

Subject Index

A

Absolute viscosity, nonhydroxylic liquid, 111
 Absorptivity, mineral carriers, 176
 Airborne concentrations, 101
 Aqueous systems, 177
 Associative thickener, 20-22
 ASTM standards
 E 11-81: 152
 E 726-80: 174
 E 727-80: 174
 E 799-81: 131
 Atrazine, flowable, 23-25
 Attapulgate, 160, 172
 drying, 170
 effect of processing on gel formation, 180-182
 formulation, processing and stability testing, 182-184
 predispersion formulation, 180
 structure, 165-167

B

Bacillus thuringiensis, viscosity-shear rate relationships, 55
 1,2-Benzisothiazolin-3-one (BIT), 37
 Bulk density, 160, 174-175

C

Calibration, delivery rates, 150
 1-(Carboethoxy)ethyl-5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoate (*see* Cobra postemergent herbicide)
 Chemical predispersion, gelling clays, 180-182
 Chromatography software, 136
 Cobra postemergent herbicide, 39-47

adjuvant effect, 41, 44, 47
 experimental procedure, 40
 optimum treatment assessment, 45, 47
 soft wettable powder formulation, 46-47
 solvent type effect, 41, 43
 soybean injury, 40-41
 surfactant concentration effects on weed control, 40-41
 Computer stability studies, 136-142
 functions of files and programs accessed, 137
 organization of files and programs, 141
 Concentrated emulsion, 32-38
 advantages, 36
 definitions, 33
 emulsifier screening, 37
 formulation, 36-37
 options, 33-34
 history, 34
 manufacturing aspects, 38
 patents, 34-35
 restrictions and limitations, 36
 testing, 38
 Contact angle, 27-29
 versus surface tension, 30
 wetting adjuvants, effect on, 30-31
 Corn, phytotoxicity, 3, 10
 Cotton, phytotoxicity, 3, 12
 Critical surface tension, 27

D

Diatomite, 167-168
 occurrences, 170
 Diluent oil, 101
 Dispersants, 20
 Distillation point, 101
 Dolomite, clay-stabilized, 184-185

Drift, 68

Droplets (*see also* Triode electrostatic atomizer)

analysis on Kromekote cards, 103, 106, 114-116

charged, 88

distribution of, 93-99

frequency of, 119-120

Droplet size, 69-70, 92, 123, 150

mean diameter, 131-132

uniformity, 119-120

versus input voltage, 93, 95

volume median diameter, 132-134

Dry clay addition technique, 179-180

E

Eccentric collisions, 129

Electrostatic atomization (*see* Triode electrostatic atomizer)

Emulsions, 177

F

Flowables, 32

Fluorocarbon wetting adjuvant, 27

Foliar sprays, 27

G

Gelling clays, 177-186

chemical predispersion, 180-182

dry clay addition, 179-180

history, 178

pregelling, 180

stabilizing agents, 178-179

use in nonfloccing liquids, 184-185

use of other stabilizing agents, 185-186

utilization, 179-182

Gel strength, 177

Granular formulations, 150

H

High-performance liquid chromatography (HPLC), 136

Hormite, 160

Hot-wire technology, 123-135

calibration techniques, 126-131

droplet/wire interaction, 127-129

eccentric collisions, 129

equipment, 134-135

geometry of hot-wire and idealized temperature distributions, 126

instrumentation, 124-125

mean diameter, 131-132

sensor signals, 127-128, 130

simultaneous collisions, 129

surface tension and calibration, 129-131

volume median diameter, 132-134

Hydration sheath, surrounding hydrophile, 21

I

In-furrow sprayer (*see* Microtube system)

Insecticide sprays, 123

Isoparaffins, lack of phytotoxicity, 16

Isophorone, phytotoxicity, 14-15

K

Kaolin, 160

Kaolinite, structure, 161-162

L

Lactofen, 39

Lasers, 68

Lewis acidity, 173

Low-volume spraying, 68

M

Manufacture of formulations, 32

Metered chemical solutions, 143
 Microtube system, 142-149
 applications, 145
 applicator, 146-147, 149
 mixture, 148-149
 calibration, 145-146
 description, 143-145
 development program, 145-149
 flow rate versus pressure versus
 length of microtube, 144

Mineral carriers, 160-176
 absorptivity, 176
 applications, 160
 attrition, 176
 bulk density, 174-175
 heating effects, 167, 169-172
 location, 167, 169-170
 molecular properties, 161-168
 nomenclature, 167
 particle size, 174-175
 processing, 174
 structures, 161
 surface acidity, 173
 surface areas, 173
 Montmorillonite, 160
 absorptive, 169, 171
 drying, 170
 structure, 163-165
 swelling, 164

N

Nonionic surfactants, 20-26
 experimental procedure, 22-23
 potential advantages, 25-26

O

Oils (*see also* Viscosity), 3, 101-121
 absolute viscosity, 102-103, 106
 airborne concentrations of diluent
 oils, 117, 120
 colorimetric analysis of deposits on
 glass plates, 106, 117
 droplet analysis on Kromekote
 cards, 103, 106, 114-116

 efficiency of spray atomization and
 deposition characteristics, 119
 evaporation characteristics, 107
 gas-liquid chromatography, 106,
 110, 113, 117
 ideal diluent, 102
 oils studied, 102, 104-105
 physical properties, 102-103,
 106-109
 phytotoxicity (*see* Phytotoxicity)
 spray atomization, 103, 112
 spray volume deposited on glass
 plates, 120
 surface tension, 110, 112

P

Particle size, 123, 156-158, 174-175
 Pendimethalin, 3
 phytotoxicity versus solubility,
 15, 18
 Personal computers, 136
 Phytotoxicity, 3-19
 Cobra postemergent herbicide,
 40-41
 corn, rating, 10
 cotton, rating, 12
 definition, 3-4
 descriptions and properties of sol-
 vents and oils tested, 7-8
 experimental procedure, 4-6
 polarity and, 9, 14
 relative ratings, 9
 results, 6
 solubility versus, 9, 15
 solvent aromatic content, 9, 14, 16
 soybean rating, 12
 volatility and, 16-17
 wheat rating, 11
 Polarity, 3
 Postemergent herbicides, 39
 Pregelling, 180
 Preservative requirements, 32
 Proxel GXL, 37
 Pseudoplasticity, 48, 59-60

Push-type granular product
 spreaders
 delivery rates, 150-158
 particle size, 156-158
 progressing to empty, 153-154
 repose angle, 155-158
 versus setting, 154-155
 swath-width determination,
 151-152
 variations, 153

R

Repose angle, 150, 155-158
 Rheology, 177
 Rosin-Rammler plot, theoretical
 droplet distribution, 98
 Rotary atomizers, 68-87
 advantages, 69
 procedure, 69-71
 relative span values, 73, 76-77,
 82-83, 86-87
 results
 with tap water, 73-79, 86
 volume median diameters,
 73-75
 with vegetable oil, 80-87
 volume median diameters,
 80-81
 sampling technique, 71-73
 volume median diameters, 73-75,
 80-81, 86
 volume percentage of spray pro-
 duced, 78-79, 84-87

S

Sepiolite, 179, 185
 predispersion formulation, 180
 Shear rate, 101
 Silicone wetting adjuvant, 27
 Simultaneous collisions, 129
 Solution fertilizers, advantages and
 disadvantages, 178
 Solvent, 3
 evaporation rates, 17
 phytotoxicity (*see* Phytotoxicity)

Soybeans
 Cobra herbicide, 40-41
 pendimethalin, 18
 phytotoxicity, 3
 rating, 12
 Specific gravity, 130
 Specific heat, 130
 Spray deposit, 101
 Spray measurements (*see* Hot-wire
 technology)
 Stability (*see* Computer stability
 studies)
 Stabilization, 177
 Surface acidity, 160, 173
 Surface tension, 3, 101, 110, 112
 absolute viscosity and, 112
 hot-wire instrumentation calibra-
 tion, 129-131
 surfactants, 31
 versus contact angle, 29-30
 Surfactants (*see also* Nonionic sur-
 factants; Viscosity)
 absolute viscosity, measurements,
 49, 52-53
 pseudoplasticity, 59-60
 selection, 32
 viscosity-activation energy, 53-54
 viscosity-shear rate relationships,
 51, 55-60
 viscosity-temperature relation-
 ships, 49, 52-53
 viscosity-volatility relationships,
 49-50
 volatility, 49-50, 53-54
 Suspensions, 177

T

Talc-pyrophyllite, structure, 162-163
 Tetrasodium pyrophosphate, 180, 182
 Thickeners, 20
 associative, 20-22
 Thixotropy, 20
 Triode electrostatic atomizer, 88-99

calibrating fluid/diesel oil data,
94-96
charge density versus input volt-
age, 94
description, 89-92
droplet
distribution, 93-99
sizing experiment, 92-93
fluid viscosity effects, 96-97
orifice size effects, 95, 97
Rosin-Rammler plot, theoretical
droplet distribution, 98
schematic, 90
spray fluid properties, 89
theoretical Malvern sized spray
droplet size distribution,
98-99
theoretical spray droplet size dis-
tribution, 97

V

Vegetable oil carriers, 68
Viscosity, 48, 130
absolute, 49, 52-53, 101
diluent oils, 102-103, 106
surface tension and, 112
apparent, 101
pseudoplasticity relationship, 61-
62, 64
viscosity-activation energy rela-
tionship, 61-62
volatility, 61-62

Viscosity-activation energy, 48, 53-
54, 107, 118-119
pseudoplasticity relationship, 64-
65
volatility relationship, 64-65
Viscosity-shear rate relationship, 48,
51, 55-60
nonvolatile oils, 109, 111
volatile oils, 108, 110, 115
Viscosity-temperature relationships,
49, 52-53
diluent oils, 116, 118
Viscosity-volatility relationships,
49-50
Volatility, 3, 48-50, 53-54, 101
relationship with pseudoplasticity,
64-65
Volume median diameter, 68

W

Wetting adjuvants, 27-31
contact angles, 27-29
effect on contact angle, 30
surface tensions, 28-29
Wheat, phytotoxicity, 3, 11
Wyoming bentonite, 179, 185

X

Xylene, phytotoxicity, 17