245 kV
Porcelænssøttelisolatorer
ETS-0170

English version is included
1. **Anvendelsesområde/indledning**

Denne standard specificerer minimumskrav til porcelænsstøtteisolatorer konstrueret til udendørs AIS-stationer i 220 kV-stationer.

1.1 **Forkortelser og definitioner**

- **AIS**: Air-insulated Switchgear
- **DS**: Dansk Standard
- **ETS**: Energinet teknisk standard
- **IEC**: International Electrotechnical Commission

2. **Referencer og standarder**

- **DS/EN 60168:1995** Prøvninger på indendørs og udendørs støtteisolatorer af keramisk materiale eller glas til systemer med nominelle spændinger større end 1000 V
- **DS/EN 60168/A1:1997** Prøvninger på indendørs og udendørs støtteisolatorer af keramisk materiale eller glas til systemer med nominelle spændinger større end 1 kV
- **DS/EN 60168/A2:2001** Prøvninger på indendørs og udendørs støtteisolatorer af keramisk materiale eller glas til systemer med nominelle spændinger større end 1 kV
- **IEC 60273:1990** Characteristic of indoor and outdoor post insulators for systems with nominal voltages greater than 1000 V
- **DS/EN 60672-1:1996** Isolationsmaterialer af keramik og glas. Del 1: Definitioner og klassifikation
- **DS/EN 60672-2:2001** Isolationsmaterialer af keramik og glas – Del 2: Prøvningsmetoder
- **DS/EN 60672-3:1997** Isolationsmaterialer af keramik og glas. Del 3: Specifikationer for individuelle materialer
- **IEC TS 60815-1:2008** Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 1: Definitions, information and general principles
- **IEC TS 60815-2:2008** Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 2: Ceramic and glass insulators for a.c. systems

3. **Afhængigheder og forudsætninger**

Hvis krav i DS/EN- og IEC-standarder til porcelænsstøtteisolatorer omhandlet i denne standard ændres, skal nærværende standard revideres.
4. **Funktionskrav**
Porcelænsstøtteisolatorerne skal have en levetid på minimum 40 år.

5. **Designkrav**
Ikke relevant.

6. **Tekniske krav**
Nedenstående tabeller viser krav til porcelænsstøtteisolatorer.

<table>
<thead>
<tr>
<th>Voltage level</th>
<th>Insulation level</th>
<th>Lightning impulse withstand voltage</th>
<th>AC withstand voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>245 kV</td>
<td>Post insulators</td>
<td>1175 kV</td>
<td>850 kV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Voltage level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>245 kV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of post insulator</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C12,5 – 1175/II</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Colour</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Brown</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Porcelain</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connection plate distance between bolts (bottom)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>300 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connection plate distance between bolts (top)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>225 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min. length</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2650 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Creepage distance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt;7595 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Falling load, bending</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min. 12.5 kN</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Falling load, torsion</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min. 6 kNm</td>
</tr>
</tbody>
</table>
7. Reservedele
Ikke relevant.

8. Dokumentation
Ikke relevant.

9. Bilag

Topflange

Bundflange
245 kV
Porcelain post insulators
ETS-0170

Document title: ETS-0170 Rev 0 Porcelain post insulators – 245 kV
Document no.: 13/90592-314
Target group: Electricity Transmission and external suppliers
Valid until: 1. December 2021

Table of contents
1. Scope/introduction ........................................................................................................... 6
   1.1 Abbreviations and definitions .................................................................................... 6
2. References and standards ................................................................................................. 6
3. Dependences and conditions ............................................................................................ 6
4. Performance requirements ................................................................................................. 6
5. Design requirements ......................................................................................................... 7
6. Technical requirements .................................................................................................... 7
7. Spare parts ....................................................................................................................... 7
8. Documentation .................................................................................................................. 8
9. Appendices ...................................................................................................................... 8
1. **Scope/introduction**

This standard specifies minimum requirements for porcelain post insulators designed for outdoor AIS substations in 245 kV substations.

1.1 **Abbreviations and definitions**

AIS  Air-insulated Switchgear  
DS  Danish Standards  
ETS  Energinet technical standard  
IEC  International Electrotechnical Commission

2. **References and standards**

- DS/EN 60168:1995 Tests on indoor and outdoor post insulators of ceramic material or glass for systems with nominal voltages greater than 1 000 V  
- DS/EN 60168/A1:1997 Tests on indoor and outdoor post insulators of ceramic material or glass for systems with nominal voltages greater than 1 kV  
- DS/EN 60168/A2:2001 Tests on indoor and outdoor post insulators of ceramic material or glass for systems with nominal voltages greater than 1 kV  
- IEC 60273:1990 Characteristic of indoor and outdoor post insulators for systems with nominal voltages greater than 1000 V  
- DS/EN 60672-1:1996 Ceramic and glass insulating materials – Part 1: Definitions and classification  
- DS/EN 60672-2:2001 Ceramic and glass insulating materials – Part 2: Methods of test  
- IEC TS 60815-1:2008 Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 1: Definitions, information and general principles  
- IEC TS 60815-2:2008 Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 2: Ceramic and glass insulators for a.c. systems

3. **Dependences and conditions**

If requirements in DS/EN standards and IEC standards for porcelain post insulators specified in this standard are changed, the present standard must be revised.

4. **Performance requirements**

The porcelain post insulators must have a lifetime of minimum 40 (forty) years.
5. Design requirements
Not relevant.

6. Technical requirements
The below tables show requirements for porcelain post insulators.

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</tr>
<tr>
<td>Min. length</td>
<td>2650 mm</td>
</tr>
</tbody>
</table>

| Creepage distance | >7595 mm |
| Falling load, bending | Min. 12.5 kN |
| Falling load, torsion | Min. 6 kNm |

7. Spare parts
Not relevant.
8. Documentation

Not relevant.

9. Appendices

Top flange

Bottom flange