

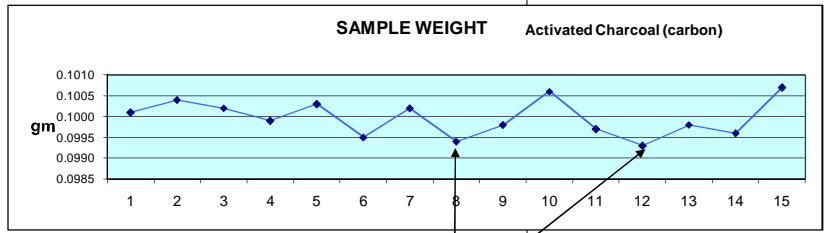
Customer		Date	7/1/2008		
Contact					
Material 1	Activated Charcoal	Est. Bulk Density gm/cu.cm	0.24 - 0.28		
2	Skim milk powder	Est. Bulk Density gm/cu.cm	0.56	rh	60%
Desired Sample size	Charcoal 0.1 gm	Pipette Size	.250 dia.		
	Milk 0.4 gm	Pipette Size	.375 dia.		
Desired accuracy	Not Specified Test results based on simulated production process				

**.250 dia. Pipette**

Micrometer setting: **0.300**

Sample weight gm
0.1001
0.1004
0.1002
0.0999
0.1003
0.0995
0.1002
0.0994
0.0998
0.1006 Rathole
0.0997
0.0993
0.0998
0.0996
0.1007
0.1000 Av
0.1000 Mean
0.0004 Std Dev
Range
0.1007 upper
0.0993 lower
0.0014 swing
%

Control unit settings  
 Vacuum Air  
 (in Hg) (PSI)  
 8 4

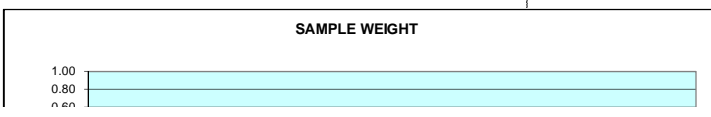
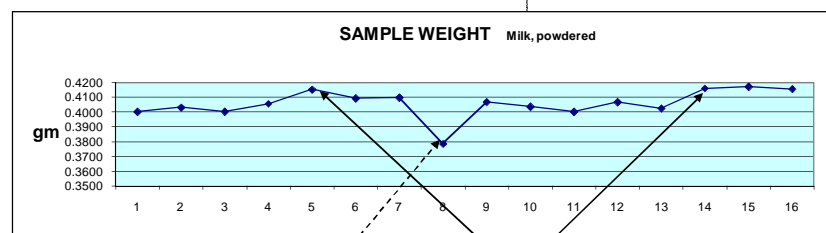


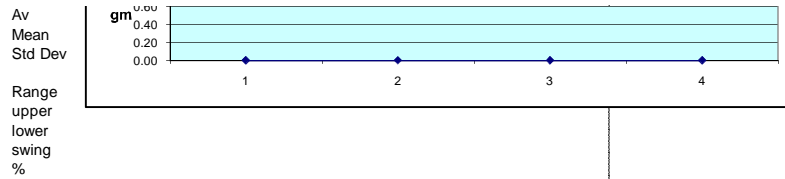
**.375 dia. Pipette**

Micrometer setting: **0.700**

Sample weight gm
0.4002
0.4031
0.4003
0.4056
0.4152
0.4092
0.4098
0.3786
0.4068
0.4036
0.4001
0.4067
0.4024
0.4160
0.4171
0.4155
0.4056 Av
0.4055 Mean
0.0093 Std Dev
Range
0.4171 upper
0.3786 lower
0.0385 swing
%

Control unit settings  
 Vacuum Air  
 (in Hg) (PSI)  
 12 6





- Notes:**
1. Powder sample 1 is a free flowing powder of uniform particulate size and low bulk density. Angle of repose is about 15 deg. Relatively light material and entrained air required higher holding vacuum for sample during aspiration. Low dispense air pressure controlled powder "blowback" and residual dust when dispensing into the na
  2. Powder sample 2 is a free flowing powder with low bulk density, non-uniform particulate size with small clumps and is hygroscopic when exposed to air resulting in weight gain due to moisture over time.
  2. The 2 material required different pipette diameters due to sample size and bulk densities. See graphs.
  3. Due to the need to recycle the powder, air is entrained in the powder that caused a large rathole in one sample. Increasing the aspiration time from 1 second to 3 seconds will purge the entrained air eliminate the rat holes
  4. Sample cycle time: Carbon 3-4 sec/sample  
Milk 3 - 4 seconds per sample due to additional volume and entrained air to fill pipette properly
  6. Set up and calibration tim 10 minutes Carbon; Milk 15 including pipette change.
  7. No ssues pipetting into either the vial or bottles as supplied by customer

**Summary:** Both powders pipette well, a some care needs to be taken with the milk powder to avoid ratholes resuting in "short weights".