

A process for preparation of bio fuel for diesel comprises mixing of plant oils with alcohols and catalyst, synthesis of ethers in reactor by means of etherification, heating and separation of etherification products into bio diesel and glycerine phases, at that synthesis of ethers is realized at application of low frequency ultrasonic machining, which is realized by means of ultrasonic transducers. The solid ultrasonic machining is realized at the frequency of 16-22 Hz, at the intensity of 0.5-5 Wt/sm², at the pressure of 0.1-0.6 MPa. The mixing of plant oils with alcohols and catalyst is realized during 5-25 sec, and etherification – during 15-22 min. at the same parameters of ultrasound machining. The separation of etherification products is realized during 30-60 minutes, after that the prepared biodiesel is mixed with water at application of solid ultrasonic machining.