

Microwave Freeze Drying of APIs

Peter Püschner, PÜSCHNER GMBH + CO KG, Germany

Abstract

Conventional freeze drying in pharma applications has been improved incrementally over the last few decades. However, due to the limited conductive energy input, hardly any major increases in performance have been achieved. Microwaves bring the sublimation energy directly into the volume and can deliver significant reductions in drying time by factor 5-10 together with better qualities. Microwave freeze-drying offers enormous advantages, especially for the new more sensitive generations of APIs and will establish itself as a new freeze-drying technology beside the conventional technology over the next few years.

The paper will give an insight into basics of microwave freeze drying and will explain different microwave concepts used in the lab and in production.

