RESULTS AND DISCUSSION

Three experimental factors have been controlled. The first two factors are categorical: the pump flow (units are cycle/s and the levels are low, medium and high) and the pin position (three different places in pin-table). The third one is numeric and corresponds to the manufacturing time or time from the last shell grease replacement. The response variable is the internal lubricant content as ppm of methyl oleate.

In Figures 1 and 2 the influence of each categorical factor is displayed. In order to predict the response, a general linear model has been applied; the Akaike information criterion (AIC) has been minimized using the R package MASS (Modern Applied Statistics with S). The final linear model obtained has no three order interaction, besides the interaction position×time is negligible.

By therefore fixing pump flow and time, the inhalation capsule internal lubricant content is negligible.

An analysis of covariance has been applied in order to study the influence of different experimental factors. The dependence of the internal lubricant with respect to the manufacturing time and its interaction with the other two categorical predictors has been shown.

CONCLUSIONS

Inhalation capsules’ internal lubricant content is a key factor in inhalation performance, since parameters as emitted dose, fine particle fraction and mass media aerodynamic diameter depend on this value. This factor is critical to control for an optimal capsule performance.

REFERENCES


