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MICROCAPSULES: MICROPARTICLES TO FUNCTIONALISE GARMENTS FOR TEXTILES

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Summary. Microcapsules are little particles, as little as micrometres which are composed of two parts. The shell, which is polymeric, avoids to lose an active ingredient. They are solid but they usually are presented as a dispersion in an aqueous liquid and can be applied by any finishing process despite being padding the most effective one. In order to enlarge the permanence of microcapsules on fabrics a binder is necessary.

Introduction

Microcapsules are spheres comprised of a shell and a core. Usually the shell is a polymer which protects the active ingredient located in the core. The shape can vary (see figure 1), and it depends on the characteristics of the active ingredient, which can be solid, liquid or gas, but the most important aspect is that the shell must protect the inner part from different agents.

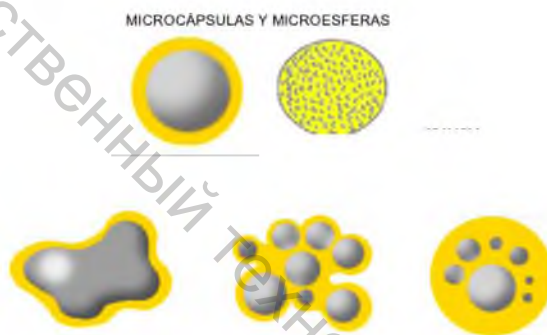


Figure 1 – Microcapsules shape

Microcapsules have been in use for a long time in many fields such as carbonless copying paper, liquid crystals [1], adhesives [2], cosmetics [3,4] insecticides[5,6] pharmaceuticals [7–13] , and medicine[3,12] , food [14–19] etc. The last years, microcapsules have increased their importance in textile field, and what some years ago could be considered as merely research, nowadays is becoming into a reality and many products can be found on the market.

Experimental

The way microcapsules can be applied onto textiles depends on the final product. The most spread process is padding, although spraying, printing and coating can be considered as well. Pad dry has shown a huge level of effectiveness compared to bath exhaustion [20].

Figure 2 shows a fabric which contains microcapsules. Focused on enlarging the microcapsules presence on the fabric, a binder can be added. However if there is an excess, which can be observed in figure 3, some properties of the fabric can be modified, for example the touch of the fabric.

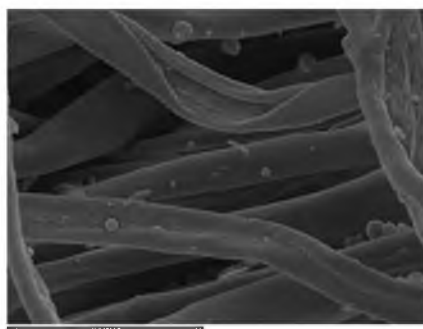


Figure 2 – Microcapsules on cotton

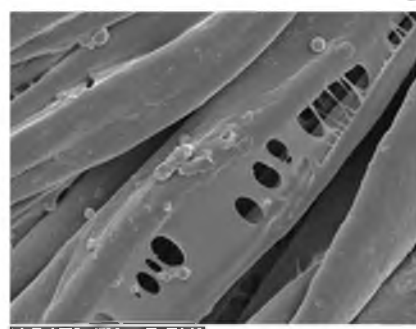


Figure 3 – Microcapsules with excess of binder

Microcapsules from figure 1 and 2 were comprised of an active core based on a moisturising agent. This product allowed to enhance the hydration of the skin in the region where the fabric is in direct contact with the skin [21]. However, this is not the only possibility to increase the functionality of textile. Some brands are selling products with E vitamin for the skin, others contain hair growth inhibitors for fuzz, or even anticellulitic agents.

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