

DISTANCE FROM DISTRIBUTOR PLATE	AIR FLOWRATE(CFM)		
	46	73	104
6	12.17	16.13	19.15
12	13.09	16.40	19.26
GLOBAL MEASUREMENTS	14.25	18.64	21.95
	PERCENT VOIDAGE		

a.)

DISTANCE FROM DISTRIBUTOR PLATE	AIR FLOWRATE(CFM)		
	46	73	104
6	11.58	14.98	17.90
12	12.28	15.43	18.09
18	12.12	15.67	17.66
24	13.06	14.94	18.90
GLOBAL MEASUREMENTS	13.52	17.24	20.00
	PERCENT VOIDAGE		

b.)

DISTANCE FROM DISTRIBUTOR PLATE	AIR FLOWRATE(CFM)		
	46	73	104
18	12.50	15.47	17.41
24	12.27	14.90	17.22
36	12.70	15.38	17.12
GLOBAL MEASUREMENTS	13.23	16.78	19.10
	PERCENT VOIDAGE		

c.)

Table 2.1 Comparison of Global Measurement and Resistance Probe Technique in Determining Overall Gas Hold-up

- a. 1 ft. of water
- b. 2 ft. of water
- c. 3 ft. of water

	Flowrate (CFM)	Predicted (in/s)	Experimental (in/s)
6"	4.6	30.13	32.05
	7.3	31.99	35.71
	10.4	34.54	44.12
12"	4.6	25.37	30.99
	7.3	28.37	34.4
	10.4	30.56	35.71

Table 2.2 Comparison of Predicted and Experimental Bubble Velocities in the center of the column

Flowrate (CFM)	Distance from Wall				
	1	1.75	2.5	3.25	4
4.6	97.6	136.4	144.2	139.4	145.2
7.3	105	104.2	181.4	197	180
10.4	160.6	181	208	219.8	228

Table 2.3 Bubble Distribution over 8 seconds with 2 ft of water, Probe 12" above Distributor Plate, and $Q_g = 4.6$ CFM

<u>Author</u>	<u>Comment</u>	<u>Value of C_D</u>
Wallis	Recommendation	1.2
Govier and Aziz	Recommendation	1.2 - 1.3
Ishii and Grolmes	Recommendation	$1.2-0.2 (\rho_g/\rho_L)^{0.5}$
Nassos and Bankoff	69 mm pipe	1.1
Best Fit/Data of		
Borishanskiy et al.	11 mm pipe	1.187
Hewitt	Recommendation	1.2
Zuber and Findlay	60 mm pipe (includes slug flow)	1.2
Zuber et al.	Recommendation	1.2 - 1.3
Galaup	42 mm pipe	1.13
Clark and Flemmer	50 mm pipe	1.16

Table 2.4: VALUES DETERMINED FOR C_D IN CHURN-TURBULENT BUBBLE FLOW

Center void fraction ϵ_c	Exponent ρ	Average void fraction $\bar{\epsilon}$
0.1	2	0.050
0.2	2	0.100
0.3	2	0.150
0.1	3	0.060
0.2	3	0.120
0.3	3	0.180
0.1	7	0.078
0.2	7	0.156
0.3	7	0.233

Table 2.5. Void fractions used in modeling.