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SUBJECT: STUDY REQUIREMENTS FOR FILM PERMEABILITY MEASUREMENTS

Minimum requirements for film permeability study:

1. Test method and test conditions
   b. Temperatures 20-25 C
   c. Two humidity conditions
      i. Source cell humidity < 45%, receiver cell humidity < 45%
      ii. Source cell humidity > 90%, receiver cell humidity < 45%
         1. Papiernik et al. (2010) describes humidity modifications
   d. Study duration
      i. Until reaching one of the following
         1. 7 days
         2. Cr/Cs=0.95
   e. Sampling frequency
      i. Structured to sample more intensively at the beginning where the fastest concentration change will occur
   f. Three replicates per humidity condition
      i. A single film will require six determinations
      ii. Replications in three physically different cells
   g. Analysis using “Film Permeability Analysis” FilmPC as provided by SR Yates
2. Reporting requirements

a. Cell dimensions and location of ports
b. Spiking procedure – enough information to calculate the initial concentration
c. Initial concentrations (actual concentrations as mass/volume)
   i. Measured initial concentration
   ii. Theoretical initial concentration (based on spiking procedure)
d. Method of gas analysis
e. Detection limit for analysis
f. Measured time course of concentrations in source and receiving chambers
g. Results of analysis using PC FILM software
   i. Plot of measured values vs model solution
   ii. Estimates for h (mass transfer coefficient),
h. Conditions
   i. Laboratory temperature
   ii. Laboratory humidity
   iii. Source cell humidity
      1. describe how determined
i. Tarp information
   i. Name
   ii. Manufacturer
   iii. Thickness
   iv. Color
   v. Color digital photographs of film identification label
   vi. Is film embossed
j. Sample instrument linearity determinations
   i. Frequency of linearity determinations in relation to samples
REFERENCES


Qian, Yaorang, Alaa Kamel, Chuck Stafford, Thuy Nguyen and Scott Yates. (undated) Film Permeability Determination Using Static Permeability Cells