World's First Development and Mass Production of Ultra-fine Porous Rubber

April 2, 2007
NOK Corporation
Synztec Co. Ltd.

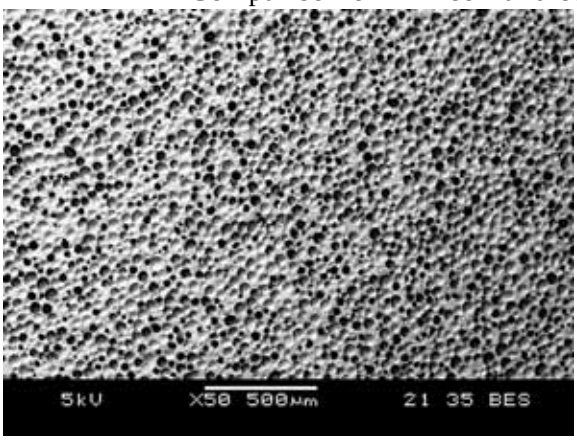
Synztec Co., Ltd. (a major manufacturer of OA equipment parts; represented by Toshio KAWAI), a 100% affiliate of NOK, has succeeded in developing "Minicell®," the world's first high-performance environmentally-benign epoch-making new lightweight rubber, and has started mass production of application products.

Minicell is a new silicone rubber material containing fine bubbles that give it lighter weight, higher durability and higher thermal insulation than similar conventional silicone rubber sponge. The secret of the high performance lies in the size and the shape of the bubbles formed in the rubber; the diameter of the bubbles is 20 to 50 μm, about one tenth the size of those in conventional foamed silicone sponge, and the bubbles are spherical.

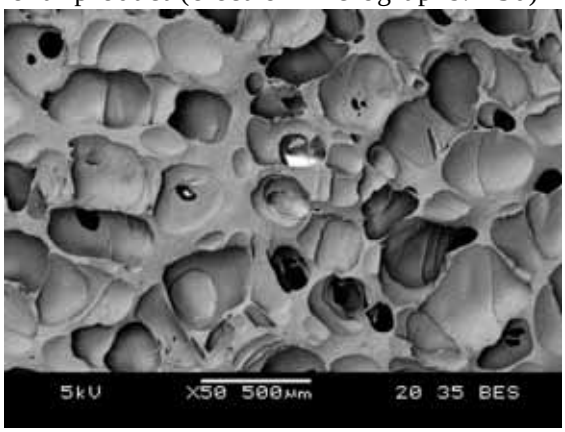
The properties of Minicell are as follows.

1. Light weight (about half the weight of conventional silicone rubber)
2. High thermal stability (230ºC instantaneous and 180ºC continuous)
3. High thermal insulation
4. High durability (fatigue durability)
5. Environmentally friendly during production, involving smaller amounts of hazardous substances

Comparison of Minicell and conventional product (electron micrographs: ×50)

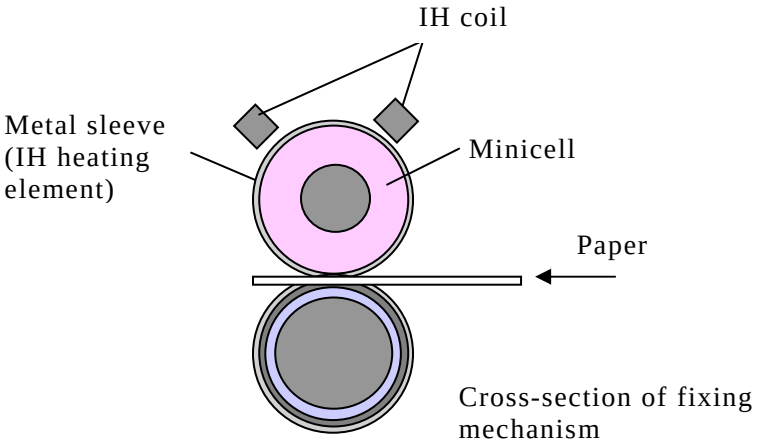


Minicell



Conventional product (Chemically foamed silicone sponge)

Mass production has started on a fixing roll for multifunction peripherals (MFP), which has been developed as one application for Minicell. Whereas fixing rolls for copiers, laser printers, etc., are generally heated by a halogen heater from the inside, this particular roll makes use of Minicell's high thermal insulation and high durability by using induction heating of the outer surface of the roll. Because of this, it can contribute to energy saving in office machinery. Synztec aims at increasing the applications of Minicell and expanding sales.



Cross-section of fixing mechanism

* Induction heating (IH) is also used in IH cooking heaters, and is a safe and highly efficient method of heating.