TECHNICAL SPECIFICATION FOR HIGH VOLTAGE GLASS INSULATORS COATED WITH RTV SILICONE

This specification gives a description of the technical requirements considering aspect and technical performance of the layer of a silicone coating at the surface of glass insulators.

1. Deposit aspect

The covering of glass insulators with an RTV silicone coating could be made by spraying or by dipping.
Whatever the method used for the coating process the ball of the pin and the socket of the cap should be protected from silicone (coating on the coupling is not allowed). On another hand the base of the cap should be covered by a slight layer of around 2 cm of height of silicone coating.

1.1 Visual aspect

The silicone coating should present a homogenous aspect with a smooth surface and a uniform colour.

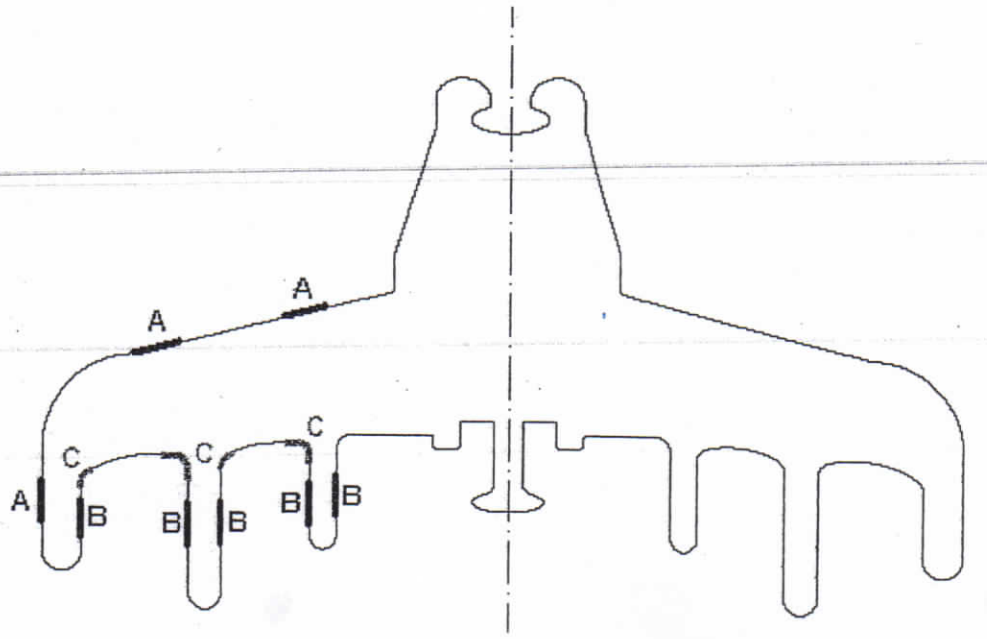
No drop, no flow mark, no groove or accumulation of silicone should appear at the surface.

Two levels of acceptance of the silicone aspect have been defined:

- *Acceptable level*: The layer of the silicone is uniform at all the surface of the glass insulator without any bubbles;
- *Inacceptable level*: The layer of silicone is inhomogeneous with zone of uncovered glass and/or with an insufficient thickness and/or with zones with a too thick layer and/or the presence of bubbles.

1.2 Thickness requirements

These measurements are useful to check the average values for the thickness of the layer of silicone. The measurement will be performed in different positions at the surface of the glass insulator on the below part as well as on the upper part. On the drawing below, areas where these measures have to be performed are shown.



On the upper surface of the insulator noted A and underneath surface noted B, three sample will be cut with a flat blade on the three 120° directions. The measurement of the thickness will be performed with the magnetic method by interposing between a metallic support and the apparatus the slice of coating to be measured.
The result are correct if

- The average A values is above 350µm
- The average B values is above 280 µm

On the C areas where the application of the silicone coating is slightly more difficult, the thickness could be lower but applied regularly. The measurement of the thickness is not controlled in these areas.

1.3 Adherence specification

The test of the adherence will be performed with a specific tool described in the standard EN-ISO 2409. Orthogonal traces and parallel traces will be made. The picture below can serve as reference to evaluate the adherence. These measurements should be performed on the opposite directions of the upper surface of the same insulator.

Moreover the adherence on the bottom of the external rib should be controlled by cutting a large strip of half the circumference. Satisfactory and unsatisfactory results are shown below. The layer of silicone should be adherent, uncoated glass sections should not be apparent and no traces of bubbles in the thickness of the silicone layer should be found.

2. Acceptance tests to be performed on coated glass insulators

1.4 2000h ageing test

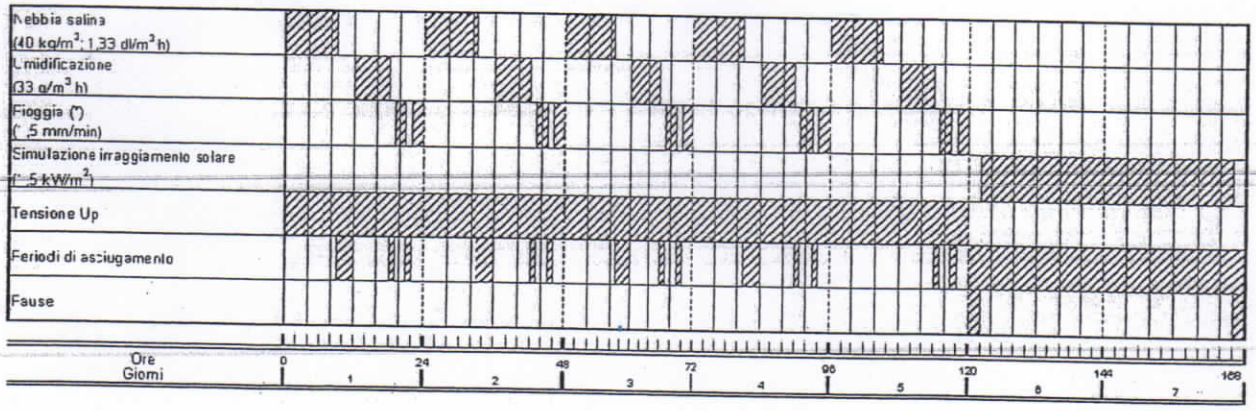
This test lasts 2000h and is relative to international standard IEC 60507 and IEC 60060-1.

Description of the insulators tested

A vertical string of 5 insulators type UF120P and a horizontal string of 4 insulators type UF210P should be tested.

Description of the test

The test is conducted in a salt fog chamber with dimensions between wall and tested strings superior to the length of the tested object.
The ageing test consists to apply to the strings of insulators a hebdomad cycle (as described in the scheme below) repeated during 2000H.



The test consists in applying alternatively sequences of salt fog, humidification, and rain fall while insulators are submitted to a high voltage stress (equivalent to 1.1line voltage stress) and UV radiation.
Each period of salt fog test lasts 9 hours, the concentration of the salt fog is 40g/l and the flow is 1.33 dl/h/m3 of the test chamber. The preparation of the salt fog should comply with the specification IEC EN 60507 §7 and 8.
Each period of wetting lasts 6 hours. The vapour could be produced by evaporation of a volume of water contained in a tank placed in the test chamber. The quantity of water

evaporated should be 33g/h/m3 of the test chamber in a maximum time of 75 minutes at the beginning of the wetting period.
Each period of rain fall lasts 4 hours divided in two periods of 2 hours. Between two periods there is a rest time of 1 hour. The rain characteristic should fit with the IEC 60060□1 standard. At the end of each radiation cycle the temperature at the surface of the insulators shall not be above 60°C.
At the end of the 2000h ageing test the result is satisfactory if during all the test no more than three flashovers occurred and no tracking or erosion of the coating layer is found on the insulator.

1.5 Salt fog test

This test is performed according standard IEC 60507.

1.6 Power arc test

This test is performed according standard IEC 61467.