

The invention relates to the field of water preparation and can be used in chemistry, energy and other fields of industry. A method for the preparation of heavily demineralized water consists in that water is treated in clarifiers with lime and coagulant, disinfected, preliminarily filtered from mechanical and hung particles at the first stage of purification, subjected to final purification from hung particles in cartridge filters of the second stage of purification, subjected to partial demineralization at the third stage of purification, carbonic acid is removed in decarbonifier and the final demineralization is carried out in the mixed action filters. According to the invention biologically purified waste water of chemical production, storm overflows, mine waste water or mixes thereof having general hardness up to 30 mg-eq/l, at total salt content up to 4-6 g/l, with general microbe number up to 10 thousand units in ml are used as original water. At the third stage of purification water demineralization is performed by means of reverse osmosis with carrying out the process of separation on membranes with the filtration spectrum between 0.0001 and 0.001  $\mu\text{m}$ , at the pressure of 2-2.5 MPa. Use of this invention allows to eliminate river water intake, reduce reagents consumption for purification, decrease effluent volume, and minimize a negative impact on the environment.