Advanced Layered Flexible Radio-Absorbing Materials Based on Powdered Charcoal

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Abstract: The article presents a technique for obtaining advanced layered radio-absorbing materials based on powdered charcoal. The technique includes the following technologies: incorporation of the electrolyte aqueous solution into the material particles pores and adhesive pressing. The developed technique is more manufacturable compared to its analogs. Materials obtained in accordance with this technique are characterized by flexibility, as well as lower cost compared to other carbon-containing radio-absorbing materials. The experimental characteristics of electromagnetic radiation reflection and transmission coefficients in the frequency range 2.0–17.0 GHz of the materials obtained in accordance with the developed technique are described. The results of the comparative analysis of these characteristics are provided. On the basis of these results, it is determined that the average values of electromagnetic radiation reflection coefficient in the specified frequency range of the materials based on powdered nonactivated wood charcoal, powdered activated wood charcoal, and powdered activated coconut charcoal are –4.5, –8.5, and –9.0 dB (when these materials fixed on metal reflectors). The average values of their electromagnetic radiation transmission coefficient are –11.5, –20.0, and –15.5 dB respectively. The investigated

materials seem to be promising for use in order to protect electronic equipment from external electromagnetic interference.

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