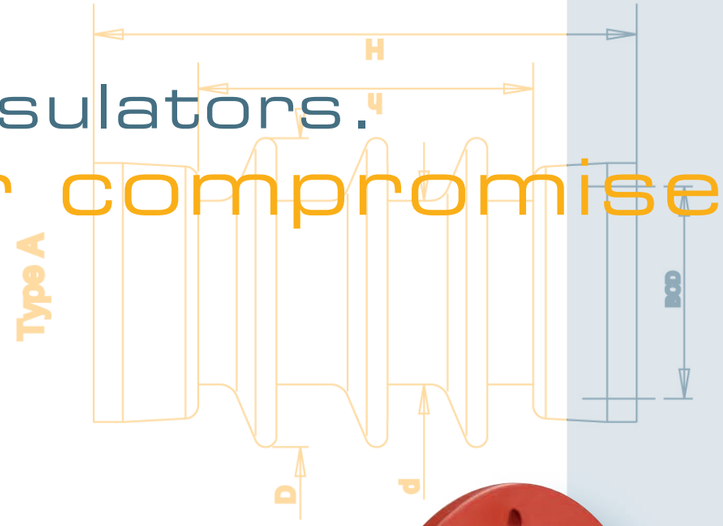
The very Best.

Precipitator Insulators

PPC INSULATORS

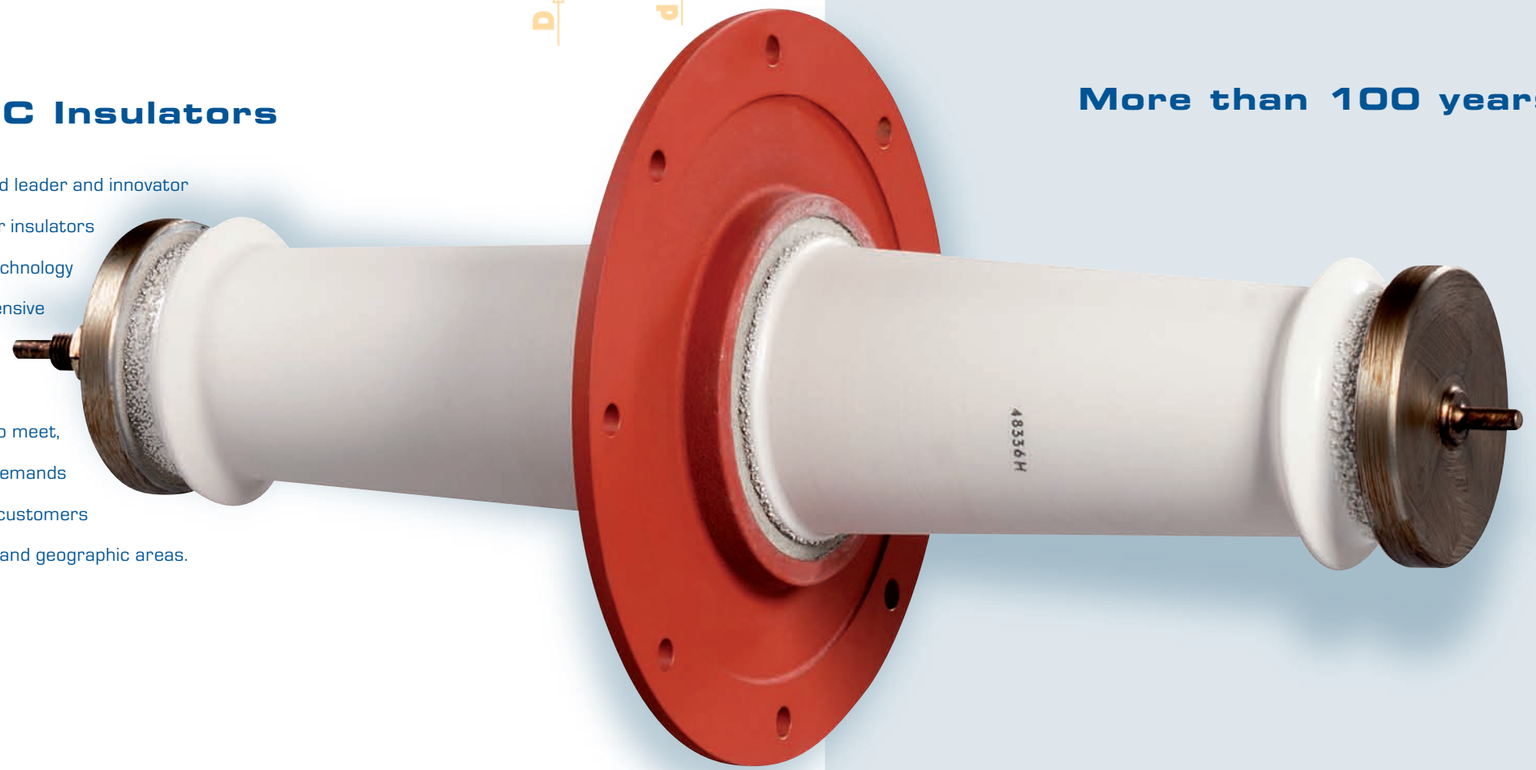
Precipitator Insulators.

Never compromise on performance!



PPC Insulators

PPC is a world leader and innovator in the manufacture of precipitator insulators for use in electrostatic precipitation technology and applications. From our extensive manufacturing base in northern and Continental Europe, products are designed, engineered and manufactured to meet, and frequently surpass, exacting demands from OEM and industry customers in many applications and geographic areas.



The evolutionary approach to product development, manufacture and design will help **PPC** maintain its long-term competitive position in the industry.

PPC, through its wholly owned subsidiary Ifö Ceramics, has long experience in manufacturing a wide range of precipitator insulators. Our manufacturing tradition goes back more than a hundred years.

More than 100 years of experience

Since 1918 high tension insulators have been produced at the Bromölla plant in southern Sweden. It was at Bromölla that the cold isostatic production technique was developed and here, in 1988, the company commissioned the worlds first cold Isostatic line of its kind. More than forty years ago, Ifö developed a proprietary ceramic body. The LD-body was developed especially for heavy duty performance in demanding operating environments such as high temperature electrostatic precipitators. Over the last two decades this design and materials formula, used in precipitator insulators, has given Ifö distinct technical advantages when compared with alternative materials and products.

Precipitator Insulators
for electrostatic applications.

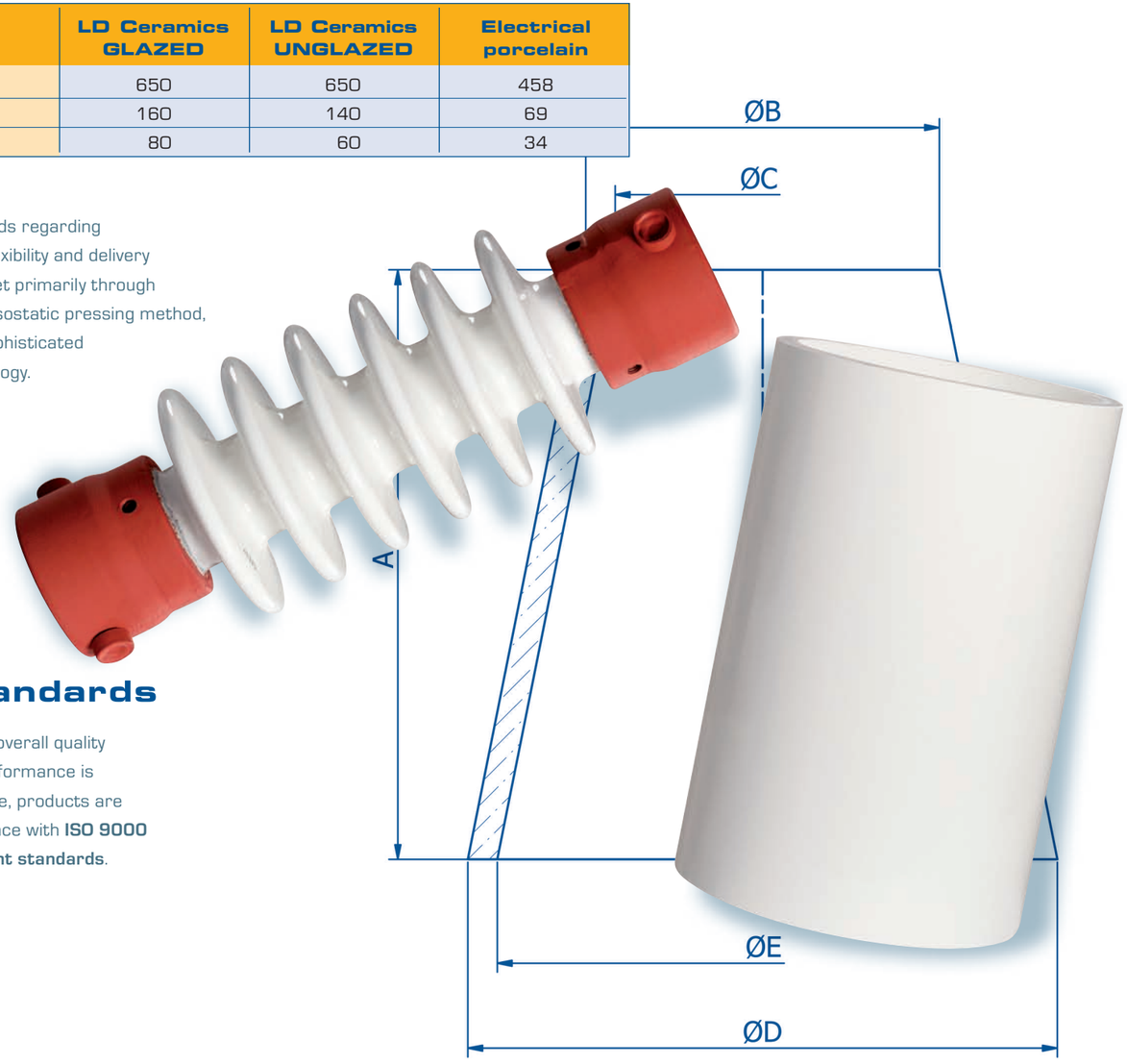
Mechanical strength properties

based on different body materials (comparison in MPa)

Mechanical strength area	LD Ceramics GLAZED	LD Ceramics UNGLAZED	Electrical porcelain
Compressive strength	650	650	458
Flexural strength	160	140	69
Tensile strength	80	60	34

Design

Customer demands regarding product design flexibility and delivery lead times are met primarily through utilizing the cold isostatic pressing method, with the aid of sophisticated comupter technology.



International standards

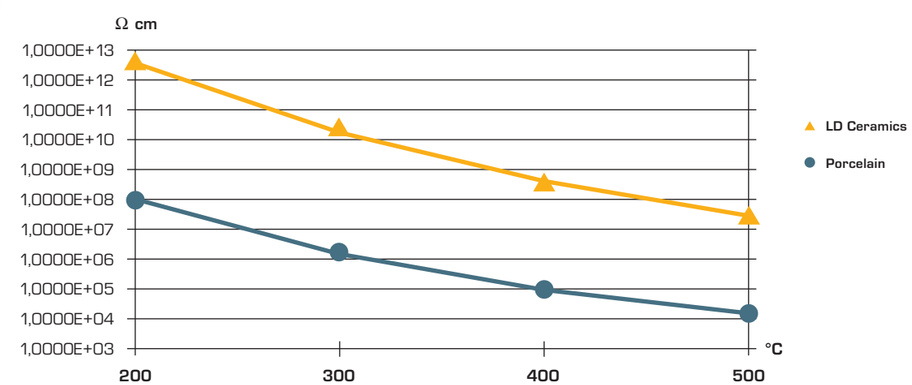
Recognizing that overall quality and technical performance is of vital importance, products are made in accordance with **ISO 9000 and other relevant standards**.

Technical features

LD Ceramics precipitator insulators have a number of outstanding technical features including:

- High DC resistivity at elevated temperatures whereby electrial break-down caused by high leakage current through the material is avoided.
- Excellent mechanical strength and impact resistance, signifcantly reducing failure due to mechanical stress.
- Very low thermal expansion due to increases in temperature or elevated temperature, allowing the insulator to resist cracking in case of thermal shock.
- Glazed surface facilitates visual inspection and cleaning. The glazed surface treatment has a dirt repellent function during plant maintenance and repair work. These properties also significantly reduce the probability of tracking across the material.

Volume resistivity v.s. temperature



Precipitator Insulators.
LD Ceramics for better results.

The benefits of LD Ceramics

The LD Ceramics body is a high-grade ceramic material with very good mechanical and electrical properties similar to that of aluminia-based electrical porcelain C-120 in accordance with IEC 672.

Precipitator insulators from the LD Ceramics product family typically holds a glass face to approximately 50% of its content. The glass matrix consists of 25% mullit and 20% korund. The glass itself contains 13% of Al_2O_3, making the total content of Al_2O_3 in the body amount to approximately 50%.

They are sintered to a **density degree of 95%** and have **no open porosity** that allows water absorption. Unglazed insulators can thus be used completely safe in various applications. **The glazing** of our precipitator insulators serves the dual enhancement purpose of providing the products with a **combined dirt and dust-repelling surface** to facilitate inspection, cleaning etc. and to avoid tracking and discharges along the insulator surface.

Traditional electrical porcelain can operate in environments close to room temperature and should never be used in temperature environments above 100°C. **The special and distinctive properties of LD Ceramics** have been developed by adjusting the volume resistivity of the glass material. This is **especially benefical at elevated temperatures**. **The glazing** used for LD Ceramics also **has the same high resistivity**.

Products made from a high purity alumina have a comparatively rough surface following manufacturing. This surface easily adheres dirt and dust and could cause insulator malfunction. When products of this type are glazed the insulator will lose its otherwise favourable electrical properties.

- LD Ceramics initially has a **high resistivity** which is marginally lower than the resistivity of aluminia ceramics, however, it still meets the required performance levels of resistivity for the application in question.
- LD Ceramics shows a **slower decrease of resistivity** during use due to reduced tendencies to build-up of conductive surface coatings in comparison with aluminia ceramics.
- The **life-length expectancy** for LD ceramics is improved by the features mentioned above and also shows substainantially improved technical performance characteristics of the insulator by the end of its service period – whereby avoiding otherwise dramatic energy-consuming loss of resistivity that occurs in many situations.

Key data relating to LD material properties

Flexural strength	
for unglazed material	140 MPa
for glazed material	160 MPa
Compression strength	
for unglazed material	650 MPa
for glazed material	650 MPa
Tensile strength	
for unglazed material	60 MPa
for glazed material	80 MPa
Open porosity	nil
Density	2.600 kg/m³
Modulus of elasticity	105 GPa
Linear thermal expansion	
in temperature range 20-200°C	3.3 $K^{-1}x10^{-6}$
in temperature range 20-600°C	4.8 $K^{-1}x10^{-6}$
Thermal conductivity 20-100°C	2.0 w/m°K
Temperature shock resistance	180-200 °K
Dielectric strength	40 kV/mm
Volume resistivity	
at temperature 20°C	10^{18} Ωcm
at temperature 200°C	10^{12} Ωcm
at temperature 400°C	10^{8} Ωcm

Reducing failure and malfunction risks

There are three major causes for operating failure and malfunction of precipitator insulators as described below. By using precipitator insulators from the LD Ceramics product family you can significantly reduce your risk exposure accordingly.

1 Electrical breakdown resulting from tracking or arcing across the insulator surface. Risks are particularly imminent in ESP start-up situations when the flue gas temperature may be close to the acid dew point and when moisture and dust concentration in the air is high.

2 Electrical breakdown resulting from high leakage current through the ceramic material itself or its glazing. This is partly due to the rapid temperatue increase that is occuring when high voltage is continously applied over the insulator body.

Consequently, it is imperative to use insulator materials with high resistivity properties at elevated temperatures.

3 Mechanical failure due to severe mechanical shock or uneven stress distribution through the ceramic material.

www.ppcinsulators.com

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The very Best.

That's what we deliver.

Only a company that develops, produces and delivers products worldwide can provide the optimal solution for your requirements.

The specialists of **PPC** Insulators are dedicated to supplying you with superior advice and global support. **PPC** Insulators quality products and service provide time-tested value to fulfill your needs!

Please visit us on the web at www.ppcinsulators.com

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