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ВЫСОКОЭНЕРГЕТИЧЕСКИЕ МАТЕРИАЛЫ: ДЕМИЛИТАРИЗАЦИЯ, АНТИТЕРРОРИЗМ И ГРАЖДАНСКОЕ ПРИМЕНЕНИЕ

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significantly increases (the contact corner decreases in two and more times) in the presence of an electrostatic charge. This is important if the harmful aerosol is presented by a liquid phase. The obtained results allow to estimate sorption time after spraying of powder in the environment containing harmful aerosol pollution.

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References

1. Klevens RM et al. Estimating health care-associated infections and deaths in U.S. hospitals // Public Health Reports. 2007. V. 122. P. 160-166.
2. Kudryashova O.B., Stepkina M.Yu., Korovina N.V., Antonnikova A.A., Muravlev E.V., Pavlenko A.A. Atomization of Nanopowders for Adsorbtion of Toxic Substances // Journal of Engineering Physics and Thermophysics. 2015. V. 88, No. 4. P. 833-838. DOI: 10.1007/s10891-015-1258-7.
3. Stepkina M.U., Kudryashova O.B., Muravlev E.V. Use of electric field for cleaning of surfaces // Polzunovskiy Vestnik. 2015. V. 2, No. 4. P. 95-99.

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EXPLOSIVE COMPACTION SYNTHESIS OF AN MG_2SI POWDERS

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In this paper the method of explosive compaction was used for synthesis a powder material Mg_2Si, used for converting thermoelectric energy. A 30-mm layer of TNT explosive (pad) compacted to $\rho = 1.25$ g/cm^3 was poured into a cardboard cup (40 mm in diameter). A tube was positioned onto the pad using a centering cardboard ring. The gap was also fitted with the compacted explosive. The powder Mg_2Si was then placed in a 10-mm diameter aluminum (99.7% Al) tube that was sealed from both sides with aluminum stoppers. The tube with powder mixture was centered by means of a second ring, and then compacted explosive was put into the cup 50 mm above the tube. A standard electric detonator was installed in the middle of this layer at the 20-mm depth. The total mass of explosive was 860 g. The assembly was put into the blast chamber on a metal plate, detonator was connected to initiation circuit, the chamber was closed and the assembly was detonated. It was found that the material has the necessary density and retains a predetermined size. The structure, phase composition and crystal structure parameters of materials Mg_2Si, produced by shock-wave compaction was studied. A metallographic analysis has disclosed that in the material Mg_2Si grains with distinct faces and average size of 15 μm are present on the sample surface. X-ray analysis of materials after explosive compaction, showed that the material mainly contents magnesium silicide phase. Nevertheless it was shown that a material contains small amounts of Si and MgO in free form.