Presented work deals with the existence and uniqueness of solution of generalized Stokes problem. The study of this problem is motivated by the research concerning partial regularity of weak solutions of systems describing the flow of incompressible fluids whose viscosity depends on the pressure and the shear rate. The explanation of the connection between presented problems is desribed in the first chapter, which includes also some models of viscosity. In following chapters the existence and uniqueness of solutions are studied with regard to the changing parametrs in models of viscosity. For this purpose I use compact embeddings followed by appropriate application of Fredholms theorems. At the end of the work the constructed theory is applied to one viscosity model.