Index

Page numbers with suffix f refers to figures.

Acetem, 93, 140
Acetem, aerating, 101
Acetem, hydrolysis, 95
Acetem, shortening, 100
Acetem, thermostability, 95
Acetem, topping, 100
Acetem, shortening, 100
Acetic acid ester, 93f
Aceto-fat, 96
Acetone insoluble, 34
Acid value, 34, 322
ADI, 101
Aerating, 102
Aerating, polyglycerolesters, 193
Aerating, sucrose esters, 160
Aeration, cake batter, 236
Agglomeration, 50, 51, 86, 87, 159, 168, 172, 248, 288, 301, 304
Agglomeration, fat, 87, 173
Alcohol absorption, 71
Alfa-fat, 100
All-in-process, 196, 198
α-crystal, 265
Alpha. α-crystal monoglycerides, 235
α-gel, 12, 77, 79, 81, 83, 86, 189, 190, 236, 237, 243, 244, 248, 257, 280, 286
α-tending, 81, 83, 84, 235f, 244, 245, 247, 265, 300, 305
Amendment, 312
Ammoniumphosphatide(s), 61f, 220, 222
chemical properties, 65
chocolate viscosity, 68
physical properties, 56
production, 62
Amylase, 262
Amylopectin, 80, 131
Amylose, 80, 131
Amylose complex formation, 80
Amylose complexing index (ACI), 133
Analysis, 321f
Analysis official methods, 321
Anti-dusting, 100
Antimicrobial, 161
Antioxidants, 76, 127, 155, 283
Antistaling, 46
Application
citrem, 115
lactem, 108
matem, 118
Ash, 326
Association colloid, 11
Atomic absorption spectroscopy (AAS), 326
Baked goods, datem, 123, 127f, 136
Baking process, 128f
Baking product, lecithin, 45
Beta-crystal monoglycerides, 235
Beta-prime crystal, 240
Beverage whitener, 118, 127
Biocide, 203
Biscuits, 168
Bloom, 289
Bread, datem, 129f
Bread, self life, 80

© 2015 John Wiley & Sons, Ltd. Published 2015 by John Wiley & Sons, Ltd.
INDEX

Bread, sucrose esters, 168
Bread volume, 71
Cake batter, 83, 84, 196, 198, 200, 236, 240f, 264, 285
Cake margarine(s)
  monoglycerides, 86
  polyglycerol esters, 196
Cake mix, 243
Cakes, 16f, 45, 82, 84, 167f, 196f, 198f, 236, 241f, 264f, 285
Cakes, polyglycerol esters, 198f
Calcium salt, 225
Calcium stearoyl lactylate (CSL), 252
Caramel, 44, 165
Casein, 86, 87, 115, 156, 172, 202, 298, 303, 304
Casson equation, 218
Casson yield value, 68
Charged aerosol detection (CAD), 332
Chemical derivatization, 327
Chewing gum, 44, 118
Chewing gum, ammonium phosphatides, 71
Chocolate, 66, 217
  citrem, 115
  dark, viscosity, 68
  flow properties, 67
  lecithin, 37
  PGPR, 217f
  sorbitan, 289
sucrose esters, 166
cis/trans isomers, 327
Citrem, 108f
Citrem, margarines, 115
Citric acid esters of monoglycerides, 108f
Citroglycerides, 108f
Coagel monoglycerides, 81
Coating acetem, 100
Coating ice cream, 42
Cocoa powder, 52
Coffee whitener, 301
Complex, lipid-starch, 133f
Complexes, 114
Compound PGPR, 217
Cookie, 139, 266f
Cookie lactylates, 266f
Cookies datem, 139
Cream, 16, 202, 244f, 300f
Cream, polyglycerol esters, 202
Critical micelle concentration (CMC), 280
Crumb hardness, 82
Crust, 263
Crust blisters, 82
Crystal, 289
Crystal form PGMS, 233
Crystal inhibitor, 203
Crystallization palm oil, polyglycerol esters, 193
Crystallization, PGMS, 5, 12ff, 232
Crystallization, sugar, 159
CSL, 252
Cubic phase, monoglycerides, 85
Datem, 121f, 158, 173, 259, 301
Debye forces, 2
Decaglycerol monoleate, 193
De-emulsification, 86
Degumming, 26
Degumming, 26
Diacetylated tartaric acid ester of
  monoglycerides, 121f
Differential scanning calorimetry (DSC), 325
Diglycerides, 307
Diglycerol, 183, 189, 190
Diglycerol esters, 190, 194
Diglycerol monolauroate, 191, 192
Diglycerol monomyristate, 193
Diglycerol monoooleate, 191
Dipole moment, 2
Directive 2008/84, 317
Directive 2009/10, 317
Dispersable, cold water, 84
Dough, 45, 46f, 79f, 129f, 132, 134, 137, 197, 202, 260f, 262f, 266f, 285f
  conditioner, 286
  frozen, 48
  strengthening, lactylates, 262f
Doughnut, 263f
Dressing, 156, 164
Dry yeast, 286
DVLO theory, 3f
E 322, 33
EFSA, 309
Electrostatic interaction, 2
Elemental analysis, 326
Emulphaps, 199
Emulsification, 155
Emulsifier-protein interaction, 135
Emulsion, 5, 13f, 31, 32, 37, 55f, 76, 85, 113, 155,
  173, 192f, 220, 225, 226, 237, 259, 265, 279f,
  282
Emulsion process sucrose esters, 151
Emulsions, lecithin, 53f
Enantiomers, 12
Enrobing, 221
Enzymatic process, sucrose ester, 150f
Ester value, 323
Ethoxylated monoglyceride, 276
Ethoxylated, 275
Ethylene oxide, 275
Fat bloom, 44
Fat filling, 171
Fat replacer, 148
Fatty acid composition, 324, 327, 331
Fatty acid methyl esters, (FAME), 327
Fatty acids, 273
Fermentation stability, 79
Film, acetem, 100
Fine baked goods, datem, 138
Flavor, 284
Flavor solubilizer, 115
Flour, 130
Flours lipids, 136
Flow properties chocolate, 220
Fluid lecithin, 48
Foam, 16, 160, 193f, 241, 243, 244f, 300f
Foam texture index, 244
Food Chemical Codex (FCC), 214
Food preservative, 203
Free fatty acids, 322
Freeze-thaw stability, 225
Frozen dough, 47
Fruit bread, 139
Galactosyl-glyceride, 24
Gas chromatography, 327, 331
Gelatination, 132
Genetic modified, 59
GLP, 102f
Gluten, 134
Glycerol monoooleate, 13, 17, 191, 237, 245, 247, 259
Glycerol monopalmitate, 17, 236
Glycerol monostearate, 225, 235f, 258, 259
Glycerolmonooleate, 259
GRAS monoglycerides, 77
Hass-Snell process, 151
Heat capacity cp, 324
Heat of fusion, 325
Hexaglycerol, 183, 189
High overrun, 306
High ratio, 264
High ratio cake, polysorbates, 285
HLB, 8, 36, 76, 100, 106, 113, 155, 181, 277
Homogenization, 299
Hydrates polysorbates, 285
Hydrophilic Lipophilic Balance (HLB), 8
Hydrogen bond, 2
Hydrogen bonding, 70
Hydrolysis
datem, 125
lactem, 104, 110
polyglycerol esters, 188
Hydrophilic, 6
Hydrophobic bonding, 156
Hydroxyl value, 323
Ice cream, 86f, 172, 202, 248f, 287f, 301f
PGMS, 248
polysorbate, 287
sucrose esters, 172
Ice crystal, 248, 306
Ice crystal, size, 306
Icing sucrose esters, 169f
ICP-AES, 326
Imitation cream, 300
Inductively coupled plasma spectroscopy (ICP), 326
Infrared spectroscopy (IR), 329
Instant powder, 50
Interesetrification, polyglycerol esters, 186
Interesterification, sucroeeester, 151
Interface, 4
Iodine value, 323
Ionic emulsifier, 8
Ionic repulsion, 258
Karl Fischer titration, 324
Labelling, 317
Lactem, 102f, 140, 300, 305
Lactic acid esters of monoglycerides, 102f
Lactic ester, 7
Lactoglycerides, 102f
Lactose, 298
Laetylates, 8
Laetylates, shortening 264
Lamellar, 11f, 17, 40, 77f, 126, 194, 198f, 243, 280, 286
Lamellar phase, 126
Lecithin, 221, 219, 222, 300, 301
animal, 27
de-oiling, 30
enzymatic modification, 28
fractionation, 31
melting point, 35
quality, 33
vegetable, 26
Lecitination, 51
Legal regulation, laetylates, 252
Legislation, polyglycerol esters, 182
Lipophilic, 6
Liquid chromatography high performance (HPLC), 331
Liquid crystal, 17
Liquid shortening PGMS, 241
London forces, 2
Low fat spreads, 56, 58, 85, 195, 224
Lubrication, 100
Lyotropic phase, polyglycerol esters, 190
INDEX

Maillard reaction, 156
Manufacturing, acetem, 96, 98
Manufacturing, citrem, 111
Manufacturing, datem, 122f
Manufacturing, lactem, 105
Manufacturing, lactylate, 253
Manufacturing, matem, 122
Manufacturing sorbitans, 273
Margarine, cream, 58
Margarines, 56, 85f, 195f, 223f, 288f
Margarines puff pastry, 58, 196
Marshmallows, 166
Mass spectroscopy (MS), 332
Matem, 116f
Mayonnaise, 164
Mayonnaise low fat, 165
Mean packing shapes, 53f
Meat emulsion, 115
Melt process sucrose esters, 151
Melting point(s)
  lactylates, 257
  PGMS, 233, 324
Melting properties, 305
Mesomorphic phases, datem, 126
Mesophase, 11
Mickey, 280, 282
Microemulsion, 281, 283
Milk protein, 298
Molecular distillation, monoglycerides, 75
Molecular spectroscopy, 329
Mono- and diglycerides, 300, 301, 333
Monodiglycerides, 73f
Monoglycerides coagel, 81
Monoglycerides, 7, 73f, 140, 171, 238, 268
  analysis, 328
  bread, 79
  cakes, 82
  chemical properties, 75f
  crumb softness, 80
  gel, 77f, 83
  GRAS, 77
  hydrates, 81
  low fat spreads, 85
  margarines, 85f
  mesomorph, 76
  molecular distillation, 75
  physical properties, 76
  polymorph, 76
  production, 74
  quantum satis, 77
  shortening, 84
Near infrared spectroscopy (NIR), 329f
Nebraska-Snell process, 152
Non dairy cream, 245, 247, 288
Non dairy cream, polysorbates, 288
Non-GMO, 59
Non-ionic
Non-QS, 317
Nucleation, 203
Nucleation triglycerides, 192
Overcooking, 269
Oil in water, 11, 55
Oleoyl lactylate, 251f
Orientation forces, 2
Orogenic, 14
Oxidation, polyglycerol esters, 188
Panning, 167
Pasta, 82
Pasta, lactylates, 269
 Peroxide value, 34
PGE, 83
PGMS, 83, 231f
2-PGMS, 240
PGMS, shortening, 236, 241
PGMS, α-tending, 235, 237
PGPR, 209f, 323, 330
PGPR, low fat spreads, 224
Phase behavior, citrem, 113
Phase behavior, polyglycerol esters, 189f
Phase inversion temperature (PIT), 281
Phospholipase, 28
Phospholipid, acetylation, 30
Phospholipid, hydrogenation, 30
Phospholipid hydroxylation, 29
Phospholipid-acid, 23
Phospholipid-choline, 33
Phospholipid-ethanolamine, 23
Phospholipid-inositol, 23
Phospholipids, 22ff
Pickering stabilization, 16, 193
POEMS, 251
Polar flour lipids, 134
Polyglycerol, 182f, 210
Polyglycerol behenate, 193
Polyglycerol esters, 8, 140, 181f
  low fat spreads, 195
  margarines, 195
  powder, 199
Polyglycerol fatty acids esters, 181f
Polyglycerol fatty esters, 83
Polyglycerol oleate, 191
Polyglycerol Polyricinoleate, 209f
Polymorphy, 325
Polyisorbate water, 280
Polysorbates, 7, 80, 271, 304, 333
Pourable margarin, 196
Production of polyglycerol esters, 185f
Production of sorbitan, 272
1,3 propanediol monostearate, 236
1,2 propylene glycol distearate, 232
Propylene glycol esters, 8
Propylene glycol fatty acid esters, 231f
Propylene glycol fatty ester, 83
Propylene glycol monostearate, 306, 307
1-propylene glycol monostearate, 232f, 236
2-propylene glycol monostearate, 232
Protein, 4f, 14, 16, 46, 56, 84, 86, 134, 155, 194, 197, 199, 200, 260, 281f, 298f, 303, 307
Protein displacement, 14, 17, 18, 200, 282, 307
Protein in colloids, 5
Protein interaction, sucrose ester, 156
Protein stabilization, 86
Protein-starch interaction, 153
Puff pastry margarine monoglycerides, 86
polyglycerol esters, 196
Purification sucrose esters, 153
Purity criteria, 317
Quantum satis (QS), 317
Raman spectroscopy, 329, 330
Rancidity, 76
Rancidity, ammoniumphosphatides, 71
Recombined milk, 300
Re-evaluation, 311
Regulation, 290
Regulation 257/2010, 311
Regulation 1129/2011, 312
Regulation 1130/2011, 317
Regulation 1169/2011, 317
Regulation 1331/2008, 311
Regulation 1333/2008, 311, 312
Regulation EU, 309
Regulation, sorbitans, 275
Regulatory procedure EU, 316
Regulatory status PGMS, 241
Release agent, 58
Residue of ignition, 326
Retrogradation, 47, 132, 138, 157f, 202, 258
Rheology chocolate, 217
RI detection, 331
Ricinoleic acid, 211
Risk assessor, 311
Risk manager, 311
Safety, 101
Salt of citrem, 109, 111, 113
Saponification process
Saponification value, 322
Sauces, 50, 55, 115, 156, 164
Sauces emulsified, 127
SCF, 309
SCFCAH, 312
Self life, 202
Semolina, 269
Short dough, 140
Shortening, 84, 100, 108, 115, 137, 196, 197, 236, 240, 241, 264f, 266f, 285
Shrinkage, 263
Slip melting point, 325
Sodium caseinate, 301
Sodium stearoyl lactylate, 138
Solubility, 35
acetem, 97
datem, 126
lactem, 106, 111
polyglycerol esters, 191
Solvent process sucrose esters, 151
Solvotropic interaction, 3
Sorbitan esters, 271, 323, 333
Sorbitan monostearate, 280
Sorbitan stearate, 276
Sorbitans, 274
Sorbitol, 272
Span, 272
Spattering, margarine, 57
Specification
acetem, 100
citrem, 114
datem, 127
lactem, 107
matem, 118
Sphingomyelin, 24
Sponge cake, 16
monoglycerides, 84
PGMS, 243
polyglycerol ester, 167
Sorbitan esters, 175
Sulfated ash, 326
Surface, 4
Surface activity
datem, 126
lactem, 106, 113
Swelling, 238
Tablets, 167
Tatem, 116
Temper Chocolate
Tetraglycerol, 183, 189
<table>
<thead>
<tr>
<th>Thermal stability polyglycerol esters, 188</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermo stability sucrose ester, 163</td>
</tr>
<tr>
<td>Thermostability datem, 123f</td>
</tr>
<tr>
<td>Thermostability lactem, 102, 110</td>
</tr>
<tr>
<td>Tin grease emulsion, 226</td>
</tr>
<tr>
<td>Toluene insoluble, 34</td>
</tr>
<tr>
<td>Topping actem, 00</td>
</tr>
<tr>
<td>PGMS, 243f</td>
</tr>
<tr>
<td>polyglycerol esters, 202</td>
</tr>
<tr>
<td>spraydried, 247</td>
</tr>
<tr>
<td>Tortilla, 202</td>
</tr>
<tr>
<td>Toxicology, 292</td>
</tr>
<tr>
<td>Triglycerol monostearate, 193</td>
</tr>
<tr>
<td>Trimethylsilyl (TMS), 328</td>
</tr>
<tr>
<td>Tunneling, 266</td>
</tr>
<tr>
<td>Tween, 272</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unsaturated monoglycerides, low fat spreads, 85, 195</th>
</tr>
</thead>
<tbody>
<tr>
<td>USDA method, 152</td>
</tr>
<tr>
<td>UV detection, 331</td>
</tr>
<tr>
<td>Van der Wall forces, 2</td>
</tr>
<tr>
<td>Water content, 324</td>
</tr>
<tr>
<td>Water in oil, 11, 56</td>
</tr>
<tr>
<td>Whey protein, 57, 88, 298</td>
</tr>
<tr>
<td>Whippable emulsion PGMS, 236gel, 236</td>
</tr>
<tr>
<td>Wijs reaction, 324</td>
</tr>
<tr>
<td>Workflow EFSA, 310</td>
</tr>
<tr>
<td>Yeast raised bread polysorbates, 285</td>
</tr>
<tr>
<td>Yeast raised product lactylates, 261</td>
</tr>
<tr>
<td>Yellow fat, 56</td>
</tr>
<tr>
<td>Yield value, 40, 218</td>
</tr>
</tbody>
</table>

| Zero trans fat margarine, 198 |
| Zwitterionic, 8 |