

**A COMPUTATIONAL ALGORITHM FOR THE ANALYSIS OF
FREEZE DRYING PROCESSES WITH SPECIAL REFERENCE TO
FOOD PRODUCTS / MATERIALS**

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ABSTRACT

A computational algorithm that permits speedy and accurate analysis of freeze drying processes has been developed. The algorithm can be used for analyzing freeze drying of all types of food materials, irrespective of their shape or geometrical configuration and irrespective of whether drying occurs from one surface of the material or from all surfaces (whether the process is unidirectional or occurs in all the three directions). Shrinkage of material due to moisture removal has also been accounted for. The algorithm demands low computational load (though is iterative in nature) and does not necessitate use of design charts. Experimental values of θ (time of drying) and fractional moisture removal agree closely with those computed using the algorithm. It, however, assumes constant diffusivity (D_L) and constant surface moisture concentration.

KEYWORDS: Freeze drying, computational algorithm, multidirectional sublimation, software package