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### Research in the Development of Oxitec, A New Refractory

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The work has presented the research outcomes regarding the development of a composition for a new refractory used as furnace lining for fireplace inserts as well as for free-standing fireplaces. Ten different mixtures have been developed, compositions of which included the following raw materials: corundum, cement, bisque, andalusite and fireclay. The said mixtures have been concentrated with the relevant oxides, quantities of which have been respectively 2%, 5%, 8% and 10% of the entire sample weight. The total number of 440 items has been prepared and they have subsequently been subject to sensory assessment and examination with regards to their mechanical strength and thermal properties. The works have resulted in the selection of a composition for a new refractory called OXITEC. Figure 1. Samples under examination regarding their thermal properties and the prototype of a fireplace insert with OXITEC lining



Operational energy and emission examinations have been performed for a prototypical fireplace insert equipped with the standard lining and with the components made of OXITEC material. The relevant measurements have been carried out at a test stand in the internal laboratory of the company called Kratki.pl, based on the norm PN-EN 13229 Fireplace inserts together with solid-fuel open fireplaces – Requirements and examinations. The examination findings have been compared with the outcomes applicable to the hitherto used fireclay material. Owing to the new material, the increase in device efficiency and the decrease in carbon oxide emissions have been achieved.

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