
The development of filters made of porous-net materials for purifying liquid or gas from mechanical pollution

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The study shows that in order to produce filters capable of purifying liquid or gas from mechanical pollution it is reasonable to apply porous sheet materials manufactured by means of roll welding in the vacuum-treated envelopes of the briquette which comprises square mesh grids made of steel 12X18H10T. We have developed a technique for designing the processes of manufacturing articles made from porous materials. Based on this technique we have developed a mathematical model of the stamp-welded filters manufacturing process. These filters ensure the required precision of purifying liquid or gas from pollution at preset discharge characteristics. The article defines the optimal values of the technological processes parameters for manufacturing the porous-net materials with specified properties, sheet pressworking of filtering elements of the required sizes and electron-beam welding of sub-components. The results of the stamp-welded filters bench tests showed that such technological processes help to obtain the products that completely meet the technical requirements.

Keywords: filter, nominal precision of purifying, operating environment, mechanical pollution, porous-net material, roll welding, wire cloth, sheet pressworking, filtering element, electron-beam welding

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