

TABLE OF CONTENTS

| | | | |
|---|-----------|---|-----------|
| CHAPTER 1 ADMINISTRATION | 1 | CHAPTER 4 EMERGENCY PLANNING AND PREPAREDNESS..... | 39 |
| Section | | Section | |
| 101 General | 1 | 401 General | 39 |
| 102 Applicability | 1 | 402 Definitions | 39 |
| 103 Department of Fire Prevention | 2 | 403 Public Assemblages and Events | 39 |
| 104 General Authority and Responsibilities | 3 | 404 Fire Safety and Evacuation Plans and <u>High-rise Emergency Operations Plans</u> | 40 |
| 105 Permits | 4 | 405 Emergency Evacuation Drills | 41 |
| 106 Inspections | 13 | 406 Employee Training and Response Procedures .. | 42 |
| 107 Maintenance | 13 | 407 Hazard Communication | 42 |
| 108 ((Board of)) Appeals | 14 | 408 Use and Occupancy-related Requirements | 42 |
| 109 Violations | 14 | CHAPTER 5 FIRE SERVICE FEATURES | 47 |
| 110 Unsafe Buildings, Premises, Motor <u>Vehicles and Marine Vessels</u> | 15 | Section | |
| 111 Stop Work or <u>Use Order</u> | 16 | 501 General | 47 |
| CHAPTER 2 DEFINITIONS | 17 | 502 Definitions | 47 |
| Section | | 503 Fire Apparatus Access Roads | 47 |
| 201 General | 17 | 504 Access to Building Openings and Roofs | 48 |
| 202 General Definitions | 17 | 505 Premises Identification | 48 |
| CHAPTER 3 GENERAL PRECAUTIONS AGAINST FIRE | 31 | 506 Key Boxes | 49 |
| Section | | 507 Hazards to Fire Fighters | 49 |
| 301 General | 31 | 508 Fire Protection Water Supplies | 50 |
| 302 Definitions | 31 | 509 Fire Command Center | 51 |
| 303 Asphalt Kettles | 31 | 510 Fire Department Access to Equipment | 51 |
| 304 Combustible Waste Material | 32 | CHAPTER 6 BUILDING SERVICES AND SYSTEMS | 53 |
| 305 Ignition Sources | 32 | Section | |
| 306 Motion Picture Projection Rooms and Film | 32 | 601 General | 53 |
| 307 <u>Bonfires, Open Burning, Portable Outdoor Fireplaces and Recreational Fires</u> | 33 | 602 Definitions | 53 |
| 308 Open Flames | 33 | 603 Fuel-fired Appliances | 54 |
| 309 Powered Industrial Trucks and Equipment | 35 | 604 Emergency and Standby Power Systems | 56 |
| 310 Smoking | 36 | 605 Electrical Equipment, Wiring and Hazards | 59 |
| 311 Vacant Premises | 36 | 606 Mechanical Refrigeration | 60 |
| 312 Vehicle Impact Protection | 37 | 607 Elevator Recall and Maintenance | 62 |
| 313 Fueled Equipment | 37 | 608 Stationary Storage Battery Systems | 62 |
| 314 Indoor Displays | 37 | 609 Commercial Kitchen Hoods | 64 |
| 315 Miscellaneous Combustible Materials Storage .. | 38 | CHAPTER 7 FIRE-RESISTANCE-RATED CONSTRUCTION | 65 |
| 316 <u>Fixed Guideway Transit and Passenger Rail Systems</u> | 38 | Section | |
| 317 <u>Road Tunnels, Bridges and Other Limited Access Highways</u> | 38 | 701 General | 65 |
| | | 702 Definitions | 65 |

TABLE OF CONTENTS

703 Fire-resistance-rated Construction 65
 704 Floor Openings and Shafts 65

CHAPTER 8 INTERIOR FINISH, DECORATIVE MATERIALS AND FURNISHINGS. 67

Section
 801 General 67
 802 Definitions 67
 803 Interior Wall and Ceiling Finish and Trim in Existing Buildings 67
 804 Interior Wall and Ceiling Trim in New and Existing Buildings 69
 805 Upholstered Furniture and Mattresses in New and Existing Buildings 69
 806 Decorative Vegetation in New and Existing Buildings 71
 807 Decorative Materials Other Than Decorative Vegetation in New and Existing Buildings . . . 72
 808 Furnishings Other Than Upholstered Furniture and Mattresses or Decorative Materials in New and Existing Buildings 73
 809 Decorative Materials used in Temporary Assembly Occupancies 74

CHAPTER 9 FIRE PROTECTION SYSTEMS. 75

Section
 901 General 75
 902 Definitions 76
 903 Automatic Sprinkler Systems 79
 904 Alternative Automatic Fire-extinguishing Systems 85
 905 Standpipe Systems 88
 906 Portable Fire Extinguishers 91
 907 Fire Alarm and Detection Systems 92
 908 Emergency Alarm Systems 103
 909 Smoke Control Systems 103
 910 Smoke and Heat Vents 110
 911 Explosion Control 111
 912 Fire Department Connections 113
 913 Fire Pumps 113
 914 Fire Protection Based on Special Detailed Requirements of Use and Occupancy 114

CHAPTER 10 MEANS OF EGRESS 117

Section
 1001 Administration 117
 1002 Definitions 117

1003 General Means of Egress 118
 1004 Occupant Load 119
 1005 Egress Width 120
 1006 Means of Egress Illumination 121
 1007 Accessible Means of Egress 122
 1008 Doors, Gates and Turnstiles 124
 1009 Stairways 130
 1010 Ramps 133
 1011 Exit Signs 134
 1012 Handrails 135
 1013 Guards 136
 1014 Exit Access 136
 1015 Exit and Exit Access Doorways 139
 1016 Exit Access Travel Distance 140
 1017 Corridors 141
 1018 Exits 142
 1019 Number of Exits and Continuity 143
 1020 Vertical Exit Enclosures 144
 1021 Exit Passageways 146
 1022 Horizontal Exits 147
 1023 Exterior Exit Ramps and Stairways 148
 1024 Exit Discharge 148
 1025 Assembly 149
 1026 Emergency Escape and Rescue 154
 1027 Means of Egress for Existing Buildings 155
 1028 Maintenance of the Means of Egress 159

CHAPTER 11 AVIATION FACILITIES 161

Section
 1101 General 161
 1102 Definitions 161
 1103 General Precautions 161
 1104 Aircraft Maintenance 161
 1105 Portable Fire Extinguishers 162
 1106 Aircraft Fueling 162
 1107 Helistops and Heliports 167

CHAPTER 12 DRY CLEANING 169

Section
 1201 General 169
 1202 Definitions 169
 1203 Classifications 169
 1204 General Requirements 169
 1205 Operating Requirements 170
 1206 Spotting and Pretreating 170

1207 Dry Cleaning Systems 171
 1208 Fire Protection 171

CHAPTER 13 COMBUSTIBLE DUST-PRODUCING OPERATIONS 173

Section
 1301 General 173
 1302 Definitions 173
 1303 Precautions 173
 1304 Explosion Protection 173

CHAPTER 14 FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION 175

Section
 1401 General 175
 1402 Definitions 175
 1403 Temporary Heating Equipment 175
 1404 Precautions Against Fire 175
 1405 Flammable and Combustible Liquids 175
 1406 Flammable Gases 176
 1407 Explosive Materials 176
 1408 Owner’s Responsibility for Fire Protection 176
 1409 Fire Reporting 176
 1410 Access for Fire Fighting 176
 1411 Means of Egress 176
 1412 Water Supply for Fire Protection 176
 1413 Standpipes 177
 1414 Automatic Sprinkler System 177
 1415 Portable Fire Extinguishers 177
 1416 Motorized Equipment 177
 1417 Safeguarding Roofing Operations 177

CHAPTER 15 FLAMMABLE FINISHES 179

Section
 1501 General 179
 1502 Definitions 179
 1503 Protection of Operations 180
 1504 Spray Finishing 181
 1505 Dipping Operations 185
 1506 Powder Coating 186
 1507 Electrostatic Apparatus 187
 1508 Organic Peroxides and Dual-component Coatings 187
 1509 Indoor Manufacturing of Reinforced Plastics 188
 1510 Floor Surfacing and Finishing Operations 188

CHAPTER 16 FRUIT AND CROP RIPENING 191

Section
 1601 General 191
 1602 Definitions 191
 1603 Ethylene Gas 191
 1604 Sources of Ignition 191
 1605 Combustible Waste 191
 1606 Ethylene Generators 191
 1607 Warning Signs 191

CHAPTER 17 FUMIGATION AND THERMAL INSECTICIDAL FOGGING 193

Section
 1701 General 193
 1702 Definitions 193
 1703 Fire Safety Requirements 193

CHAPTER 18 SEMICONDUCTOR FABRICATION FACILITIES 195

Section
 1801 General 195
 1802 Definitions 195
 1803 General Safety Provisions 195
 1804 Storage 199
 1805 Use and Handling 201

CHAPTER 19 LUMBER YARDS AND WOODWORKING FACILITIES 205

Section
 1901 General 205
 1902 Definitions 205
 1903 General Requirements 205
 1904 Fire Protection 205
 1905 Plywood, Veneer and Composite Board Mills 206
 1906 Log Storage Areas 206
 1907 Storage of Wood Chips and Hogged Material Associated With Timber and Lumber Production Facilities 206
 1908 Storage and Processing of Wood Chips, Hogged Material, Fines, Compost and Raw Product Associated With Yard Waste and Recycling Facilities 206
 1909 Exterior Storage of Finished Lumber Products 207

TABLE OF CONTENTS

CHAPTER 20 MANUFACTURE OF ORGANIC COATINGS..... 209

Section

2001 General..... 209
 2002 Definitions 209
 2003 General Precautions..... 209
 2004 Electrical Equipment and Protection 209
 2005 Process Structures 210
 2006 Process Mills and Kettles 210
 2007 Process Piping 210
 2008 Raw Materials in Process Areas..... 211
 2009 Raw Materials and Finished Products 211

CHAPTER 21 INDUSTRIAL OVENS 213

Section

2101 General..... 213
 2102 Definitions 213
 2103 Location..... 213
 2104 Fuel Piping..... 213
 2105 Interlocks 213
 2106 Fire Protection..... 214
 2107 Operation and Maintenance 214

CHAPTER 22 MOTOR FUEL-DISPENSING FACILITIES AND REPAIR GARAGES..... 215

Section

2201 General..... 215
 2202 Definitions 215
 2203 Location of Dispensing Devices..... 216
 2204 Dispensing Operations 216
 2205 Operational Requirements..... 217
 2206 Flammable and Combustible Liquid Motor Fuel-dispensing Facilities 218
 2207 Liquefied Petroleum Gas Motor Fuel-dispensing Facilities 223
 2208 Compressed Natural Gas Motor Fuel-dispensing Facilities 223
 2209 Hydrogen Motor Fuel-dispensing and Generation Facilities 225
 2210 Marine Motor Fuel-dispensing Facilities..... 229
 2211 Repair Garages..... 230

CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE..... 233

Section

2301 General..... 233

2302 Definitions 233
 2303 Commodity Classification..... 234
 2304 Designation of High-piled Storage Areas 236
 2305 Housekeeping and Maintenance..... 236
 2306 General Fire Protection and Life Safety Features 236
 2307 Solid-piled and Shelf Storage 240
 2308 Rack Storage 240
 2309 Automated Storage 240
 2310 Specialty Storage..... 241

CHAPTER 24 TENTS, CANOPIES AND OTHER MEMBRANE STRUCTURES 243

Section

2401 General..... 243
 2402 Definitions 243
 2403 Temporary Tents, Canopies and Membrane Structures..... 243
 2404 Temporary and Permanent Tents, Canopies and Membrane Structures 245

CHAPTER 25 TIRE REBUILDING AND TIRE STORAGE 249

Section

2501 General..... 249
 2502 Definitions 249
 2503 Tire Rebuilding 249
 2504 Precautions Against Fire..... 249
 2505 Outdoor Storage..... 249
 2506 Fire Department Access 250
 2507 Fencing..... 250
 2508 Fire Protection 250
 2509 Indoor Storage Arrangement 250

CHAPTER 26 WELDING AND OTHER HOT WORK 251

Section

2601 General..... 251
 2602 Definitions 251
 2603 General Requirements 251
 2604 Fire Safety Requirements 252
 2605 Gas ((~~Welding and Cutting~~) Hot Work)..... 253
 2606 Electric Arc Hot Work 254
 2607 Calcium Carbide Systems 254
 2608 Acetylene Generators 254
 2609 Piping Manifolds and Hose Systems for Fuel Gases and Oxygen..... 255

**CHAPTER 27 HAZARDOUS MATERIALS—
GENERAL PROVISIONS 257**

Section

2701 General 257

2702 Definitions 259

2703 General Requirements 261

2704 Storage 274

2705 Use, Dispensing and Handling 278

CHAPTER 28 AEROSOLS..... 283

Section

2801 General 283

2802 Definitions 283

2803 Classification of Aerosol Products 283

2804 Inside Storage of Aerosol Products 283

2805 Outside Storage 285

2806 Retail Display 286

2807 Manufacturing Facilities 287

CHAPTER 29 COMBUSTIBLE FIBERS..... 289

Section

2901 General 289

2902 Definitions 289

2903 General Precautions 289

2904 Loose Fiber Storage 289

2905 Baled Storage 290

CHAPTER 30 COMPRESSED GASES 291

Section

3001 General 291

3002 Definitions 291

3003 General Requirements 291

3004 Storage of Compressed Gases 295

3005 Use and Handling of Compressed Gases 295

3006 Medical Gas Systems 295

3007 Compressed Gases Not Otherwise Regulated .. 296

CHAPTER 31 CORROSIVE MATERIALS 297

Section

3101 General 297

3102 Definitions 297

3103 General Requirements 297

3104 Storage 297

3105 Use 297

CHAPTER 32 CRYOGENIC FLUIDS 299

Section

3201 General 299

3202 Definitions 299

3203 General Requirements 299

3204 Storage 301

3205 Use and Handling 303

**CHAPTER 33 EXPLOSIVES AND
FIREWORKS 305**

Section

3301 General 305

3302 Definitions 307

3303 Record Keeping and Reporting 311

3304 Explosive Materials Storage and Handling 311

3305 Manufacture, Assembly and Testing of
Explosives, Explosive Materials and
Fireworks 318

3306 Small Arms Ammunition, Model Rocket
Motors and Marine Flares 320

3307 Blasting 322

3308 Fireworks Display 323

**CHAPTER 34 FLAMMABLE AND
COMBUSTIBLE LIQUIDS 327**

Section

3401 General 327

3402 Definitions 327

3403 General Requirements 328

3404 Storage 332

3405 Dispensing, Use, Mixing and Handling 353

3406 Special Operations 359

CHAPTER 35 FLAMMABLE GASES 369

Section

3501 General 369

3502 Definitions 369

3503 General Requirements 369

3504 Storage 370

3505 Use 370

CHAPTER 36 FLAMMABLE SOLIDS 371

Section

3601 General 371

3602 Definitions 371

3603 General Requirements 371

3604 Storage 371

TABLE OF CONTENTS

3605 Use 371
3606 Magnesium..... 371

CHAPTER 37 HIGHLY TOXIC AND TOXIC MATERIALS 375

Section

3701 General..... 375
3702 Definitions 375
3703 Highly Toxic and Toxic Solids and Liquids ... 376
3704 Highly Toxic and Toxic Compressed Gases ... 377
3705 Ozone Gas Generators..... 381

CHAPTER 38 LIQUEFIED PETROLEUM GASES 383

Section

3801 General..... 383
3802 Definitions 383
3803 Installation of Equipment 383
3803.2 Use of LP-gas inside Buildings 383
3804 Location of Containers 385
3805 Prohibited Storage and Use of LP-gas 387
3806 Dispensing and Overfilling 387
3807 Safety Precautions and Devices 387
3808 Fire Protection 387
3809 Storage of Portable LP-gas Containers
Awaiting Use or Resale..... 387
3810 Containers Not in Service..... 389
3811 Parking and Garaging 389

CHAPTER 39 ORGANIC PEROXIDES 391

Section

3901 General..... 391
3902 Definitions 391
3903 General Requirements..... 391
3904 Storage 391
3905 Use 393

CHAPTER 40 OXIDIZERS 395

Section

4001 General..... 395
4002 Definitions 395
4003 General Requirements..... 395
4004 Storage 396
4005 Use 397

CHAPTER 41 PYROPHORIC MATERIALS..... 399

Section

4101 General..... 399
4102 Definitions 399
4103 General Requirements..... 399
4104 Storage 399
4105 Use 400
4106 Silane Gas 400

CHAPTER 42 PYROXYLIN (CELLULOSE NITRATE) PLASTICS 403

4201 General..... 403
4202 Definitions 403
4203 General Requirements..... 403
4204 Storage and Handling 403

CHAPTER 43 UNSTABLE (REACTIVE) MATERIALS 405

Section

4301 General..... 405
4302 Definitions 405
4303 General Requirements..... 405
4304 Storage 406
4305 Use 406

CHAPTER 44 WATER-REACTIVE SOLIDS AND LIQUIDS 407

Section

4401 General..... 407
4402 Definitions 407
4403 General Requirements..... 407
4404 Storage 407
4405 Use 408

CHAPTER 45 REFERENCED STANDARDS..... 409

CHAPTER 46 WATERFRONT STRUCTURES FIRE PROTECTION..... 417

Section

4601 General..... 417
4602 Definitions 417
4603 Plans and Approvals 417
4604 Access and Water Supply 418
4605 Fire Protection Equipment 418

**CHAPTER 90 RESIDENTIAL OCCUPANCIES
FOUR STORIES AND OVER 419**

Section
 9001 General 419
 9002 Conflicts with Later Adopted Codes 419

**CHAPTER 91 AUTOMATIC SPRINKLER
SYSTEMS IN NURSING HOMES .. 421**

Section
 9101 Scope 421
 9102 Installation of Equipment 421
 9103 Conflicts with Later Adopted Codes 421

**CHAPTER 92 AUTOMATIC SPRINKLER
SYSTEMS IN SCHOOLS 423**

Section
 9201 General 423
 9202 Installation of Equipment 423
 9203 Conflicts with Later Adopted Codes 423

**CHAPTER 93 MINIMUM STANDARDS FOR
HIGH-RISE BUILDINGS..... 425**

Section
 9301 General 425
 9302 Exits 426
 9303 Dead-end Corridors 426
 9304 Fire Resistive Construction 427
 9305 Heating, Ventilation and Air Conditioning
 System (HVAC) Shutdown 427
 9306 Fire Alarm and Detection Systems 427
 9307 Emergency Power 428
 9308 Sign Requirements 428
 9309 Emergency Preparedness 429

**CHAPTER 94 FIRE PROTECTION FOR
COVERED BOAT MOORAGE.... 431**

Section
 9401 General 431
 9402 Definitions 431
 9403 Plans and Approvals 432
 9404 Access and Water Supply 432
 9405 Fire Protection Equipment 432
 9406 Emergency Plans and Training 433
 9407 Operational Hazards 434
 9408 Compliance 434

APPENDIX A BOARD OF APPEALS 435

Section
 A101 General 435

**APPENDIX B FIRE-FLOW REQUIREMENTS
FOR BUILDINGS 437**

Section
 B101 General 437
 B102 Definitions 437
 B103 Modifications 437
 B104 Fire-flow Calculation Area 437
 B105 Fire-flow Requirements for Buildings 437
 B106 Referenced Standards 438

**APPENDIX C FIRE HYDRANT LOCATIONS
AND DISTRIBUTION..... 439**

Section
 C101 General 439
 C102 Location 439
 C103 Number of Fire Hydrants 439
 C104 Consideration of Existing Fire Hydrants 439
 C105 Distribution of Fire Hydrants 439

**APPENDIX D FIRE APPARATUS ACCESS
ROADS 441**

Section
 D101 General 441
 D102 Required Access 441
 D103 Minimum Specifications 441
 D104 Commercial and Industrial Developments 442
 D105 Aerial Fire Apparatus Access Roads 442
 D106 Multiple-family Residential Developments 442
 D107 One- or Two-family Residential
 Developments 442

APPENDIX E HAZARD CATEGORIES..... 445

Section
 E101 General 445
 E102 Hazard Categories 445
 E103 Evaluation of Hazards 448

APPENDIX F HAZARD RANKING..... 451

Section
 F101 General 451
 F102 Referenced Standards 451

TABLE OF CONTENTS

**APPENDIX G CRYOGENIC FLUIDS—WEIGHT
AND VOLUME EQUIVALENTS .. 453**

Section

G101 General..... 453

INDEX..... 455