

Bubble Column Mass Transfer Calculations

Bubble diameter, d_b	0.000447	m
Grashof number, Gr	904.69	unitless
Schmidt number, Sc	1223.86	unitless
Sherwood number, Sh	32.07	unitless
Mass transfer coefficient, k_L	0.0000583	m/s
Gas volume in column, V_g	0.0000326	m ³
Liquid volume in column, V	0.0005	m ³
Gas holdup ratio, ϕ_g	0.065	unitless
$a = A_i/V$	874.34	m ² /m ³
$k_L a$	0.0510	1/s

Packed Tower Mass Transfer Calculations

Packing Type	$k_L a$ (1/s)	Liquid Flow Rate (gpm)
2.0-inch rings	0.00273	0.3963
1.5-inch rings	0.00307	0.3963
1.0-inch rings	0.00341	0.3963
0.5-inch rings	0.00435	0.3963
0.375-inch rings	0.00439	0.3963
1.5-inch saddles	0.00380	0.3963
1.0-inch saddles	0.00403	0.3963
0.375-inch saddles	0.00356	0.3963
3.0-inch spiral tiles	0.00261	0.3963