The adsorption of trifluoronitrosomethane on sodium chloride films has been characterized by means of infrared spectroscopy at 77 and 9.2 K. Two phases of adsorption have been discovered. Isotherms were plotted using IR absorption intensities as a function of pressure. The heat of reaction in the adsorbed phase has been calculated to be 249.4 kJ/mole; the heat of transition between two phases of adsorption has been determined to be 118\pm10 \text{ J/mole}. The modes of adsorption for the two phases have been predicted.