A new copper(II) complex of 1-vinylimidazole (1-Vim) and perchlorate has been synthesized and structurally characterized. The molecular structure of the complex exhibits six coordination with a distorted octahedron geometry. The 1-Vim ring is coordinated through the imidazole nitrogen, as expected from earlier spectroscopic studies of related adducts [1-3]. The complex crystallizes in triclinic system and the space group is P-1 with the following parameters; a=9.6242(4), b=10.4140(4), c=15.2662(6) Å, α=70.278(3)°, β=80.056(3)°, γ=74.662(3)°, V=1383.15(10) Å³, and Z=2.

In the title compound, [Cu(ClO₄)₂(C₅H₆N₂)₄], the Cu(II) ion is located on an inversion centre. It features a Jahn–Teller distorted octahedral coordination geometry, defined by four N atoms of four 1-vinylimidazole ligands in the equatorial plane and two nitrate O atoms in the axial positions. The structure contains chemically identical but crystallographically independent two neutral molecules as shown in Figure 1. All perchlorate ligands and two of the 1-Vim ligands were shown to be disordered over two sites with a ratio of 0.45(1):0.55(1) but nitrogen and oxygen atoms coordinated to Cu(II) metal ions were not disordered. In the crystal, the complex molecules are linked by weak intermolecular C—HááO type hydrogen bonds.

Figure 1. ORTEP III view of [Cu(ClO₄)₂(C₅H₆N₂)₄] with the atom-numbering scheme (10% probability ellipsoids). The disordered part of the atoms has been shown. [symmetry codes (i):1-x, 1-y, 1-z; (ii):-x, -y, -z].


Keywords: Cu(II) complex; 1-Vinylimidazole; Single crystal; XRD