

# Nanocomposites and nanomaterials

## New technology for synthesis of thermally expanded graphite

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Nanolayered material – thermally expanded graphite (TEG) has grown increasingly popular in recent years [1].

Such properties of TEG as: high specific surface, chemical inertness, ability to be formed into compression molded products without binding agents, high adhesion to organic liquids led to a wide range of applications of this material in variety of markets [2].

Stages of TEG production include: chemical processing of initial raw materials (natural flake graphite), washing with water, drying and its thermal treatment. Moreover, the end properties of the final product are mainly determined by the way heat treatment of oxidized graphite.

There are variety types of heat treatment for TEG. They include: chemical, electric heating and heating by fuel combustion. The greatest commercially popular method – last mentioned due to the technological effectiveness which was realized in furnaces with a fluidized bed of an inert heat carrier and – in furnaces with a satellite flow of combustion gases.

The new technology of TEG manufacturing was created. Its essential novelty includes: the initial raw material is fed into the reactor jointly with air, fed air is used simultaneously for fuel combustion and for raw material pneumatic transport. Also the dynamic characteristics of a two-phase gas/particle flow provide for direct contact between the raw material and the heart of a torch.

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