The thermal and rheological properties of nano refrigerants using different metallic oxides nanoparticles were discussed in this study. Different parameters were considered such as different metallic oxides nanoparticles (Al_2O_3, CuO, SiO_2 and ZnO), a various volume fraction of 1-5%, different temperature preparation of 300-350 K, and different nanoparticle shapes of (spherical, cylindrical, plates, bricks and blades). The thermal conductivity of metallic oxides/R-134a based nano refrigerants was increased by increasing the temperature and volume fraction while decreased by increasing the size of nanoparticles. Furthermore, the data of viscosity ratios suggested a significance increment when the concentration was increased. Therefore, the perfect volume fraction of metallic nanoparticle was considered a significant research parameter to improve the performance of thermal mechanisms. To conclude, the thermal and rheological characteristics were influenced by the shape of solid particles.