

Index

- antifoam agents, 53
- apparent tray efficiency, 172, 200
- balance points, 83, 84
- bubble cap trays, 1, 23, 38, 57, 62, 142, 168
- bubble promoter, 72
- bubble regime, 12, 23
- bubble rise velocity, 24, 28, 135
- bubble sizes, 21, 26, 133–6
- bubbling
 - frequency, 16, 19, 23, 31
 - from multiple holes, 23, 111
 - from single holes, 14, 32, 110
 - model, 18
 - regimes of, 14–18, 32
- bypassing of gas, 28
- calming zone, 61, 198
- capacity factor, 7, 8, 88–93
- chemical reaction, 28, 148
- choking of downcomer, 104
- clear liquid height, 31, 39, 54, 58, 73
- Colburn equation, 172
- column diameter, 8
- column height, 11, 118
- concentration similarity ratio, 160
- constant flow regime, 20
- constant pressure regime, 20
- cost, 2, 5, 11, 118
- Danckwerts' boundary condition, 162
- density of froth/spray, *see* dispersion density
- design of trays, 8
- diffusional interactions, 191
- discharge coefficient, 58–60, 77, 85, 100
- dispersion density, 13, 25, 39, 54, 56
- dispersion height, 54, 61
- downcomer
 - back up, 98
 - design rules, 102
 - froth density, 101
- drag coefficient, 39, 42, 92
- drop
 - diameter, 40, 48, 92
 - generation, 38, 43
 - velocities, 42
- dry tray pressure drop, 77, 82
- dump point, 116
- dynamic liquid head, 55, 61
- eddy diffusivity, 161, 166, 171
- efficiency
 - apparent, 172, 200
 - calculation of, 128, 154, 157, 194
 - correlations for, 126
 - Hausen, 121
 - measurement, 125
 - Murphree point, 133, 144
 - Murphree tray, 119, 158
 - overall column, 119
 - section, 119, 121
 - Standart, 124
 - thermal, 123
 - vapourisation, 124
- emulsion flow regime, 12, 29, 102, 113
- entrainment of liquid, 80, 94–8, 172
- entrainment of vapour, 102, 177
- film theory, 129, 152
- flooding, 7, 8, 87
- flood factor, 89, 146
- flow parameter, 3, 93
- flow path arrangement, 4
- flow regime, 7, 12
- foam regime, 12, 44
- fractional free area, 15
- Francis's equation, 58

226 *Index*

- free bubbling regime, 25
- froth height, 54, 61
- froth regime, 12, 23
- Froude number, 56, 68, 109
- heat transfer, 149, 155
- height-to-diameter ratio, 11
- high-pressure distillation, 6, 7, 30
- history of distillation, 1
- holdup of gas/liquid, *see* dispersion density
- hole diameter, 9
- hole pitch, 15, 60, 78
- hole vapour velocity, 15
- hydraulic gradient, 72
- hydraulic jump, 70
- interfacial area, 28, 40, 134–50
- jetting of gas, 25–42
- latent heat of vaporisation, 151–5
- Lewis's cases, 159
- liquid-phase resistance, 139, 143
- Marangoni effect, 45, 141
- mass transfer coefficient, 129, 131, 139, 147, 150, 152
- mixed-froth regime, 25
- mixed pools model, 166
- mixing of vapour, 133, 170
- momentum balance, 65, 69, 198
- multicomponent efficiencies, 188
- multipass trays, 4, 9, 103, 186
- Murphree efficiency, 119, 133
- nappe, 100
- Oldershaw column, 51, 137
- orifice coefficient, *see* discharge coefficient
- oscillation, 105, 116
- overall column efficiency, 119
- packing, 2
- Peclét number, liquid
 - for circular tray, 162, 170, 182, 186
 - for rectangular tray, 163
- Peclét number, vapour, 171
- penetration theory, 147
- physical properties, 6
- pressure drop
 - dry tray, 76, 80, 82
 - wet tray, 7, 76
- pressure of operation, 6, 8
- pseudo-binary mixture, 189
- reflux ratio, 3, 11, 118
- residence time
 - liquid, 132
 - vapour, 130, 135
- residual pressure drop, 31, 77, 80, 86
- Reynolds number, 15, 25, 72, 78, 92
- Ross-type foam, 46
- scale-up, 2, 180
- section efficiency, 119, 121
- simple backmixing model, 163
- slope and intercept method, 138
- splash baffle, 67
- spray regime, 12, 38, 72
- stabilisation index, 48
- stagnant regions model, 180
- Standart efficiency, 124
- stripping factor λ or λ_0 , 121, 131, 162, 172
- surface tension, 14, 81, 88, 90, 92, 97, 141, 147, 156
- surface tension gradient $\sigma^+, \sigma^-, \sigma^0$
 - systems, 42, 47
- system factor, 52, 90, 103
- theoretical trays, 118, 190
- thermal efficiency, 123
- transfer unit
 - correlations for, 141, 142, 145
 - definitions, 129, 191
- transition
 - bubbling-froth, 24
 - foam-froth, 50
 - froth-emulsion, 7, 30
 - froth-spray, 7, 8, 30, 91
- tray selection, 5
- tray spacing, 9, 11
- tray types, 2
- turndown ratio, 10, 107
- vacuum distillation, 2, 7, 8, 73, 107
- valve tray, 73, 82, 89, 108, 169
- vaporisation efficiency, 124
- vapour recompression, 2, 6
- velocity profile of liquid, 179, 185
- Weber number, 92
- weep point, 108
- weeping of liquid, 107, 114, 174
- weir
 - exit, 10, 37
 - inlet, 69, 71
 - load, 89, 93, 103