

AQUEOUS CELLULOSIC FILM COATING OF TABLETS

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Aqueous film coating of tablets has been steadily increasing in popularity over the past few years. This is largely due to the inherent difficulties associated with the still widely used organic solvent based process namely:

Expense of solvents and measures that have to be taken to avoid fire and explosion hazards; the health hazard to process workers; environmental pollution and the expense of solvent recovery: (Pickard and Rees, 1974, 1976; Lehmann and Dreher 1972).

This demonstration aims to provide an up to date picture of this important area of pharmaceutical technology via a practical demonstration in which essential details of equipment, air flow and temperatures, spray equipment details and coating system formulation will be presented.

In general, it has been shown that acceptable films can be produced using cellulose ether polymers such as hydroxypropylmethylcellulose, usually the 5 or 15 cps grades but sometimes as high as 50 cps. Plasticiser and pigments can also be added as required.

The tablets so produced usually have a matt appearance compared with the traditional organic solvent based process but a shine can be imparted by applying a straight polymer solution with or without a final wax polishing at the end of the process.

Work done has shown it possible to coat even moisture sensitive materials.

Variables encountered in aqueous film coating can be attributed to:

- a) Core formulation
- b) Coating system formulation
- c) Spraying conditions

Generally the aqueous cellulosic film coating process requires tablet cores to be rather less friable than required for the organic solvent based process as the cores may have to be tumbled for longer in the absence of a protective film coat. This is because spray rate is kept down in order not to overwet the cores, and later, the film already deposited.

Besides the polymer solution, spray systems usually require a plasticiser; propylene glycol and the polyethylene glycols are commonly used here. Pigments and opacifiers can be included in the formula as for solvent based coating systems.

The ability of the coating equipment to evaporate water quickly is essential for efficient aqueous film coating and in this respect peripherally vented pans are ideal. The air temperature should be the maximum possible commensurate with the stability of the core itself. For the best coated appearance spray rate should be low and spray droplet size should be small and this is best achieved using an airbourne spray as opposed to an airless system.

Aqueous cellulosic coating in a conventional pan is quite feasible but conditions need careful watching regarding spray and drying rates.

Lehmann, K. and Dreher, D. (1972), Pharm. Ind. 34,894.

Pickard, J.F. and Rees, J.E. (1974), Manuf. Chem. and Aerosol News 45,19.

Pickard, J.F. and Rees, J.E. (1976), *ibid* 47,31.