 | 27.7 |

Suffix Code Annotation:



Note: The code parameter number is hidden if it is not involved.

Quality Control

SYGG commit to enhancement of power lines stability under varying environment, and places great emphasis on the quality of insulators. We continually improve product designing to meet customer requirements, by means of customer feedback analysis and settlement. The annual shattering rates as an important index has been curbing less than ten-thousandth on SYGG products.



• Mixing:

The material's weighing accuracy and homogeneity is the determinant in mixing. The precision range of 1/1600~1/3000 can be achieve by using advanced equipment imported weiahina from Switzerland. We also import greatest mixing equipment from Germany which best fit small pellets material mixing. Using the equipment, homogeneity of the materials can meet 96%. Moreover, an automatic control system from Siemens was used to lead equipment on weighing, mixing and feeding, which ensure the high quality from the source.



• Melting:

During the melting, the stability of temperature, pressure, liquid level and boundary of foam has mainly impact on quality. In order to improve the stability, electric boosting technique is used for compensation to maintain temperature in

the furnace is consistent. It also allows beneficial convection to be formed in the glass solution, stabilize boundary and enhance homogeneity of composition. With those techniques, we can hold temperature fluctuation into $\pm 1^{\circ}$ C; boundary fluctuation into ± 0.5 mm.

Molding

Under molding step, stable feeding temperature and feeding weight should be consider for ensuring molding quality. We set nine monitory points; regulate feeding temperature dynamically by using platinum rhodium thermocouple. The feeding temperature can be controlled within $\pm 1^{\circ}$ C. The feeding weight can be controlled with $\pm 10g$ by using electromagnetic servo feeding system. In addition, the automatic hydraulic press is purchased from well-known Germany manufacturer which own over 100 years' experience on glassmaking equipment field. This equipment can better FPY through adjust punch position automatically and separate pressing and boring.

• Toughening

How to make the glass cooling under control and shell acquire uniform prestress is an inevitable problem will be facing on toughening under complexity of glass shell structure and thickness. To reduce the effect of this problem, SYGG make many researches and work with experts all over the world. After vast proofs, the positions and angle of air were be optimized to make the surface of the glass prestress more uniform. By optimization, the perfect toughening rate of SYGG can reach 95%.



• Thermal Shock

After toughening, all SYGG glass shells will subject to three times temperature shock to eliminate disqualification. It is necessary that after three times temperature shock test, the qualification rate can achieve more than 96%. Those shells which after temperature shock will be double checked by visual inspection to minimize reject.

• Get rid of the remnant NiS

NiS is a kind impurity which may consist in shells. Under indoor temperature, NiS will has a phase change and cause 2%~4% volume change. It subjects the glass into a huge phase transition stress, resulting in self-detonation. SYGG has special treatment address remnant NiS. The shells after thermal shock and visual inspection will put into relevant equipment, drive its phase change and reject defective.

Laboratory:

The SYGG Insulator in-house lab has the state-of-the-art testing equipment and has capacity of performing up to insulator type test , routine test, and sample test up to 1000kV AC and +-1100kV.

The 1800kV Impulse Testing Hall

SYGG's glass insulators also passed the 3rd party type tests.

| Powertech Powriech Latis Inc. + 12384-86" Aure, Surray, B.C. Canada + (864) 596-7500 | VERLAND, No. 7077/NL | |
|--|---|---|
| POWERTECH LABS INC. | V DELECTRIC LARGE LABORATORIES Lat. Page 1 of 16 | |
| | TYPE TEST REPORT | |
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www.sygg-usa.com

SYGG's Experience

After 10-year fast development, more than 30 million pieces of our glass insulators have been provided to utilities domestically and abroad, including State Power Grid and Southern Power Grids in China; and Power Grid Corporation of India, National Grid of UK, State Grid of Brazil, State Grid of Finland (FINGRID), State Grid of South Africa (ESKOM) AEP, DOMINION and Southern Company of US. These insulators have been operating on AC transmission lines from 10kV to 1000kV and DC lines of \pm 500kV, \pm 800kV, \pm 1100kV, specifically, there are 2.6 million pieces running on \pm 800kV DC lines. The Top major accounts are shows below:

| No | Customer | Country | Voltage | Quantity |
|-------|--|------------|------------------|-----------|
| 1 | Powergrid Corperation of India Co,Ltd | India | 400kV | 166,336 |
| | | | 765kV | 3,745,925 |
| 2 | Grantel Equipementos L TD | Brazil | 132kV ~ 500kV | 2,267,852 |
| 3 | State Power Grid of China | Ethiopia | 500KV | 658,584 |
| 4 | PT Trans Electric | Indonesia | 150kV | 919,637 |
| 5 | Abengoa | Peru | 400kV | 457,419 |
| 6 | KPTL | India | 765kV | 374,026 |
| 7 | National Grid | UK | 275/400kV | 370,460 |
| 8 | Grisim Electric | Turkey | 275/400kV | 166,606 |
| 9 | Siemens | Chile | 220KV | 155,020 |
| 10 | TBEA | Kyrgyzstan | 500KV | 145,032 |
| Total | | | | 7,936,868 |

The recorded shattering rate from those installations is the best in the industry

RAIPUR POOLING STATION WARDHA 765 KV D/C TRANSMISSION LINE---India

OHL 750kV Zaporizhzhia NPP-Kakhovskain--- Ukraine

Dateka — Ke Ming 500KV transmission project--- Kyrgyzstan

Teles Pires Project 500kV--- Brazil

Our Service

SYGG regard service as an indivisible part of our quality. Our proactive customer service is offer from pre-sales to after-sales, and encourages can-do attitude. We guarantee to respond customer's inquiries and requests within 24 hours. And we have complete post-sales service and warranty to help customer replace the defective or faulty parts during one year after reception.

LETTER OF PRODUCT WARRANTY

TO WHOM IT MAY CONCERN

We, Sichuan Yibin Global Group Co.,Ltd, having the principal office at 99# South first Road, Economic and technological Development Zone of Longquan Yi, Chengdu, Sichuan, China, hereby guarantee that all the insulators manufactured by us will be new, unused and comply with the technical specification requested.

Furthermore, we state that the quality guaranteed period of our products is one year after your reception. During the warranty period, if any defect or inherent failure is discovered or if the product does not meet the requirements of the contract, we will replace the defective or faulty parts at our own expenses and within a reasonable amount of time.

Frances, w

Packing:

The packaging should have good measures against moisture, vibration, rust and theft, so that to ensure the insulators can be safely transported to the site without any damages. We make the insulators in short strings and using strong and suitable size wooden crates to package. The crates are evenly stacked on pallet bases and are secured using an appropriately tightened plastic strap. Cushions, protective gaskets, crosser or isolation blocks will be used on pallet setting to prevent damage or deformation during transportation and handling. All the pallets used receive a high-temperature treatment to prevent humidity and mildew. All these materials using on packaging have good chemical stability, waterproofness, not adhere to insulators and do not produce corrosion. All packing cases or pallets are correctly and clearly marked to avoid loss or misdelivery.

