

Invention relates to electrochemical methods for producing expanded graphite, which is used to manufacture gaskets, composite materials, and products for use in equipment at enterprises in the fuel and energy sector and the petrochemical industry. Method for obtaining expanded graphite, comprising adding sulfuric acid solution to natural dispersed graphite, electrochemical treatment, removal of liquid phase, rinsing with deionized water, treatment with an ammonium bifluoride solution in acid, drying, and heat treatment. Sulfuric acid solution with a concentration of 30-94 wt% is used as electrolyte, mixture of dispersed graphite and electrolyte 4-10 mm thick is uniformly distributed on anode surface of electrochemical reactor; porous membrane made of chemically resistant polypropylene fabric is placed on the layer of dispersed graphite-electrolyte mixture; cathode is placed under pressure on the layer of membrane made of chemically resistant polypropylene fabric, ensuring electrical contact with dispersed graphite-electrolyte mixture; direct current is passed through the dispersed graphite-electrolyte mixture at a current density of 0.50-55 mA/cm², the amount of electricity consumed is 90-120 A·h/kg; after the electrolysis process is complete, solid phase is separated from solution and rinsed with deionized water until pH is neutral; ammonia solution is added to solid phase until alkaline reaction is achieved, along with solution of ethylenediaminetetraacetic acid disodium salt at a rate of 5-40 g of salt per 100 g of graphite; prepared mixture is heated to 50-100 °C for 1-2 hours, then liquid phase is removed by filtration; solid phase is rinsed on filter with deionized water until a negative reaction to ammonium ions is obtained; ammonium bifluoride solution in hydrochloric acid is added at a rate of 10-20 g of ammonium bifluoride per 100 g of natural graphite; held at a temperature of 55-75 °C for 5-10 hours, rinsed with deionized water until a negative reaction to chloride ions is obtained, solid phase is separated from solution, dried, and rapidly heated in a thermal shock mode to a temperature of 800-1200 °C.

Method provides for obtaining expanded graphite with an increased purity of 99.91-99.96%.