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## **Silicone pressure-sensitive adhesives with improved thermally resistance**

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**P**ressure sensitive-adhesives (PSA) can be defined as a special category of adhesive which are used for the production of a variety of materials, such as mounting tapes, labels, protective films, masking tapes, operations tape and biomedical electrodes.

Combination of the unique properties of silicones pressure-sensitive adhesives, such as high Si–O–Si backbone flexibility, low intermolecular interactions, low surface tension, excellent thermal stability and high UV transparency, often explains why silicone PSAs have superior performance at high- and low-temperature extremes, excellent electrical properties, chemical resistance and outstanding weathering resistance. It makes them superior compared to organic PSAs.

Selected silicone PSA composition with crosslinking agent was mixed with filler to obtain homorganic composition containing 50 wt. % polymer. Nanokaolin was added in 1, 3, 5, or 7 wt.% on a base of polymer content. Subsequently, PSA was coated (coating speed 5 cm/s, coating weight 45 g/m<sup>2</sup>) on polyester film (50 μm), dried for 10 min at 110°C in drying canal. Thus obtained adhesive films were secured with a polyester film (36 μm).

The presented on the poster self-adhesive tapes based on PSA with nanokaolin characteristic good mechanical properties and improved thermal resistance. The best mechanical properties showed of compositions adhesive Q2-7566 with kaolin. The highest maximum temperature work (ca. 246 °C) obtained composition PSA 590 1,5 wt.% with 7 wt.% content of kaolin. Tape based on silicone PSA with kaolin could be used in heavy industry to combine elements operating at elevated temperature or aerospace bonding solar cells on board satellites and space stations.

### **Biography**

M. Sc. Adrian K. Antosik is graduate at the West Pomeranian University of Technology Szczecin in Poland an engineering degree in 2012 at the Department of Chemical Technology and Engineering and master's degree in 2013 at the Department of Materials Engineering and Mechatronics. He is a PhD student at the Institute of Organic Chemical Technology of West Pomeranian University of Technology Szczecin in Poland. Specialization - plastics processing. He is the author or co-author of 11 publications, 3 chapters in the monograph, and 25 patent applications.

### **Notes:**