

Electrical strength and damping properties of a mixture of transformer oil and SF₆ gas

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The properties of the gas-liquid mixture transformer oil – SF₆ gas are experimentally studied for electrical insulating and damping properties. When a compression wave passes through such a medium, its intensity decreases significantly due to a change in the compressibility of the medium and a decrease in the propagation speed, which can be used in solving problems of reducing the consequences of electrical breakdown of high-voltage oil-filled electrical equipment. The use of transformer oil in a mixture with SF₆ gas leads to a decrease in electrical strength, but remains acceptable within the volumetric gas content of less than 1 %. To determine such small values, the work proposes an acoustic method for determining gas content when its value is significantly less than 1 %.

Keywords: transformer oil, SF₆ gas, dielectric strength, compression wave, gas-liquid mixture.

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