

The invention relates to the technology of ion-exchange purification of solutions. A method of counterflow sorption of ions by ion-exchange sorbent includes continuous process of sorption in two moving layers of sorbent. A process liquid is supplied from below into the upper moving layer of the sorbent, which is directed from top to bottom towards the motion of the process liquid, into the lower moving layer of the worked out sorbent the solution is supplied, which regenerates sorbent; the regenerated sorbent by means of an airlift is supplied for removal of mechanical impurities and remainders of regenerating solution, clean regenerated sorbent after washing is supplied to the upper moving layer of sorbent. A device for realization of the counterflow sorption of ions by ion-exchange sorbent and its regeneration – an ion-exchange reactor of continuous action, additionally contains a labyrinth channel; the upper operating layer of sorbent; a reducing device - a sluice; the lower layer of sorbent; the airlift; three systems of coaxial pipes and collectors. The use of invention makes it possible to simultaneously carry out two processes in one apparatus with increased efficiency: sorption of ions from the process liquid and regeneration of ion-exchange sorbents.