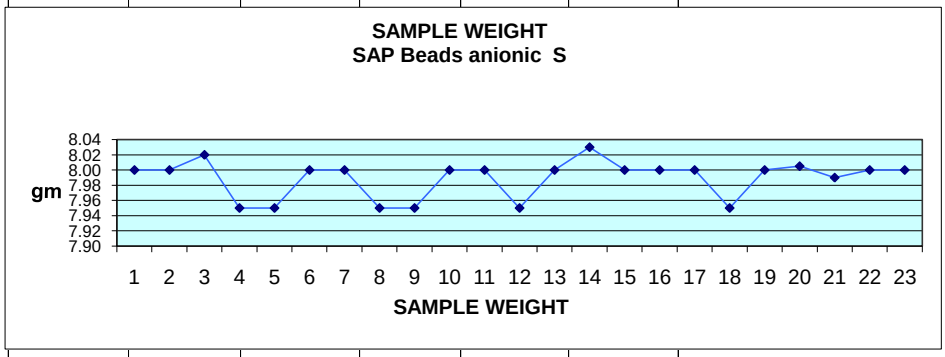
Customer		Contact		Date	01-May-09

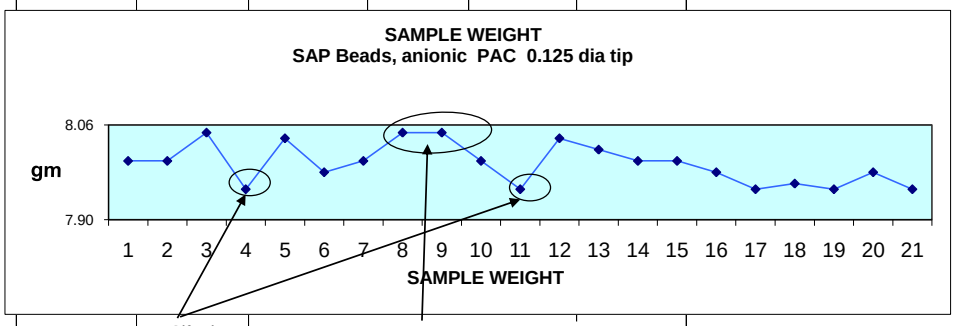
Material	SAP BEADS, ANIONIC PAC, S	Material condition			Bulk Density (gm/cc PAC			Bulk Density (gm/cc) S	
		Paticulate size	Fines	From Table	Measured	Tap Density	From Table	Measured	Tap Density
Desired Sample size	8 mg both powders	Unk >20 micron	>2%	NA	0.71	0.72	NA	0.42	0.43
Desired accuracy	Std +/-% 1.0		rh	20%					
Pipette Size	0.125 dia.	Filter Cup:	Filter cup mesh	10 micron					

Micrometer setting		Sample weight		Control unit settings	
				Vacuum (1in hg)	Air (psi)
				12	5
0.2	Set	7.90			
		8.00			
		8.00			
		8.02			
		7.95			
		7.95			
		8.00			
		8.00			
		7.95			
		7.95			
		8.00			
		8.00			
		7.95			
		8.00			
		8.03			
		8.00			
		8.00			
		8.00			
		7.95			
		8.00			
		8.01			
		7.99			
		8.00			
		8.00			
		7.9889	Av		
		7.9889	Mean		
		0.0249	Std Dev		
		8.03	High	Range	
		7.95	Low		
		1.01	%		



Cycle time	Aspirate	Level	Dispense	total
(sec)	2	1	1	4

Micrometer setting				Vacuum (1in hg)	Air (psi)
0.10				12	8
	set	7.90			
		8.00			
		8.00			
		8.05			
		7.95			
		8.04			
		7.98			
		8.00			
		8.05			
		8.05			
		8.00			
		7.95			
		8.04			
		8.02			
		8.00			
		8.00			
		7.98			
		7.95			
		7.96			
		7.95			
		7.98			
		7.95			



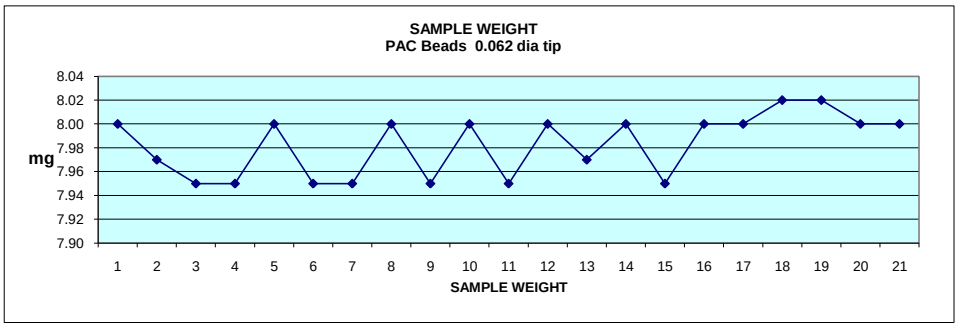
Cycle time	Aspirate	Level	Dispense	total
(sec)	2	1	1	4

7.9909	Av	
7.9908	Mean	
0.0406	Std Dev	
8.0500	High	Range
7.9500	Low	
1.2422	%	

Micrometer setting	Vacuum (1in hg)	Air (psi)
0.10	12	14

set

7.90
8.00
7.97
7.95
7.95
8.00
7.95
7.95
8.00
7.95
8.00
7.95
8.00
7.97
8.00
7.95
8.00
8.00
8.02
8.02
8.00
8.00



Cycle time (sec)	Aspirate	Level	Dispense	total
	1	Skip	1	3

7.9824	Av	
7.9786	Mean	
0.0309	Std Dev	
8.02	High	Range
7.95	Low	
0.87	%	See note 3

Notes/observations

1. Type S: White, granular, fairly free flowing powder with small percentage of fines <5 micron. High angle of repose.
1a. 8 mg Sample will eject from pipette into syringe at 4 - 6 psi without blowback, aerosol, or flying dust particles.
1a. Dispenses readily into 1.5 ml vial with no blowback aerosol.

2. **PAC**: White. granular powder, uniform particulate size. Low in fines, <50 micron Particlulate size. High angle of repose. Tends to agglomerate into a clump in the pipette when aspirated Had to continually sift the powder to pipette uniform samples.
Hydroscopic, Powder gains weight due to moisture if left open .
2.a. Requires fairly high air pressure to fully eject sample from the tip due to accretion in the tip.
2.b. 8.0 gm dispense weight requires 8-9 PSI to fully eject sample into the tube. No aerosol.
2.c. Dispenses readily into 1.5 ml vial with no blowback aerosol.
2.d. Beads carry a large electostatic charge causing the beads to aglommorate in the supply vessel and pipette tip when dry.
2.e. Recommend static control when dispensing.

3. **PAC test # 2**: Powder was vacuum dried. A 0.062 dia proto tip was fabricated to improve bead ejection durung dispense cycle.
Hydroscopic, Powder gained weight due to moisture during test. Control sample, 160 mg gained 10 mg (6.3%) @ 30% rh in 30 minutes.
Levelling step was eliminated to reduce tip clogging.
3.a. Requires fairly high air pressure to fully eject sample from the tip due to accretion and softening of the beads in the tip.
3.b. 8.0 gm dispense weight requires 12 PSI to fully eject sample into the tube. No aerosol.
3.c. Dispenses readily into 1.5 ml vial with no blowback aerosol.
3.d. Repeatability improves with controlling moisture and use of smaller ID tip.