

# **IEC 60815: Guide For The Selection And Dimensioning Of High ....pdf**

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## **IEC 60815: Guide for the selection and dimensioning of high-voltage insulators for polluted conditions**

IEC 60815 is a technical specification that provides guidance on how to choose and size high-voltage insulators for different levels of pollution in the environment. It consists of five parts, covering definitions, information and general principles (Part 1), porcelain and glass insulators for a.c. systems (Part 2), polymer insulators for a.c. systems (Part 3), porcelain and glass insulators for d.c. systems (Part 4), and polymer insulators for d.c. systems (Part 5). The main objective of IEC 60815 is to help engineers and designers select the most appropriate type and dimension of insulators for a given application, taking into account the site pollution severity (SPS), the electrical stress, the mechanical load, the environmental conditions, and the expected performance and reliability of the insulators. The specification also provides methods for evaluating the SPS based on measurements or estimations of pollution parameters, such as equivalent salt deposit density (ESDD), non-soluble deposit density (NSDD), site pollution severity factor (SPSF), and time of wetness (TOW). IEC 60815 is based on the work of CIGRE TF 33.13.01, which identified several areas where the previous version of IEC 815 was perceived to be weak, such as the performance of polymeric insulators, the insulator orientation, the extension of applicability to voltages above 525 kV a.c., the design for d.c. application, the insulators with semi-conducting glaze, the surge arrester housing performance, the longitudinal breaks in interrupter equipment, the radio interference, television interference, and audible noise of polluted insulators, and the effect of altitude. IEC 60815 was first published in 2008 and is currently under revision by IEC/TC 36: Insulators. The latest drafts of Part 1 and Part 2 were issued in May 2021 and December 2021 respectively<sup>[1]</sup> <sup>[2]</sup>. The drafts of Part 3, Part 4, and Part 5 are expected to be available by end of 2023<sup>[2]</sup>. Pollution is one of the main causes of flashover and degradation of high-voltage insulators. Pollution can be classified into three types: natural, industrial, and marine. Natural pollution is caused by dust, sand, pollen, and organic matter. Industrial pollution is caused by smoke, soot, ash, cement, and chemicals. Marine pollution is caused by salt spray and mist from the sea. The type and degree of pollution vary depending on the location,

climate, season, and weather conditions of the site. When pollution deposits on the surface of insulators, it forms a layer that reduces the surface resistance and increases the leakage current. If the layer becomes wet due to rain, fog, dew, or snow, it can create a conductive path that leads to flashover. Flashover is a disruptive discharge that occurs across the insulator and causes a temporary or permanent interruption of the power supply. Flashover can also damage the insulator and the surrounding equipment. To prevent or reduce the risk of flashover due to pollution, several measures can be taken. One measure is to select and dimension the insulators according to IEC 60815, which provides guidance on how to choose the most suitable type and size of insulators for different levels of pollution. Another measure is to apply preventive maintenance techniques, such as cleaning, coating, or replacing the insulators periodically. A third measure is to use protective devices, such as surge arresters or grading rings, to limit the overvoltages that may occur during flashover.

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