



**PPC INSULATORS**  
ELECTRIFYING THE WORLD

# PPC Porcelain Solid Core Post Insulators and Operating Rods

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**IEC**

# Superior Reliability

## Over 130 years of Innovation.

Competence and service  
by a leading manufacturer.

PPC Insulators is a specialist in the field of high voltage porcelain solutions with more than 130 years of experience in designing and manufacturing solid core post insulators. Dedicated to innovation and development of quality distinct solutions, PPC Insulators produces the most comprehensive range of post insulators, up to the highest AC and DC system voltages. With the most progressive technology and engineering PPC solid core post insulators are providing the most efficient and reliable insulating and structural support of live components in transmission, substation, and distribution applications with unlimited lifetime performance cycle.



### IEC® Standards

- ISO 9001
- ISO 14001



- Porcelain Solution for Unlimited Lifetime
- High Strength C130 Body for Advanced Performance Designs
- Below 1% of Quartz Composition for Superior Structural Rigidity
- Invariable Homogeneity for Consistant Highest Tolerances
- Isostatic and Wet Process for Specific Product Requirements



Porcelain Insulators from PPC are manufactured and tested under strict production and quality control, in full accordance with IEC 60273. Meticulous from the selection of high-quality non-conflict minerals conforming to REACH Regulation, each production process is carefully planned and executed to achieve the best result - C130 High Strength Alumina Porcelain body with maximum reliability and highest strength to weight ratio. Ensured by in-house material property standard of below 1% of Quartzware content, PPC Porcelain Insulators not only have unlimited lifetime but the highest performance consistency. With no dangerous waste material produced as a byproduct, PPC porcelain insulators are produced by wet or isostatic process and assembled with non-conflict cast-iron or casted aluminum end fittings and flanges, delivering the strongest possible, most reliable and sustainable solution to quality striven customers.

# Index

Page	Title
2	<b>INTRODUCTION</b>
3	<b>INDEX</b>
4	<b>PPC STRENGTHS</b>
6	<b>DESIGN</b>
8	<b>Pollution Levels</b>
10	<b>Shed Design</b>
12	<b>Insulating Material</b>
14	<b>Production</b>
15	<b>Testing</b>
16	<b>Key Features</b>
18	<b>RTV Coating</b>
20	<b>BIL 60-95 kV</b>
22	<b>BIL 125-170 kV</b>
24	<b>BIL 200-325 kV</b>
26	<b>BIL 450-650 kV</b>
28	<b>BIL 750-950 kV</b>
30	<b>BIL 1050-1300 kV</b>
32	<b>BIL 1425-1675 kV</b>
34	<b>BIL 1800-2100 kV</b>
36	<b>BIL 2250-2550 kV</b>
38	<b>Bina Test Station</b>

# PPC Insulators

## The Edge Advantages.

PPC's experience, developed technology and persistent quality assures its customers



**State-of-the-art  
technology**



**Over 130 years  
of experience**



**Contemporary  
products**



**Comprehensive assistance  
and technical support**



**Fast response  
time**



**Worldwide  
presence**

## Innovation

Excellence

- Contemporary insulation solutions, i.e. Hybrid Post insulators and RTV-Coating, show excellent performance in adverse environmental conditions, have improved pollution resistance and high durability due to mechanical strength of porcelain core.
- UHV and HVDC experience: Successfully delivered post insulators up to 1200kV
- In addition to the traditional production technology PPC also has Isostatic production technology that give more design flexibility including the possibility to produce shed profiles and creepage distances exceeding minimum IEC requirements
- Advanced porcelain post design with less metal parts and longer arcing distances increase substations performance

## Customer

Excellence

- Proximity to each market with a worldwide footprint including sites in Europe, Asia and Latin America guarantees the availability of PPC's products 24/7
- A comprehensive local customer service guaranteed by our global sales organization and supported by highly qualified local PPC representatives that provide competent personal service to every single customer
- Quick responses to our customers' delivery requirements by combining modern tools for design and leveraging our multiple manufacturing sites and warehouses
- Tailored solutions serving customer specific design requirements by PPC's international engineering team

## Quality

Excellence

- Superior technology and craftsmanship, supported by leading R&D for continuous product innovation
- Strict raw-material analysis and control
- High quality material for residual quartz content below 1%, preventing micro cracks in the porcelain, which grow under stresses and can seriously affect lifetime of insulators
- Compliance with all globally requested quality standards and exceed international standards and norms to provide ample safety margins for its customers
- ISO 9001 certification for all PPC plants.
- Close to zero replacement rates on site

# PPC Post Insulators

## The Perfection of Design.

PPC post insulators and operating rods are state-of-the-art solutions, carefully designed to comply with critical demand of electrical insulation and mechanical strength, while taking many other factors such as environmental conditions that play integral role in insulators' service.



Outdoor porcelain solid core post insulator is determined according the following characteristics:

- **Lightning impulse withstand voltage, dry**
- **Switching impulse withstand voltage, wet (when a switching impulse level is required)**
- **Power frequency withstand voltage, wet**
- **Mechanical failing load**
- **Minimum nominal creepage distance**
- **Fixing arrangement of top and bottom metal fitting**
- **Color of glaze**



## Standards

**PPC Insulators** manufactures outdoor porcelain solid core post insulators with external metal fittings and outdoor operating rods with external metal fittings (for High Voltage Switchgears) according to standard IEC60273. Components according to other standards or special customer requirements can be supplied upon request.

# Electrical Design

The insulation performance of a post insulator column is a function of the height, creepage distance, arcing distance of the insulating part(s) as well as the number of insulator units for a defined height and follows the standards IEC60071 and IEC60273.



Nominal system voltage $U_n$	Highest system voltage $U_m$	One minute withstand voltage wet 50 cs	Lightning impulse withstand voltage 1,2/50 $\mu$ s
kV (r.m.s.)	kV (r.m.s.)	kV (r.m.s.)	kV (peak value)
3	3,6	10	20 40
6	7,2	20	40 60
10	12	28	60 75 95
15	17,5	38	75 95
20	24	50	95 125 145
30	36	70	145 170
45	52	95	250
66	72,5	140	325
110	123	185 230	450 550
132	145	185 230 325	450 550 650
150	170	230 275 325	550 650 750
220	245	275 325 360 395 460	650 750 850 950 1050
275	300	750 850	850 950 1050
330	362	850 950	950 1050 1175
380	420	850 950 1050	1050 1175 1300 1425
480	525 (550)	850 950 1050	1175 1300 1425 1550
700	765 (800)	1300 1425 1550	1675 1800 1950 2100 2400 2550

Up to 1200kV UHVAC and  $\pm$ 800kV UHVDC as per system and power transmission requirements

# Pollution Levels Facing the Climate Conditions.

Performance in polluted environment, under various contamination sources is one of the key considerations for insulator design and its dimensioning. Recommendations for insulators in adverse environment are specified in IEC 60815 and IEC 60273 standard.

In IEC60815 the basic pollution levels are defined qualitatively with examples of typical environmental situations. The corresponding minimum nominal creepage distance is given in mm/kV.





## Class

A

Pollution	Specific Creepage Distance	
Very Light	12.7 mm/kV	0.5 inch/kV

## Class

B

Pollution	Specific Creepage Distance	
Light	16 mm/kV	0.630 inch/kV

- Areas without industry and with low housing density equipped with heating plants.
- Areas with low density of industry or houses but subjected to frequent winds and/or rainfall.
- Agricultural areas.
- Mountainous areas.

## Class

C

Pollution	Specific Creepage Distance	
Medium	20 mm/kV	0.787 inch/kV

- Industrial areas not producing particulate polluting smoke and/or with average housing density equipped with heating plants.
- Areas with high density of houses and/or industry but subjected to frequent winds and/or rainfall.
- Areas exposed to wind from the sea but not too close to the coast (at least several kilometers distant).

## Class

D

Pollution	Specific Creepage Distance	
Heavy	25 mm/kV	0.984 inch/kV

- Areas with high density of industries and suburbs of large cities with high density of heating plants producing pollution.
- Areas close to the sea in any case exposed to relatively strong winds from the sea.

## Class

E

Pollution	Specific Creepage Distance	
Very Heavy	31 mm/kV	1.220 inch/kV

- Areas generally of moderate extent, subjected to conductive dusts and to industrial smoke producing particularly thick conductive deposits.
- Areas generally of moderate extent, very close to the coast and exposed to sea-spray or to very strong and polluting winds from the sea.
- Desert areas, characterized by no rain for long periods, exposed to strong winds carrying sand and salt, and subjected to regular condensation.

# Shed Design

## The Form of Performance.

PPC Insulators produces a wide array of shed designs to deliver the best electrical. Considering specific conditions and contamination level, shed design is optimized to meet required performance level, creepage distance and good self-cleaning properties under rain and other type of pollution.

### Parameters Characterizing Insulator Profile

#### 1. Minimum distance, $c$ , between sheds

Insulator length	Deviations for $c$						
	Major		Minor		None		
>550 mm	Major		Minor		None		
≤550 mm	Major	Minor	None				
$c$ (mm)	15	20	25	30	35	40	45

#### 2. Ratio $s/p$ between spacing and overhang

Sheds	Deviations for $s/p$								
	Major		Minor			None			
with under ribs	Major		Minor			None			
without under ribs	Major	Minor	None						
$s/p$	0,4	0,5	0,6	0,65	0,7	0,75	0,8	0,9	1

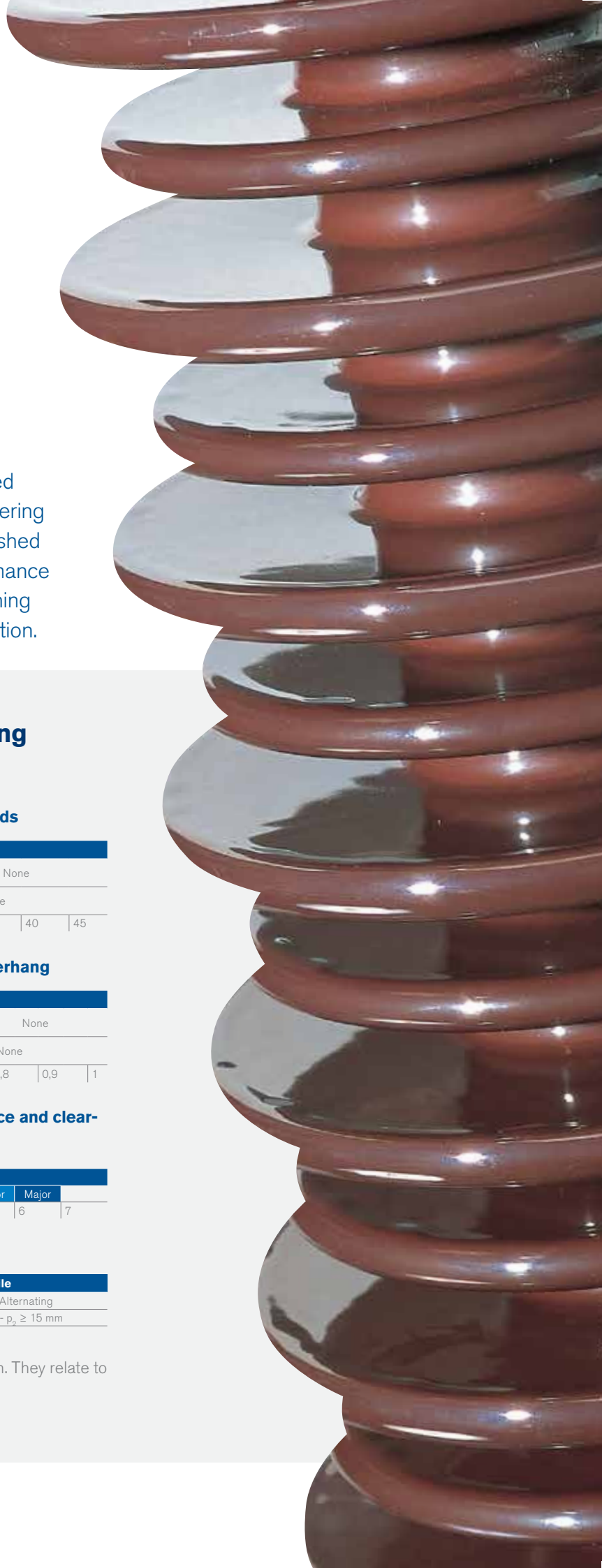
#### 3. Ratio $l_c/d$ between creepage distance and clearance

All profiles	Deviations for $l_c/d$						
	None				Minor	Major	
$l_c/d$	1	2	3	4	5	6	7

#### 4. Alternating shed

All insulators	Classification of profile	
	Non-alternating	Alternating
	$p_1 = p_2$ or $p_1 - p_2 < 15$ mm	$p_1 - p_2 \geq 15$ mm

Parameters give basic rules to assist design. They relate to vertically installed insulators.





## Parameters Characterizing Entire Insulator

### 1. Creepage factor C.F.

$$C.F. = \frac{l_t}{S_t}$$

$l_t$  total creepage distance of an insulator  
 $S_t$  arcing distance

SPS Class	Deviations for C.F.					
	None	Minor	Major	None	Minor	Major
SPS Class a	None	Minor	Major			
SPS Class b	None	Minor	Major			
SPS Class c	None	Minor	Major			
SPS Class d	None	Minor	Major			
SPS Class e	None	Minor	Major			
CF	2,5	3	3,5	4	4,5	5

### 2. Profile factor P.F.

$$P.F. = \frac{2p_1 + 2p_2 + s}{l}$$

alternating sheds

$$P.F. = \frac{2p + s}{l}$$

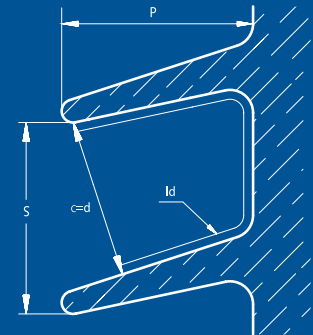
all other sheds

Creepage distance of the insulated leakage path measured between the two points which define  $s$ .

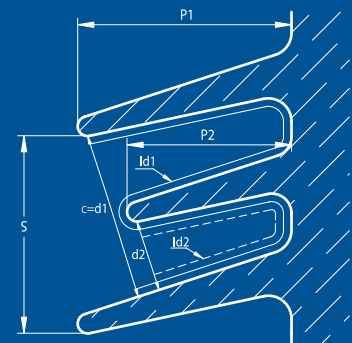
- P.F. > 0.8 for pollution levels 1 and 2.
- C.F. > 0.7 for pollution levels 3 and 4.

## Sheds

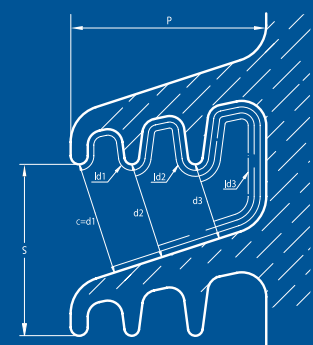
### Plain



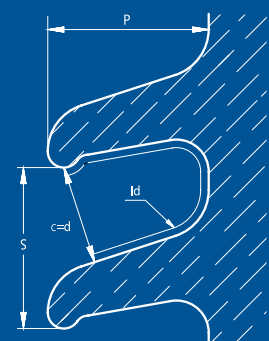
### Alternating



### Under rib



### Standard



# Insulating Material

## The Making of the Quality.

The insulator body of the unit is made from high quality aluminium oxide porcelain, C130 or C120, which conforms to standard IEC60672. Glazing provides a dirt repellent surface. Glazing is normally brown in colour, though Munsell grey can also be provided upon request.



### Fittings

Fittings are made in malleable cast iron according to standard EN1562 or spheroidal graphite cast iron according to standard EN1563. All fittings are hot dip galvanized according to standard EN ISO 1461 with a zinc weight of min. 600 g/m<sup>2</sup> (min. 85 µm) as average value. The following table shows the standard dimensions for fittings according to IEC60273.



Pitch circle diameter p.c.d. $d_1$	Depth of the tapped blind holes $h_2$	Number of holes $n$	Bolt holes tapped $d_2$	Bolt holes plain $\varnothing d_2$	Nominal maximum diameter of mounting face $d_3$
mm	mm	-	-	mm	mm
76	12	4	M12	-	115
127	18 (22)	4	M16	-	165
178		4	-	18	225
200		4	-	18	245
225		4	-	18	270
254		8	-	18	300
275		8	-	18	320
300		8	-	18	345
325		8	-	18	370
356		8	-	18	400
375	20	8	-	18	420

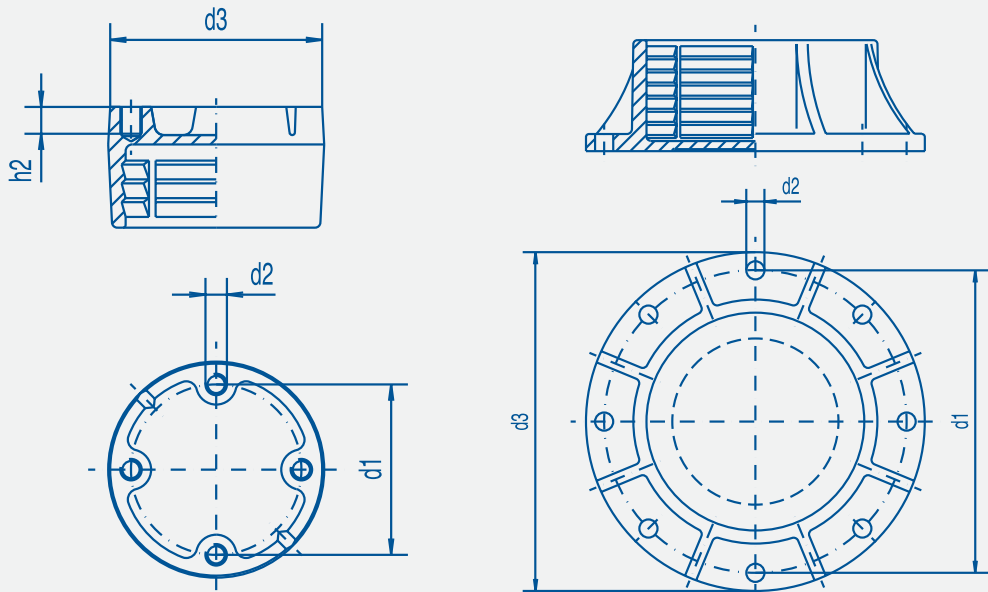
## Fittings with other dimensions

(e.g., for operation rod columns) can be supplied on request.

Threads are generally tapped after hot dip galvanizing; for shipment and storage, the threads will be protected by a protective layer and/or special plastic plugs.

### NOTE:

Multiple unit insulator columns will be delivered with hardware (bolts, nuts and spring washers) for the interconnection of the insulator units.



# Production

## Leading-Edge Craftmanship.

Tested Items	Type Test	Sample Test	Routine Test
Dry lightning impulse withstand voltage test	✓		
Wet switching impulse withstand voltage test	✓ <sup>1</sup>		
Wet power frequency withstand voltage test	✓		
Mechanical failing load test Bending strength	✓	✓	
Verification of dimensions		✓	
Temperature cycles test		✓	
Porosity test		✓ <sup>2</sup>	
Galvanising test		✓	
Visual inspection			✓
Mechanical test (Bending)			✓ <sup>3</sup>

### Inspection and Testing

Inspections and tests after firing are made according to standard IEC60168.

1. Applicable only to post insulators for use on systems with highest voltage for equipment above 245 kV
2. In agreement with Customer
3. Insulators with height >770 mm

### Tolerances of Dimensions, Form and Position

The tolerances are in accordance with the standards IEC60168 and IEC60273.



## Cementing

The fittings are assembled to the porcelain body with a Portland base mortar as standard. A bituminous coating is applied on the porcelain and the fittings to compensate for the difference in thermal expansion. This is especially important for extreme weather applications.

## Marking

Each insulator carries the trademark of the PPC Insulators, the trademark of the manufacturing factory, type designation (reference number), date of manufacture and a serial number.

# Key Features

## Competitive Advantages.

### High strength aluminium oxide porcelain body

- highest strength to weight ratio
- high compression and torsion strength
- minimum deflection
- high resistance to vandalism
- resistant to salt pollution

### Below 1 % of quartzware residue

- free of internal stresses
- highest structure rigidity
- minimum porosity
- lowest maintenance costs

### No measurable aging

- high resistance to thermal stress
- high resistance to temperature variations
- **minimum total life cycle costs**

### High performance consistency

- routine test load at 70 % of the min. failing load
- low surface leakage current
- separated electrical and mechanical zones
- good self-cleaning properties
- good insulation performance under pollution
- ultrasonic mechanical soundness inspection

### Puncture proof

- The theoretical puncture path through the porcelain body is almost equal to the dry arcing distance. Since porcelain has several times the dielectric breakdown strength of air, flashover, if any, always occurs in the air outside the porcelain body





## Production and Product Tables

**PPC Insulators production facilities** for IEC station post insulators manufacture in full accordance to IEC60273. Operating rod columns for disconnectors are manufactured corresponding to the relevant post insulators.

**Insulation requirements** are available in ratings from BIL 60kV to 2550kV.

This catalogue includes standard IEC solid core station post insulators with external metal fittings. Insulator creepage distances are in accordance with IEC60273,

and IEC60815. Special requirements, such as other creepage distances, special shed forms, other top bending moments or pitch circle diameters, can also be offered upon request.

## Conversion Table

<b>Dimensions</b>	1 mm	0.03937 inch
	25.4 mm	1 inch
<b>Force</b>	1 N	0.22481 pound
	4.448 N	1 pound
<b>Moment of Force</b>	1 Nm	8.8508 inch-pound
	0.113 Nm	1 inch-pound



# RTV Coating

## Porcelain Strength Meets Hydrophobicity.

Extreme environmental conditions and high pollution areas such as industrial, desert and coastal regions cause excessive leakage currents. The surface condition of an insulator in such areas will subsequently lead to a pollution flashover and power system outages. To avoid the electrically conductive layer, resulting from an accumulation of pollutants in combination with moisture, frequent washing or greasing of the insulators is necessary to ensure safe operation. The consequences are high maintenance cost and profit losses because of regular station shut downs and interruptions in electricity supply.



### RTV Coating

RTV Coated insulators are porcelain insulators with silicone layer, applied to the insulator surface by using a special spray coating technique for new insulators or already installed insulators performing as existing substation equipment.

The silicone layer provides a hydrophobic surface limiting the negative effects of contamination and enhancing the electrical characteristics and low leakage currents in highly polluted areas.



## Benefits of RTV Coating

- Excellent self-cleaning characteristics
- Long-term hydrophobicity
- Suppression of leakage current, discharges and pollution flashover
- Reduced maintenance expenditures
- Facilitated cleaning in case of extreme pollution deposition
- RTV coated surfaces withstand high pressure jet washing
- Minimum 15 years lifecycle
- Nontoxic and environmental friendly material



## TYPE

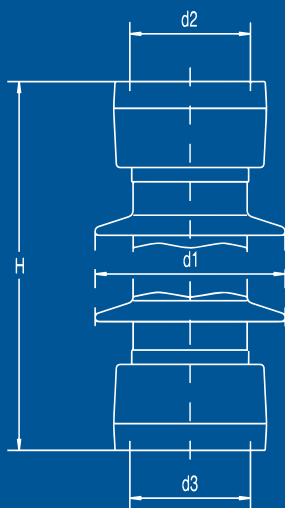
**BIL 60-95 kV**

Higher mechanical strength possible on customer request!

IEC POST INSULATOR DESIGNATION	C4-60	C6-60	C8-60	C10-60
<b>Dimensions</b>				
Height H [mm]	190 ± 1	190 ± 1	190 ± 1	190 ± 1
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12
<b>Mechanical Values</b>				
Minimum failing load - Bending [kN]	4	6	8	10
Minimum failing load - Bending moment underhung [kNm]	0.38	0.57	0.76	0.95
Minimum failing load - Bending moment upright [kNm]	0.76	1.14	1.52	1.9
Minimum failing load - Torsion [kNm]	0.6	0.6	0.8	1
<b>Electrical Values</b>				
Lightning impulse withstand voltage, dry [kV peak value]	60	60	60	60
Power frequency withstand voltage, wet [kV r.m.s.]	20	20	20	20

IEC POST INSULATOR DESIGNATION	C4-75	C6-75	C8-75	C10-75
<b>Dimensions</b>				
Height H [mm]	215 ± 1	215 ± 1	215 ± 1	215 ± 1
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12
<b>Mechanical Values</b>				
Minimum failing load - Bending [kN]	4	6	8	10
Minimum failing load - Bending moment underhung [kNm]	0.43	0.65	0.86	1.08
Minimum failing load - Bending moment upright [kNm]	0.86	1.29	1.72	2.15
Minimum failing load - Torsion [kNm]	0.6	0.6	0.8	1
<b>Electrical Values</b>				
Lightning impulse withstand voltage, dry [kV peak value]	75	75	75	75
Power frequency withstand voltage, wet [kV r.m.s.]	28	28	28	28

IEC POST INSULATOR DESIGNATION	C4-95	C6-95	C8-95	C10-95	C12.5-95
<b>Dimensions</b>					
Height H [mm]	255 ± 1	255 ± 1	255 ± 1	255 ± 1	255 ± 1
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	76/4x M12
<b>Mechanical Values</b>					
Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	0.51	0.77	1.02	1.28	1.6
Minimum failing load - Bending moment upright [kNm]	1.02	1.53	2.04	2.55	3.19
Minimum failing load - Torsion [kNm]	0.8	0.8	1.2	1.2	1.8
<b>Electrical Values</b>					
Lightning impulse withstand voltage, dry [kV peak value]	95	95	95	95	95
Power frequency withstand voltage, wet [kV r.m.s.]	38	38	38	38	38



TYPE

# BIL 125-170 kV

Higher mechanical strength possible on customer request!

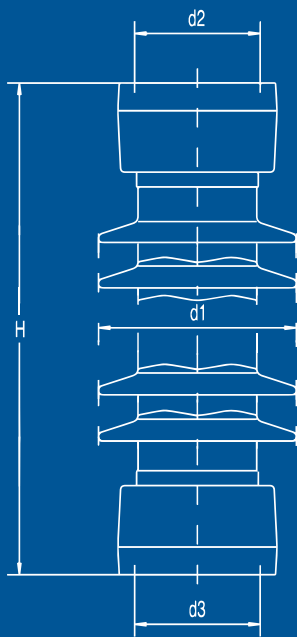
IEC POST INSULATOR DESIGNATION	C4-125	C6-125	C8-125	C10-125	C12.5-125
<b>Dimensions</b>					
Height H [mm]	305 ± 1	305 ± 1	305 ± 1	305 ± 1	305 ± 1
Max. nom. diameter of insulating part d1 [mm]	170	180	190	190	200
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	76/4x M12
<b>Mechanical Values</b>					
Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	0.61	0.92	1.22	1.53	1.91
Minimum failing load - Bending moment upright [kNm]	1.22	1.83	2.44	3.05	3.82
Minimum failing load - Torsion [kNm]	0.8	0.8	1.2	1.2	2
<b>Electrical Values</b>					
Lightning impulse withstand voltage, dry [kV peak value]	125	125	125	125	125
Power frequency withstand voltage, wet [kV r.m.s.]	50	50	50	50	50

IEC POST INSULATOR DESIGNATION	C4-150	C6-150	C8-150	C10-150	C12.5-150
<b>Dimensions</b>					
Height H [mm]	355 ± 1	355 ± 1	355 ± 1	355 ± 1	355 ± 1
Max. nom. diameter of insulating part d1 [mm]	175	190	190	195	205
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	76/4x M12
<b>Mechanical Values</b>					
Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	0.71	1.07	1.42	1.78	2.22
Minimum failing load - Bending moment upright [kNm]	1.42	2.13	2.84	3.55	4.44
Minimum failing load - Torsion [kNm]	1	1.2	1.5	1.8	2.5
<b>Electrical Values</b>					
Lightning impulse withstand voltage, dry [kV peak value]	150	150	150	150	150
Power frequency withstand voltage, wet [kV r.m.s.]	50	50	50	50	50

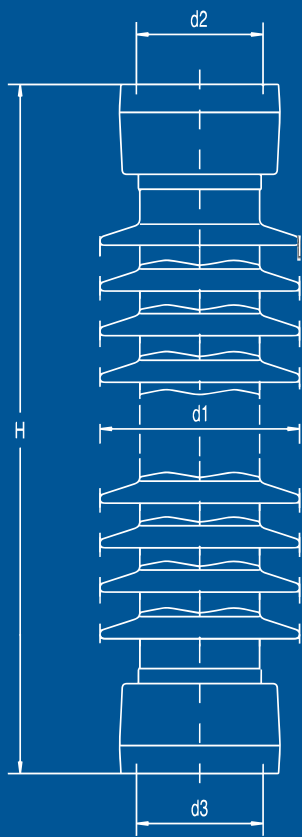
  

IEC POST INSULATOR DESIGNATION	C4-170	C6-170	C8-170	C10-170	C12.5-170
<b>Dimensions</b>					
Height H [mm]	445 ± 1	445 ± 1	445 ± 1	445 ± 1	445 ± 1
Max. nom. diameter of insulating part d1 [mm]	180	190	195	205	210
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	127/4x M16
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	127/4x M16
<b>Mechanical Values</b>					
Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	0.89	1.34	1.78	2.23	2.79
Minimum failing load - Bending moment upright [kNm]	1.78	2.67	3.56	4.45	5.57
Minimum failing load - Torsion [kNm]	1.2	1.5	2	2.5	3
<b>Electrical Values</b>					
Lightning impulse withstand voltage, dry [kV peak value]	170	170	170	170	170
Power frequency withstand voltage, wet [kV r.m.s.]	70	70	70	70	70

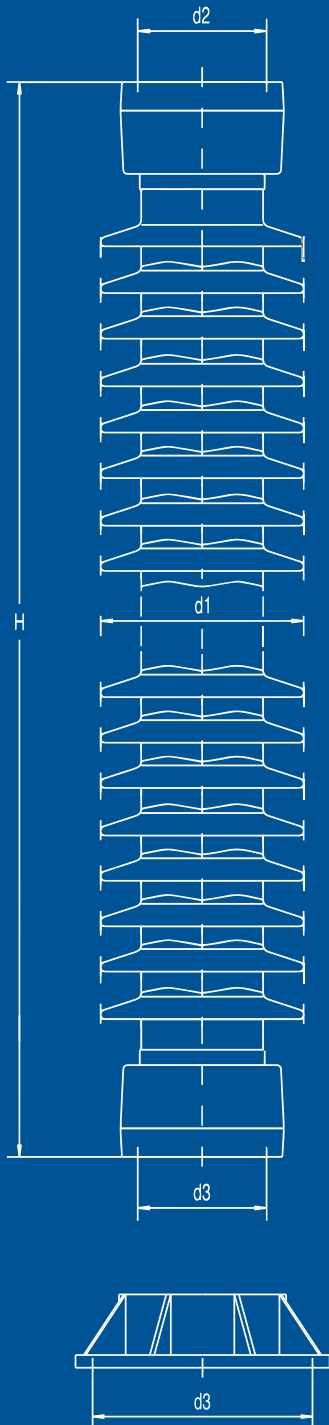












## TYPE

**BIL 750-950 kV**

Higher mechanical strength possible on customer request!

IEC POST INSULATOR DESIGNATION	C2-750	C4-750	C6-750	C8-750	C10-750	C12.5-750	C16-750	C20-750
<b>Dimensions</b>								
Height H [mm]	1700 ± 2.5	1700 ± 2.5	1700 ± 2.5	1700 ± 2.5	1700 ± 2.5	1700 ± 2.5	1700 ± 2.5	1700 ± 2.5
Max. nom. diameter of insulating part d1 [mm]	225	225	245	255	265	280	290	305
Top fitting p.c.d. d2 [mm] / hole pattern	127/4x M16	127/4x M16	127/4x M16 225/4x18	127/4x M16 225/4x18	127/4x M16 225/4x18	127/4x M16 225/4x18	127/4x M16 254/4x18	127/4x M16 254/4x18
Bottom fitting p.c.d. d3 [mm] / hole pattern	127/4x M16 178/4x18	127/4x M16 200/4x18	127/4x M16 200/4x18	127/4x M16 225/4x18	127/4x M16 225/4x18	254/8x18	254/8x18	275/8x18 300/8x18
<b>Mechanical Values</b>								
Minimum failing load - Bending [kN]	2	4	6	8	10	12.5	16	20
Minimum failing load - Bending moment underhung [kNm]	0.68	1.36	2.04	2.72	3.4	4.25	5.44	6.8
Minimum failing load - Bending moment upright [kNm]	3.4	6.8	10.2	13.6	17	21.25	27.2	34
Minimum failing load - Torsion [kNm]	2	3	3	4	4	6	6	6
<b>Electrical Values</b>								
Lightning impulse withstand voltage, dry [kV peak value]	750	750	750	750	750	750	750	750
Power frequency withstand voltage, wet [kV r.m.s.]	325	325	325	325	325	325	325	325

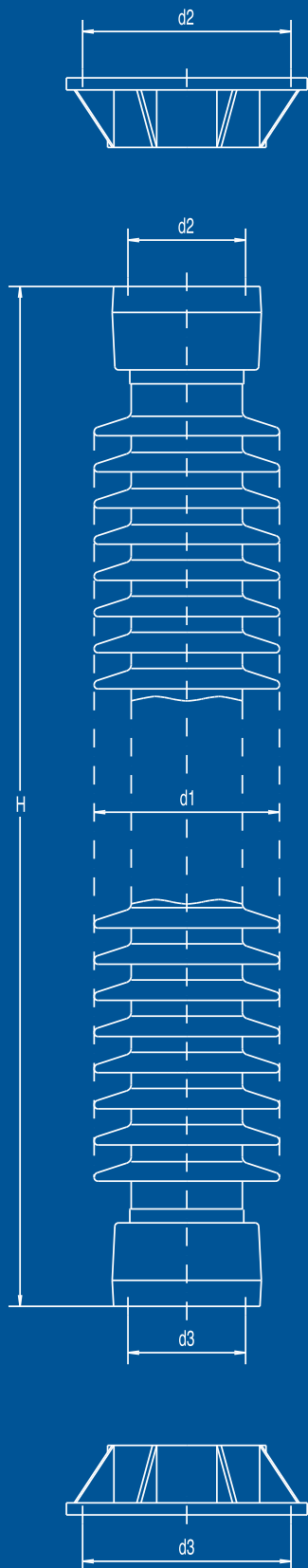
IEC POST INSULATOR DESIGNATION	C4-850	C6-850	C8-850	C10-850	C12.5-850	C16-850	C20-850
<b>Dimensions</b>							
Height H [mm]	1900 ± 3.5	1900 ± 3.5	1900 ± 3.5	1900 ± 3.5	1900 ± 3.5	1900 ± 3.5	1900 ± 3.5
Max. nom. diameter of insulating part d1 [mm]	230	245	260	270	280	295	310
Top fitting p.c.d. d2 [mm] / hole pattern	127/4x M16	127/4x M16 225/4x18	127/4x M16 225/4x18	127/4x M16 225/4x18	127/4x M16 225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18
Bottom fitting p.c.d. d3 [mm] / hole pattern	200/4x18	225/4x18	254/8x18	254/8x18	254/8x18	275/8x18	300/8x18
<b>Mechanical Values</b>							
Minimum failing load - Bending [kN]	4	6	8	10	12.5	16	20
Minimum failing load - Bending moment underhung [kNm]	1.52	2.28	3.04	3.8	4.75	6.08	7.6
Minimum failing load - Bending moment upright [kNm]	7.6	11.4	15.2	19	23.75	30.4	38
Minimum failing load - Torsion [kNm]	3	3	4	4	6	6	6
<b>Electrical Values</b>							
Lightning impulse withstand voltage, dry [kV peak value]	850	850	850	850	850	850	850
Power frequency withstand voltage, wet [kV r.m.s.]	360	360	360	360	360	360	360

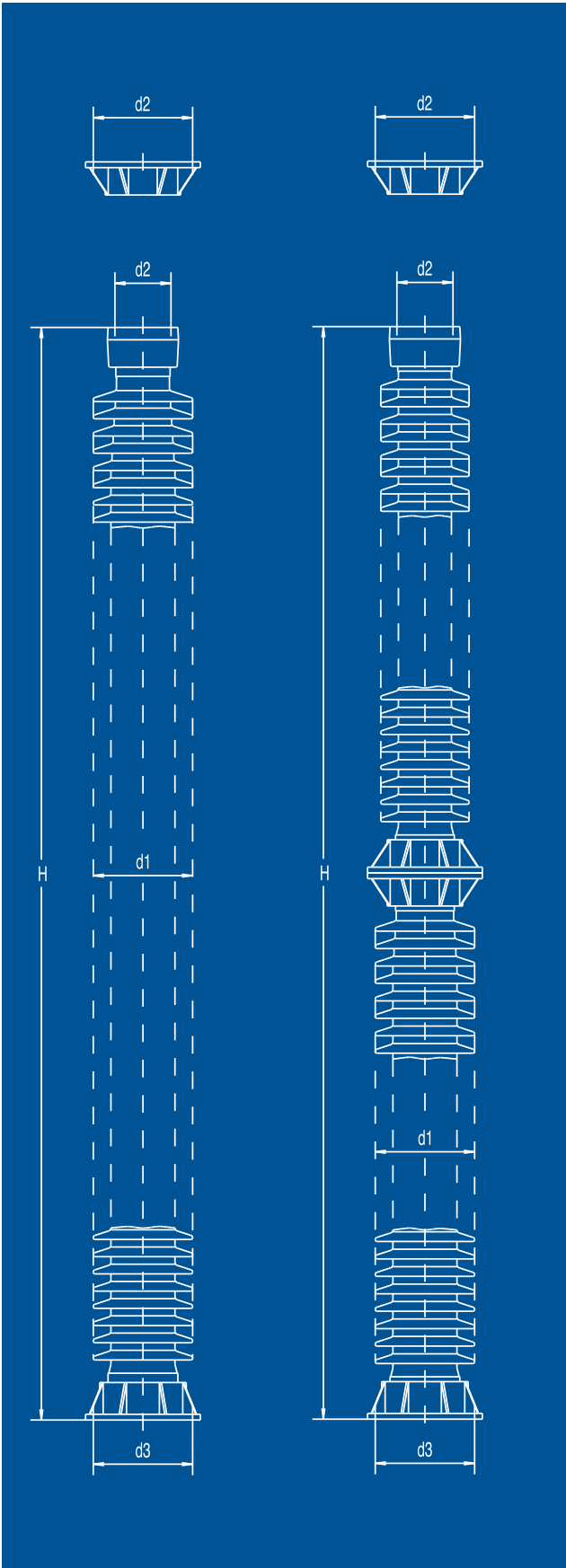
IEC POST INSULATOR DESIGNATION	C4-950	C6-950	C8-950	C10-950	C12.5-950	C16-950	C20-950
<b>Dimensions</b>							
Height H [mm]	2100 ± 3.5	2100 ± 3.5	2100 ± 3.5	2100 ± 3.5	2100 ± 3.5	2100 ± 3.5	2100 ± 3.5
Max. nom. diameter of insulating part d1 [mm]	225	245	255	270	285	295	310
Top fitting p.c.d. d2 [mm] / hole pattern	127/4x M16	127/4x M16 225/4x18	127/4x M16 225/4x18	127/4x M16 225/4x18	127/4x M16 225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18
Bottom fitting p.c.d. d3 [mm] / hole pattern	200/4x18	225/4x18	254/8x18	254/8x18	275/8x18	300/8x18	325/8x18
<b>Mechanical Values</b>							
Minimum failing load - Bending [kN]	4	6	8	10	12.5	16	20
Minimum failing load - Bending moment underhung [kNm]	1.68	2.52	3.36	4.2	5.25	6.72	8.4
Minimum failing load - Bending moment upright [kNm]	8.4	12.6	16.8	21	26.25	33.6	42
Minimum failing load - Torsion [kNm]	3	3	4	4	6	6	6
<b>Electrical Values</b>							
Lightning impulse withstand voltage, dry [kV peak value]	950	950	950	950	950	950	950
Switching impulse withstand voltage, wet [kV peak value]	750	750	750	750	750	750	750
Power frequency withstand voltage, wet [kV r.m.s.]	395	395	395	395	395	395	395

Will be offered as one or two unit column

Will be offered as one or two unit column

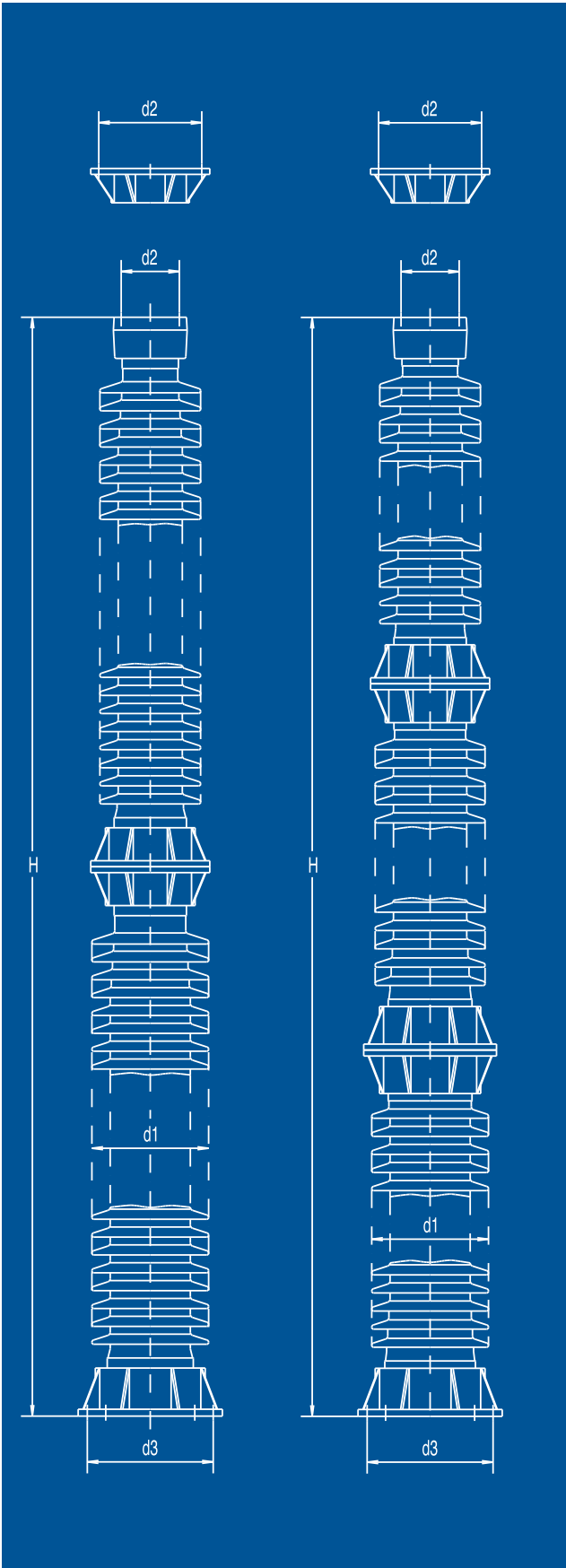












## TYPE

**BIL 1800-2100 kV**

Higher mechanical strength possible on customer request!

Will be offered as two or three unit column

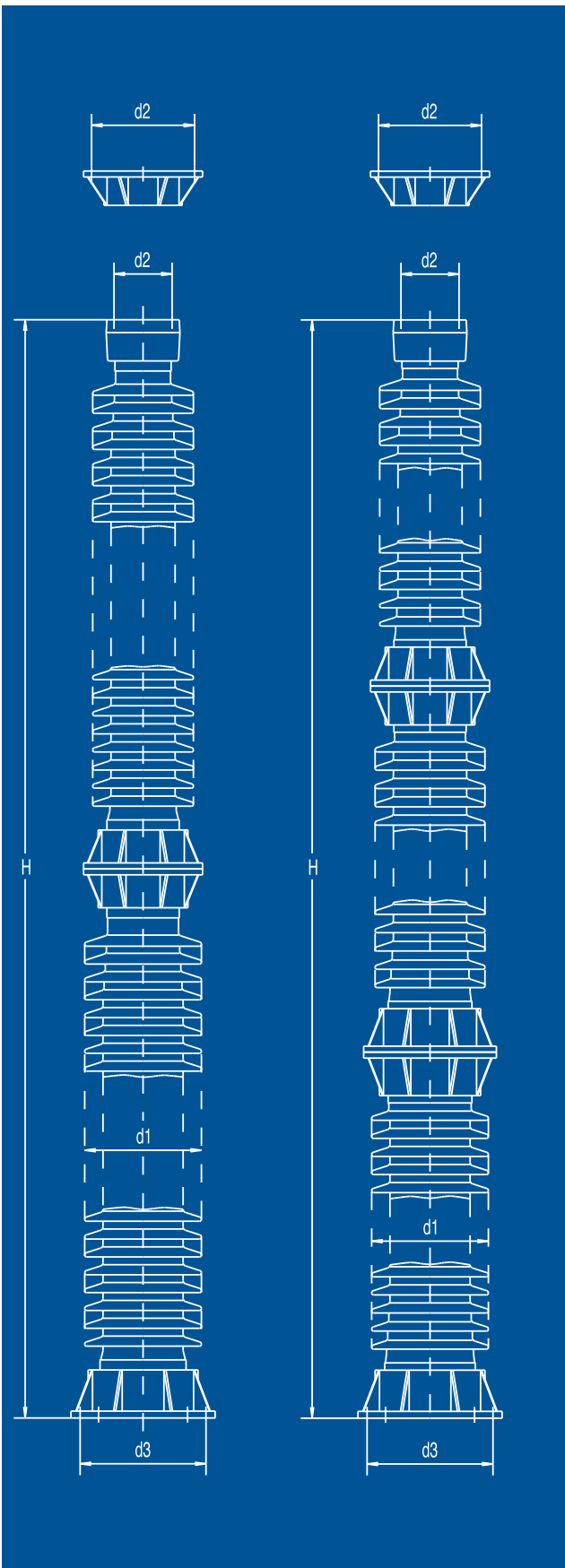
IEC POST INSULATOR DESIGNATION	C4-1800	C6-1800	C8-1800	C10-1800	C12.5-1800	C16-1800
<b>Dimensions</b>						
Height H [mm]	4000 ± 5.5	4000 ± 5.5	4000 ± 5.5	4000 ± 5.5	4000 ± 5.5	4000 ± 5.5
Max. nom. diameter of insulating part d1 [mm]	260	280	300	320	320	330
Top fitting p.c.d. d2 [mm] / hole pattern	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18
Bottom fitting p.c.d. d3 [mm] / hole pattern	254/4x18	275/8x18	300/8x18	325/8x18	356/8x18	356/8x18
<b>Mechanical Values</b>						
Minimum failing load - Bending [kN]	4	6	8	10	12.5	16
Minimum failing load - Bending moment underhung [kNm]	3.2	4.8	6.4	8	10	12.8
Minimum failing load - Bending moment upright [kNm]	16	24	32	40	50	64
Minimum failing load - Torsion [kNm]	3	3	4	4	6	6
<b>Electrical Values</b>						
Lightning impulse withstand voltage, dry [kV peak value]	1800	1800	1800	1800	1800	1800
Switching impulse withstand voltage, wet [kV peak value]	1175	1175	1175	1175	1175	1175

Will be offered as two or three unit column

IEC POST INSULATOR DESIGNATION	C4-1950	C6-1950	C8-1950	C10-1950	C12.5-1950
<b>Dimensions</b>					
Height H [mm]	4400 ± 5.5	4400 ± 5.5	4400 ± 5.5	4400 ± 5.5	4400 ± 5.5
Max. nom. diameter of insulating part d1 [mm]	270	300	310	330	330
Top fitting p.c.d. d2 [mm] / hole pattern	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18
Bottom fitting p.c.d. d3 [mm] / hole pattern	254/8x18	275/8x18	300/8x18	325/8x18	356/8x18
<b>Mechanical Values</b>					
Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	3.52	5.28	7.04	8.8	11
Minimum failing load - Bending moment upright [kNm]	17.6	26.4	35.2	44	55
Minimum failing load - Torsion [kNm]	3	3	4	4	6
<b>Electrical Values</b>					
Lightning impulse withstand voltage, dry [kV peak value]	1950	1950	1950	1950	1950
Switching impulse withstand voltage, wet [kV peak value]	1300	1300	1300	1300	1300

Will be offered as three unit column

IEC POST INSULATOR DESIGNATION	C4-2100	C6-2100	C8-2100	C10-2100	C12.5-2100
<b>Dimensions</b>					
Height H [mm]	4700 ± 5.5	4700 ± 5.5	4700 ± 5.5	4700 ± 5.5	4700 ± 5.5
Max. nom. diameter of insulating part d1 [mm]	280	300	320	320	330
Top fitting p.c.d. d2 [mm] / hole pattern	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18
Bottom fitting p.c.d. d3 [mm] / hole pattern	254/8x18	275/8x18	300/8x18	325/8x18	356/8x18
<b>Mechanical Values</b>					
Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	3.76	5.64	7.52	9.4	11.75
Minimum failing load - Bending moment upright [kNm]	18.8	28.2	37.6	47	58.75
Minimum failing load - Torsion [kNm]	3	3	4	4	6
<b>Electrical Values</b>					
Lightning impulse withstand voltage, dry [kV peak value]	2100	2100	2100	2100	2100
Switching impulse withstand voltage, wet [kV peak value]	1300	1300	1300	1300	1300



## TYPE

**BIL 2250-2550 kV**

Higher mechanical strength possible on customer request!

Will be offered as three unit column

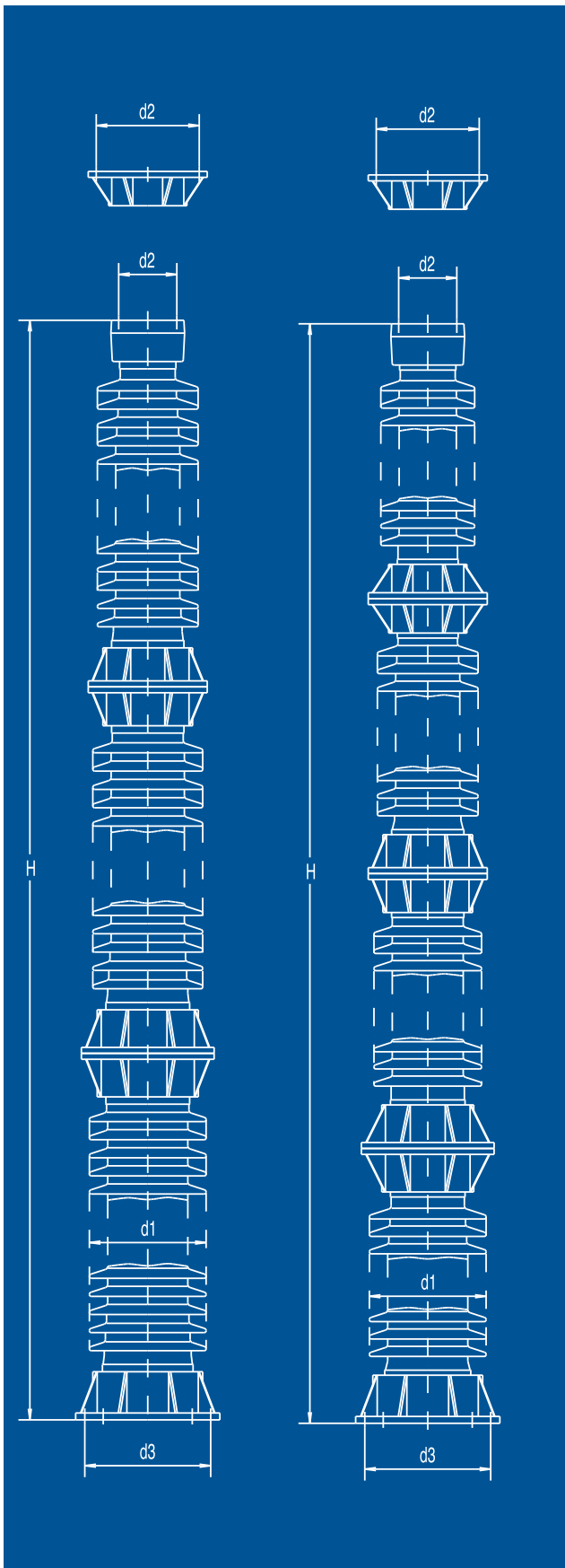
IEC POST INSULATOR DESIGNATION	C4-2250	C6-2250	C8-2250	C10-2250	C12.5-2250
<b>Dimensions</b>					
Height H [mm]	5000 ± 6.5	5000 ± 6.5	5000 ± 6.5	5000 ± 6.5	5000 ± 6.5
Max. nom. diameter of insulating part d1 [mm]	280	300	320	320	330
Top fitting p.c.d. d2 [mm] / hole pattern	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18
Bottom fitting p.c.d. d3 [mm] / hole pattern	254/4x18	300/8x18	325/8x18	356/8x18	356/8x18
<b>Mechanical Values</b>					
Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	4	6	8	10	12.5
Minimum failing load - Bending moment upright [kNm]	20	30	40	50	62.5
Minimum failing load - Torsion [kNm]	3	3	4	4	6
<b>Electrical Values</b>					
Lightning impulse withstand voltage, dry [kV peak value]	2250	2250	2250	2250	2250
Switching impulse withstand voltage, wet [kV peak value]	1425	1425	1425	1425	1425

Will be offered as three or four unit column

IEC POST INSULATOR DESIGNATION	C4-2400	C6-2400	C8-2400	C10-2400	C12.5-2400
<b>Dimensions</b>					
Height H [mm]	5300 ± 6.5	5300 ± 6.5	5300 ± 6.5	5300 ± 6.5	5300 ± 6.5
Max. nom. diameter of insulating part d1 [mm]	280	310	325	325	330
Top fitting p.c.d. d2 [mm] / hole pattern	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18
Bottom fitting p.c.d. d3 [mm] / hole pattern	254/8x18	300/8x18	325/8x18	356/8x18	356/8x18
<b>Mechanical Values</b>					
Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	4.24	6.36	8.48	10.6	13.25
Minimum failing load - Bending moment upright [kNm]	21.2	31.8	42.4	53	66.25
Minimum failing load - Torsion [kNm]	3	3	4	4	6
<b>Electrical Values</b>					
Lightning impulse withstand voltage, dry [kV peak value]	2400	2400	2400	2400	2400
Switching impulse withstand voltage, wet [kV peak value]	1425	1425	1425	1425	1425

Will be offered as three or four unit column

IEC POST INSULATOR DESIGNATION	C4-2550	C6-2550	C8-2550	C10-2550
<b>Dimensions</b>				
Height H [mm]	5700 ± 6.5	5700 ± 6.5	5700 ± 6.5	5700 ± 6.5
Max. nom. diameter of insulating part d1 [mm]	285	310	330	330
Top fitting p.c.d. d2 [mm] / hole pattern	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18	225/4x18 254/8x18
Bottom fitting p.c.d. d3 [mm] / hole pattern	275/8x18	300/8x18	325/8x18	356/8x18
<b>Mechanical Values</b>				
Minimum failing load - Bending [kN]	4	6	8	10
Minimum failing load - Bending moment underhung [kNm]	4.56	6.84	9.12	11.4
Minimum failing load - Bending moment upright [kNm]	22.8	34.2	45.6	57
Minimum failing load - Torsion [kNm]	3	3	4	4
<b>Electrical Values</b>				
Lightning impulse withstand voltage, dry [kV peak value]	2550	2550	2550	2550
Switching impulse withstand voltage, wet [kV peak value]	1550	1550	1550	1550



# Bina Test Station

## 1200 kV Porcelain Station Post Insulators

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- Bina Test Station is an ultra-high voltage 1200 kV AC testing facility, located in Madhya Pradesh, India. It is one of a kind project - it is the first 1200 kV station in the world!
- Built in 2013, the aim of Bina Test Station is to address increasing electricity demand in India, following rapid demographic growth and economic development.
- After three years in 2016, Bina Test Station has been operationalized, becoming part of Indian power sector, carrying capacity five times to six time more than the 400 kV stations.
- Especially for Bina Test Station, PPC Insulators developed, produced and delivered several dozen of **1200 kV Bus Post Insulators** and **1200 kV Operating rod Insulators**.





PPC Insulators is a leading manufacturer of porcelain and hybrid insulators for more than 130 years. We invest our efforts to offer quick, easy and effective solutions to our customers. Our extensive knowledge, expertise, and production technology enables us to produce the best insulator designs to cater up to 1200kV AC and 800kV DC system voltages, that positions us at the forefront of techno-industrial achievements. We supply over 40,000 standard insulators from our stock to meet the demands of our customers.

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