

# TABLE OF CONTENTS

<b>CHAPTER 1 ADMINISTRATION..... 1</b>	<u>317</u> <u>Road Tunnels, Bridges and Other Limited</u>
Section	<u>Access Highways..... 36</u>
101 General..... 1	<b>CHAPTER 4 EMERGENCY PLANNING AND</b>
102 Applicability..... 1	<b>PREPAREDNESS..... 37</b>
103 Department of Fire Prevention..... 2	Section
104 General Authority and Responsibilities..... 2	401 General..... 37
105 Permits..... 4	402 Definitions..... 37
106 Inspections..... 13	403 Public Assemblages and Events..... 37
107 Maintenance..... 13	404 Fire Safety and Evacuation Plans <u>and High-Rise</u>
108 <del>Board of Appeals</del> ..... 14	<u>Emergency Operations Plans</u> ..... 38
109 Violations..... 14	405 Emergency Evacuation Drills..... 39
110 <u>Unsafe Buildings, Premises, Motor Vehicles,</u>	406 Employee Training and Response
<u>and Marine Vessels</u> ..... 15	Procedures..... 40
111 Stop Work <u>or Use</u> Order..... 16	407 Hazard Communication..... 40
<b>CHAPTER 2 DEFINITIONS..... 17</b>	408 Use and Occupancy-Related Requirements..... 40
Section	<b>CHAPTER 5 FIRE SERVICE FEATURES..... 45</b>
201 General..... 17	Section
202 General Definitions..... 17	501 General..... 45
<b>CHAPTER 3 GENERAL PRECAUTIONS</b>	502 Definitions..... 45
<b>AGAINST FIRE..... 29</b>	503 Fire Apparatus Access Roads..... 45
Section	504 Access to Building Openings and Roofs..... 46
301 General..... 29	505 Premises Identification..... 46
302 Definitions..... 29	506 Key Boxes..... 47
303 Asphalt Kettles..... 29	507 Hazards to Fire Fighters..... 47
304 Combustible Waste Material..... 30	508 Fire Protection Water Supplies..... 48
305 Ignition Sources..... 30	509 Fire Command Center..... 48
306 Motion Picture Film and Screens..... 30	510 Fire Department Access to Equipment..... 49
307 Bonfires, Open Burning, Patio Fireplaces	<b>CHAPTER 6 BUILDING SERVICES AND</b>
and Recreational Fires..... 31	<b>SYSTEMS..... 51</b>
308 Open Flames..... 31	Section
309 Powered Industrial Trucks..... 33	601 General..... 51
310 Smoking..... 33	602 Definitions..... 51
311 Vacant Premises..... 34	603 Fuel-Fired Appliances..... 51
312 Vehicle Impact Protection..... 34	604 Emergency and Standby Power Systems..... 54
313 Fueled Equipment, <u>Motor Vehicles</u>	605 Electrical Equipment, Wiring and Hazards..... 57
<u>and Watercraft</u> ..... 34	606 Mechanical Refrigeration..... 57
314 Indoor Displays..... 35	607 Elevator Recall and Maintenance..... 59
315 Miscellaneous Combustible	608 Stationary Lead-Acid Battery Systems..... 60
Materials Storage..... 35	609 Valve-Regulated Lead-Acid (VRLA)
<u>316 Fixed Guideway Transit and Passenger</u>	<u>Battery Systems</u> ..... 60
<u>Rail Systems</u> ..... 36	610 Commercial Kitchen Hoods..... 61

**TABLE OF CONTENTS**

**CHAPTER 7 FIRE-RESISTANCE-RATED CONSTRUCTION..... 63**

Section

701 General..... 63  
702 Definitions ..... 63  
703 Fire-resistance-rated Construction ..... 63  
704 Floor Openings and Shafts ..... 63

**CHAPTER 8 INTERIOR FINISH, DECORATIVE MATERIALS AND FURNISHINGS ..... 65**

Section

801 General..... 65  
802 Definitions ..... 65  
803 Furnishings..... 65  
804 Decorative Vegetation ..... 67  
805 Decorations and Trim ..... 67  
806 Interior Finish and Decorative Materials ..... 68  
807 Decorative Materials Used in Temporary Assembly Occupancies ..... 69

**CHAPTER 9 FIRE PROTECTION SYSTEMS .... 71**

Section

901 General..... 71  
902 Definitions ..... 72  
903 Automatic Sprinkler Systems ..... 75  
904 Alternative Automatic Fire-Extinguishing Systems ..... 82  
905 Standpipe Systems..... 85  
906 Portable Fire Extinguishers..... 87  
907 Fire Alarm and Detection Systems..... 88  
908 Emergency Alarm Systems ..... 98  
909 Smoke Control Systems ..... 99  
910 Smoke and Heat Vents..... 106  
911 Explosion Control ..... 108  
912 Fire Department Connections..... 110  
913 Fire Pumps ..... 110

**CHAPTER 10 MEANS OF EGRESS..... 113**

Section

1001 General..... 113  
1002 Definitions ..... 113  
1003 General Means of Egress ..... 114  
1004 Occupant Load..... 115  
1005 Egress Width ..... 116  
1006 Means of Egress Illumination..... 117  
1007 Accessible Means of Egress ..... 118

1008 Doors, Gates and Turnstiles ..... 120  
1009 Stairways and Handrails ..... 125  
1010 Ramps..... 128  
1011 Exit Signs..... 129  
1012 Guards ..... 129  
1013 Exit Access..... 130  
1014 Exit and Access Doorways ..... 132  
1015 Exit Access Travel Distance ..... 133  
1016 Corridors ..... 134  
1017 Exits ..... 135  
1018 Number of Exits and Continuity..... 135  
1019 Vertical Exit Enclosures ..... 137  
1020 Exit Passageways..... 138  
1021 Horizontal Exits..... 139  
1022 Exterior Exit Ramps and Stairways ..... 140  
1023 Exit Discharge ..... 140  
1024 Assembly ..... 142  
1025 Emergency Escape and Rescue..... 146  
1026 Means of Egress for Existing Buildings ..... 147  
1027 Maintenance of the Means of Egress ..... 151

**CHAPTER 11 AVIATION FACILITIES ..... 153**

Section

1101 General..... 153  
1102 Definitions ..... 153  
1103 General Precautions..... 153  
1104 Aircraft Maintenance..... 153  
1105 Portable Fire Extinguishers..... 154  
1106 Aircraft Fueling ..... 154  
1107 Helistops and Heliports..... 159

**CHAPTER 12 DRY CLEANING ..... 161**

Section

1201 General..... 161  
1202 Definitions ..... 161  
1203 Classifications ..... 161  
1204 General Requirements ..... 161  
1205 Operating Requirements ..... 162  
1206 Spotting and Pretreating ..... 162  
1207 Dry Cleaning Systems..... 163  
1208 Fire Protection ..... 163

**CHAPTER 13 COMBUSTIBLE DUST-PRODUCING OPERATIONS ..... 165**

Section

1301 General..... 165

1302 Definitions ..... 165  
 1303 Precautions ..... 165  
 1304 Explosion Protection ..... 165

**CHAPTER 14 FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION..... 167**

Section  
 1401 General ..... 167  
 1402 Definitions ..... 167  
 1403 Temporary Heating Equipment ..... 167  
 1404 Precautions Against Fire ..... 167  
 1405 Flammable and Combustible Liquids ..... 167  
 1406 Flammable Gases ..... 168  
 1407 Explosive Materials ..... 168  
 1408 Owner’s Responsibility for Fire Protection .... 168  
 1409 Fire Alarm Reporting ..... 168  
 1410 Access for Fire Fighting ..... 168  
 1411 Means of Egress ..... 168  
 1412 Water Supply for Fire Protection ..... 168  
 1413 Standpipes ..... 168  
 1414 Automatic Sprinkler System ..... 169  
 1415 Portable Fire Extinguishers ..... 169  
 1416 Motorized Equipment ..... 169  
 1417 Safeguarding Roofing Operations ..... 169

**CHAPTER 15 FLAMMABLE FINISHES..... 171**

Section  
 1501 General ..... 171  
 1502 Definitions ..... 171  
 1503 Protection of Operations ..... 171  
 1504 Spray Finishing ..... 173  
 1505 Dipping Operations ..... 176  
 1506 Electrostatic Apparatus ..... 178  
 1507 Powder Coating ..... 178  
 1508 Automobile Undercoating ..... 179  
 1509 Organic Peroxides and Dual-Component Coatings ..... 179  
 1510 Floor Surfacing and Finishing Operations ..... 179  
 1511 Indoor Manufacturing of Reinforced Plastics .. 180

**CHAPTER 16 FRUIT AND CROP RIPENING .... 181**

Section  
 1601 General ..... 181  
 1602 Definitions ..... 181  
 1603 Ethylene Gas ..... 181

1604 Sources of Ignition ..... 181  
 1605 Combustible Waste ..... 181  
 1606 Ethylene Generators ..... 181  
 1607 Warning Signs ..... 181

**CHAPTER 17 FUMIGATION AND THERMAL INSECTICIDAL FOGGING ..... 183**

Section  
 1701 General ..... 183  
 1702 Definitions ..... 183  
 1703 Fire Safety Requirements ..... 183

**CHAPTER 18 SEMICONDUCTOR FABRICATION FACILITIES..... 185**

Section  
 1801 General ..... 185  
 1802 Definitions ..... 185  
 1803 General Safety Provisions ..... 185  
 1804 Storage ..... 189  
 1805 Use and Handling ..... 189

**CHAPTER 19 LUMBER YARDS AND WOODWORKING FACILITIES... 193**

Section  
 1901 General ..... 193  
 1902 Definitions ..... 193  
 1903 General Requirements ..... 193  
 1904 Fire Protection ..... 194  
 1905 Plywood, Veneer and Composite Board Mills ..... 194  
 1906 Log Storage Areas ..... 194  
 1907 Storage of Wood Chips and Hogged Material Associated With Timber and Lumber Production Facilities ..... 194  
 1908 Storage and Processing of Wood Chips, Hogged Material, Fines, Compost and Raw Product Associated With Yard Waste and Recycling Facilities ..... 194  
 1909 Exterior Storage of Finished Lumber Products ..... 195

**CHAPTER 20 MANUFACTURE OF ORGANIC COATINGS..... 197**

Section  
 2001 General ..... 197  
 2002 Definitions ..... 197  
 2003 General Precautions ..... 197  
 2004 Electrical Equipment and Protection ..... 197

**TABLE OF CONTENTS**

2005 Process Structures . . . . . 198  
 2006 Process Mills and Kettles . . . . . 198  
 2007 Process Piping . . . . . 198  
 2008 Raw Materials in Process Areas . . . . . 199  
 2009 Raw Materials and Finished Products . . . . . 199

**CHAPTER 21 INDUSTRIAL OVENS . . . . . 201**

Section  
 2101 General . . . . . 201  
 2102 Definitions . . . . . 201  
 2103 Location . . . . . 201  
 2104 Fuel Piping . . . . . 201  
 2105 Interlocks . . . . . 201  
 2106 Fire Protection . . . . . 202  
 2107 Operation and Maintenance . . . . . 202

**CHAPTER 22 MOTOR FUEL-DISPENSING FACILITIES AND REPAIR GARAGES . . . . . 203**

Section  
 2201 General . . . . . 203  
 2202 Definitions . . . . . 203  
 2203 Location of Dispensing Devices . . . . . 204  
 2204 Dispensing Operations . . . . . 204  
 2205 Operational Requirements . . . . . 205  
 2206 Flammable and Combustible Liquid Motor Fuel-Dispensing Facilities . . . . . 206  
 2207 Liquefied Petroleum Gas Motor Fuel-Dispensing Facilities . . . . . 210  
 2208 Compressed Natural Gas Motor Fuel-Dispensing Facilities . . . . . 211  
 2209 Hydrogen Motor Fuel-Dispensing and Generation Facilities . . . . . 212  
 2210 Marine Motor Fuel-Dispensing Facilities . . . . . 215  
 2211 Repair Garages . . . . . 217

**CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE . . . . . 221**

Section  
 2301 General . . . . . 221  
 2302 Definitions . . . . . 221  
 2303 Commodity Classification . . . . . 222  
 2304 Designation of High-Piled Storage Areas . . . . . 224  
 2305 Housekeeping and Maintenance . . . . . 224  
 2306 General Fire Protection and Life Safety Features . . . . . 224  
 2307 Solid-Piled and Shelf Storage . . . . . 228

2308 Rack Storage . . . . . 228  
 2309 Automated Storage . . . . . 229  
 2310 Specialty Storage . . . . . 229

**CHAPTER 24 TENTS, CANOPIES AND OTHER MEMBRANE STRUCTURES . . . . . 231**

Section  
 2401 General . . . . . 231  
 2402 Definitions . . . . . 231  
 2403 Temporary Tents, Canopies and Membrane Structures . . . . . 231  
 2404 Temporary and Permanent Tents, Canopies and Membrane Structures . . . . . 233

**CHAPTER 25 TIRE REBUILDING AND TIRE STORAGE . . . . . 237**

Section  
 2501 General . . . . . 237  
 2502 Definitions . . . . . 237  
 2503 Tire Rebuilding . . . . . 237  
 2504 Precautions Against Fire . . . . . 237  
 2505 Outdoor Storage . . . . . 237  
 2506 Fire Department Access . . . . . 238  
 2507 Fencing . . . . . 238  
 2508 Fire Protection . . . . . 238  
 2509 Indoor Storage Arrangement . . . . . 238

**CHAPTER 26 WELDING AND OTHER HOT WORK . . . . . 239**

Section  
 2601 General . . . . . 239  
 2602 Definitions . . . . . 239  
 2603 General Requirements . . . . . 239  
 2604 Fire Safety Requirements . . . . . 240  
 2605 Gas ~~Welding and Cutting~~ Hot Work . . . . . 241  
 2606 Electric Arc Hot Work . . . . . 242  
 2607 Calcium Carbide Systems . . . . . 242  
 2608 Acetylene Generators . . . . . 242  
 2609 Piping Manifolds and Hose Systems for Fuel Gases and Oxygen . . . . . 243

**CHAPTER 27 HAZARDOUS MATERIALS—GENERAL PROVISIONS . . . . . 245**

Section  
 2701 General . . . . . 245  
 2702 Definitions . . . . . 247  
 2703 General Requirements . . . . . 249

2704 Storage ..... 262  
 2705 Use, Dispensing and Handling ..... 265

**CHAPTER 28 AEROSOLS ..... 271**

Section

2801 General ..... 271  
 2802 Definitions ..... 271  
 2803 Classification of Aerosol Products ..... 271  
 2804 Inside Storage of Aerosol Products ..... 271  
 2805 Outside Storage ..... 273  
 2806 Retail Display ..... 274  
 2807 Manufacturing Facilities ..... 274

**CHAPTER 29 COMBUSTIBLE FIBERS ..... 275**

Section

2901 General ..... 275  
 2902 Definitions ..... 275  
 2903 General Precautions ..... 275  
 2904 Loose Fiber Storage ..... 275  
 2905 Baled Storage ..... 275

**CHAPTER 30 COMPRESSED GASES ..... 277**

Section

3001 General ..... 277  
 3002 Definitions ..... 277  
 3003 General Requirements ..... 277  
 3004 Storage of Compressed Gases ..... 279  
 3005 Use and Handling of Compressed Gases ..... 279  
 3006 Medical Gas Systems ..... 280  
 3007 Compressed Gases Not Otherwise Regulated .. 280

**CHAPTER 31 CORROSIVE MATERIALS ..... 281**

Section

3101 General ..... 281  
 3102 Definitions ..... 281  
 3103 General Requirements ..... 281  
 3104 Storage ..... 281  
 3105 Use ..... 281

**CHAPTER 32 CRYOGENIC FLUIDS ..... 283**

Section

3201 General ..... 283  
 3202 Definitions ..... 283  
 3203 General Requirements ..... 283  
 3204 Storage ..... 286  
 3205 Use and Handling ..... 286

**CHAPTER 33 EXPLOSIVES AND FIREWORKS ..... 289**

Section

3301 General ..... 289  
 3302 Definitions ..... 291  
 3303 Record Keeping and Reporting ..... 294  
 3304 Explosive Materials Storage and Handling .... 294  
 3305 Manufacture, Assembly and Testing of Explosives, Explosive Materials and Fireworks ..... 300  
 3306 Small Arms Ammunition, Model Rockets, Motores and Marine Flares ..... 303  
 3307 Blasting ..... 305  
 3308 Fireworks Display ..... 305

**CHAPTER 34 FLAMMABLE AND COMBUSTIBLE LIQUIDS ..... 309**

Section

3401 General ..... 309  
 3402 Definitions ..... 309  
 3403 General Requirements ..... 310  
 3404 Storage ..... 314  
 3405 Dispensing, Use, Mixing and Handling ..... 334  
 3406 Special Operations ..... 340

**CHAPTER 35 FLAMMABLE GASES ..... 351**

Section

3501 General ..... 351  
 3502 Definitions ..... 351  
 3503 General Requirements ..... 351  
 3504 Storage ..... 352  
 3505 Use ..... 352

**CHAPTER 36 FLAMMABLE SOLIDS ..... 353**

Section

3601 General ..... 353  
 3602 Definitions ..... 353  
 3603 General Requirements ..... 353  
 3604 Storage ..... 353  
 3605 Use ..... 353  
 3606 Magnesium ..... 353

**CHAPTER 37 HIGHLY TOXIC AND TOXIC MATERIALS ..... 357**

Section

3701 General ..... 357  
 3702 Definitions ..... 357  
 3703 Highly Toxic and Toxic Solids and Liquids .... 358

**TABLE OF CONTENTS**

3704 Highly Toxic and Toxic Compressed Gases. . . . . 359  
3705 Ozone Gas Generators . . . . . 363

**CHAPTER 38 LIQUEFIED PETROLEUM GASES. . . . . 365**

Section

3801 General . . . . . 365  
3802 Definitions . . . . . 365  
3803 Installation of Equipment . . . . . 365  
3804 Location of Containers . . . . . 367  
3805 Prohibited Storage and Use of LP-Gas. . . . . 368  
3806 Dispensing and Overfilling . . . . . 369  
3807 Safety Precautions and Devices . . . . . 369  
3808 Fire Protection . . . . . 369  
3809 Storage of Portable LP-Gas Containers Awaiting Use or Resale . . . . . 369  
3810 Containers Not in Service . . . . . 371  
3811 Parking and Garaging . . . . . 371

**CHAPTER 39 ORGANIC PEROXIDES . . . . . 373**

Section

3901 General . . . . . 373  
3902 Definitions . . . . . 373  
3903 General Requirements . . . . . 373  
3904 Storage . . . . . 373  
3905 Use . . . . . 375

**CHAPTER 40 OXIDIZERS . . . . . 377**

Section

4001 General . . . . . 377  
4002 Definitions . . . . . 377  
4003 General Requirements . . . . . 377  
4004 Storage . . . . . 378  
4005 Use . . . . . 379

**CHAPTER 41 PYROPHORIC MATERIALS. . . . . 381**

Section

4101 General . . . . . 381  
4102 Definitions . . . . . 381  
4103 General Requirements . . . . . 381  
4104 Storage . . . . . 381  
4105 Use . . . . . 381  
4106 Silane Gas. . . . . 382

**CHAPTER 42 PYROXYLIN (CELLULOSE NITRATE) PLASTICS . . . . . 385**

4201 General . . . . . 385  
4202 Definitions . . . . . 385  
4203 General Requirements . . . . . 385  
4204 Storage and Handling . . . . . 385

**CHAPTER 43 UNSTABLE (REACTIVE) MATERIALS . . . . . 387**

Section

4301 General . . . . . 387  
4302 Definitions . . . . . 387  
4303 General Requirements . . . . . 387  
4304 Storage . . . . . 388  
4305 Use . . . . . 388

**CHAPTER 44 WATER-REACTIVE SOLIDS AND LIQUIDS. . . . . 389**

Section

4401 General . . . . . 389  
4402 Definitions . . . . . 389  
4403 General Requirements . . . . . 389  
4404 Storage . . . . . 389  
4405 Use . . . . . 390

**CHAPTER 45 REFERENCED STANDARDS . . . . . 391**

**CHAPTER 46 WATERFRONT STRUCTURES FIRE PROTECTION . . . . . 399**

Section

4601 General . . . . . 399  
4602 Definitions . . . . . 399  
4603 Plans and Approvals . . . . . 399  
4604 Access and Water Supply . . . . . 400  
4605 Fire Protection Equipment . . . . . 400

**CHAPTER 90 RESIDENTIAL OCCUPANCIES FOUR STORIES AND OVER. . . . . 403**

Section

9001 General . . . . . 403  
9002 Conflicts with Later Adopted Codes . . . . . 403

**CHAPTER 91 AUTOMATIC SPRINKLER SYSTEMS IN NURSING HOMES . . 405**

Section

9101 Scope. . . . . 405  
9102 Installation of Equipment . . . . . 405  
9103 Conflicts with Later Adopted Codes . . . . . 405

**CHAPTER 92 AUTOMATIC SPRINKLER SYSTEMS IN SCHOOLS ..... 407**

Section  
 9201 General..... 407  
 9202 Installation of Equipment ..... 407  
 9203 Conflicts with Later Adopted Codes ..... 407

**CHAPTER 93 MINIMUM STANDARDS FOR HIGH-RISE BUILDINGS ..... 409**

Section  
 9301 General..... 409  
 9302 Exits ..... 410  
 9303 Dead-End Corridors ..... 410  
 9304 Fire-Resistive construction ..... 411  
 9305 Heating, Ventilation, and Air-Conditioning (HVAC) System Shutdown ..... 411  
 9306 Fire Alarm and Detection Systems..... 411  
 9307 Emergency Power ..... 412  
 9308 Sign Requirements..... 412  
 9309 Emergency Preparedness ..... 413

**CHAPTER 94 FIRE PROTECTION FOR COVERED BOAT MOORAGE.... 414a**

Section  
 9401 General..... 414a  
 9402 Definitions ..... 414b  
 9403 Plans and Approvals ..... 414b  
 9404 Access and Water Supply ..... 414b  
 9405 Fire Protection and Equipment..... 414b  
 9406 Emergency Plans and Training ..... 414c  
 9407 Operational Hazards ..... 414d  
 9408 Compliance ..... 414d

**APPENDIX A BOARD OF APPEALS..... 415**

Section  
 A101 General..... 415

**APPENDIX B FIRE-FLOW REQUIREMENTS FOR BUILDINGS ..... 417**

Section  
 B101 General..... 417  
 B102 Definitions ..... 417  
 B103 Modifications ..... 417  
 B104 Fire-Flow Calculation Area ..... 417  
 B105 Fire-Flow Requirements for Buildings..... 417  
 B106 Referenced Standards ..... 417

**APPENDIX C FIRE HYDRANT LOCATIONS AND DISTRIBUTION ..... 419**

Section  
 C101 General..... 419  
 C102 Location ..... 419  
 C103 Number of Fire Hydrants ..... 419  
 C104 Consideration of Existing Fire Hydrants ..... 419  
 C105 Distribution of Fire Hydrants ..... 419

**APPENDIX D FIRE APPARATUS ACCESS ROADS ..... 421**

Section  
 D101 General..... 421  
 D102 Required Access ..... 421  
 D103 Minimum Specifications ..... 421  
 D104 Commercial and Industrial Developments..... 422  
 D105 Aerial Fire Apparatus Access Roads ..... 422  
 D106 Multiple-Family Residential Developments ... 422  
 D107 One- or Two-Family Residential Developments ..... 422

**APPENDIX E HAZARD CATEGORIES ..... 425**

Section  
 E101 General..... 425  
 E102 Hazard Categories ..... 425  
 E103 Evaluation of Hazards..... 428

**APPENDIX F HAZARD RANKING ..... 431**

Section  
 F101 General..... 431  
 F102 Referenced Standards ..... 431

**APPENDIX G CRYOGENIC FLUIDS—WEIGHT AND VOLUME EQUIVALENTS ... 433**

Section  
 G101 General..... 433

**INDEX..... 435**

