

Accepted Manuscript

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PII: S1359-8368(17)33922-7

DOI: [10.1016/j.compositesb.2018.03.046](https://doi.org/10.1016/j.compositesb.2018.03.046)

Reference: JCOMB 5605

To appear in: *Composites Part B*

Received Date: 13 November 2017

Revised Date: 25 March 2018

Accepted Date: 28 March 2018

Please cite this article as: Kmita A, Drożyński D, Rocznik A, Gajewska M, Marciszko M, Górecki K, Baczymański A, Adhesive hybrid nanocomposites for potential applications in moulding sand technology, *Composites Part B* (2018), doi: 10.1016/j.compositesb.2018.03.046.

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Adhesive hybrid nanocomposites for potential applications in moulding sand technology

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Abstract:

The results of investigations concerning the production of nanocomposite based on phenol-formaldehyde resin, resol type, with organophilic montmorillonite MMT Na (organophilic MMT Na), for applications in the moulding sands technology, are presented in the hereby paper. This composite with mass fractions of: 0.75; 1.5 or 3 mas.% of nanofiller constituted the point of departure for investigating: X-Ray diffraction (XRD), microstructure by transmission electron microscope (TEM), physical-chemical properties (η viscosity), strength (tensile strength R_m^u ; bending strength R_g) and abrasive wear investigations of moulding sands.

The performed investigations indicate that the produced nanocomposite has an intercalated structure and its viscosity increases with an increase of the nanofiller fraction. The optimal nanofiller fraction in a binder, above which mechanical properties in the system binder-mineral matrix are getting worse, was found. Thermal degradation behavior cured

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