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2P72 - INFLUENCE OF THE CREEPAGE DISTANCE ON SURFACE FLASHOVER OF THE EPOXY INSULATION UNDER AC VOLTAGE IN C4F7N-CO2 MIXTURES

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With the increasing usage of sulfur hexafluoride, the disadvantages of its high GWP are becoming increasingly prominent. Therefore, looking for alternatives to SF6 gas to promote gas-insulated technology to an environmentally friendly direction has important engineering and practical value. The mixture green gas C4F7N/CO2 which is most potential to subscribe SF6 arouses the concern of the researchers worldwide. However, recent researches focus on the breakdown performance of gas gap and the flashover performance in this mixture gas is rarely studied.

In this paper, the surface flashover experiment platform is built and PR equation and Antoine equation are used to amend the mixing method and calculates the liquefaction temperature. The influence of creepage distance on power frequency flashover voltage under uniform electrical filed is studied. The gas pressure of the mixture is 0.1MPa, 0.3MPa and 0.5MPa while the concertation of the C4F7N is 0%, 5%, 9% and 13%. Results show that the surface flashover voltages of the pure CO2 will be promoted up to 2 times when adding 5% C4F7N to it. With the increase of the creepage distance, the dielectric strength of the mixture gas is going to decrease under the same pressure and C4F7N concentration. When gas pressure rises, the downward trend exacerbates with the increase of the creepage distance. What's more, Increasing the C4F7N concentration has no obvious effect on increasing the surface flashover voltage.

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