NFPA 252 Standard Methods of Fire Tests of Door Assemblies 1995 Edition

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Policy Adopted by NFPA Board of Directors on December 3, 1982

The Board of Directors reaffirms that the National Fire Protection Association recognizes that the toxicity of the products of combustion is an important factor in the loss of life from fire. NFPA has dealt with that subject in its technical committee documents for many years.

There is a concern that the growing use of synthetic materials may produce more or additional toxic products of combustion in a fire environment. The Board has, therefore, asked all NFPA technical committees to review the documents for which they are responsible to be sure that the documents respond to this current concern. To assist the committees in meeting this request, the Board has appointed an advisory committee to provide specific guidance to the technical committees on questions relating to assessing the hazards of the products of combustion.

Statement on NFPA Procedures

This material has been developed under the published procedures of the National Fire Protection Association, which are designed to assure the appointment of technically competent Committees having balanced representation. While these procedures assure the highest degree of care, neither the National Fire Protection Association, its members, nor those participating in its activities accept any liability resulting from compliance or noncompliance with the provisions given herein, for any restrictions imposed on materials or processes, or for the completeness of the text.

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NFPA 252

Standard Methods of

Fire Tests of Door Assemblies

1995 Edition

This edition of NFPA 252, *Standard Methods of Fire Tests of Door Assemblies*, was prepared by the Technical Committee on Fire Tests and acted on by the National Fire Protection Association, Inc., at its Fall Meeting held November 14-16, 1994, in Toronto, Ontario, Canada. It was issued by the Standards Council on January 13, 1995, with an effective date of February 7, 1995, and supersedes all previous editions.

The 1995 edition of this document has been approved by the American National Standards Institute.

Changes other than editorial are indicated by a vertical rule in the margin of the pages on which they appear. These lines are included as an aid to the user in identifying changes from the previous edition.

Origin and Development of NFPA 252

The Standard *Methods of Fire Tests of Door Assemblies* was adopted as a tentative standard by the ASTM in 1940 and was formally adopted in 1941. In 1942, this standard was adopted by the NFPA and approved by the American Standards Association. It was reaffirmed by the Committee on Fire Tests of Building Construction and Materials and adopted in 1950. In 1953, a new NFPA Committee on Fire Tests was formed by action of the Board of Directors, and recommendations for revision of the standard made from that committee were adopted in 1958, 1969, 1972, 1976, 1979, 1984, and 1990.

The basic procedure covered by this standard was developed by Underwriters Laboratories Inc. and has not undergone any significant revisions to the original concept of procedures. The 1995 edition introduces a new provision to address the neutral plane of the furnace. This provision permits the testing agency to establish the neutral plane of the test furnace to the specification of the particular need, i.e., positive pressure at a 40-in. level, top of the opening, or test at atmospheric pressure.

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NOTE. Membership on a Committee shall not in and of itself constitute an endorsement of the Association or any document developed by the Committee on which the member serves.

Committee Scope: This committee shall have primary responsibility for documents on fire testing procedures where such documents are not available; review existing fire test standards and recommend appropriate action to NFPA; recommend the application of and advise on the interpretation of acceptable test standards for fire problems of concern to NFPA technical committees and members, and act in a liaison capacity between NFPA and the committees of other organizations writing fire test standards. The Committee shall not be responsible for fire tests that are used to evaluate extinguishing agents, devices, or systems.

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Standard Methods of

Fire Tests of Door Assemblies

1995 Edition

NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates explanatory material on that paragraph in Appendix A.

Information on referenced publications can be found in Chapter 7 and Appendix C.

Chapter 1 General

1-1 Purpose. This standard outlines methods of fire tests for door assemblies.

1-2 Scope.

1-2.1 These methods of fire tests are applicable to door assemblies of various materials and types of construction used in wall openings to retard the passage of fire.

1-2.2 Tests made in conformity with these test methods demonstrate the performance of door assemblies during the test exposure; but such tests shall not be construed as determining the suitability of door assemblies for use after their exposure to fire.

1-2.3 It is intended that tests made in conformity with these test methods will develop data that enable regulatory bodies to determine the suitability of door assemblies for use in locations where fire resistance of a specified duration is required.

1-3 Significance.

1-3.1 These test methods are intended to evaluate the ability of a door assembly to remain in an opening during a predetermined test exposure.

1-3.2 The tests expose a specimen to a standard fire exposure that is controlled to achieve specified temperatures throughout a specified time period, followed by the application of a specified standard fire hose stream. The exposure, however, will not be representative of all fire conditions, which can vary with changes in the amount, nature, and distribution of fire loading, ventilation, compartment size and configuration, and heat sink characteristics of the compartment. The exposure does, however, provide a relative measure of the fire performance of door assemblies under these specified fire exposure conditions.

1-3.3 Any variation in the construction or conditions that are tested could substantially change the performance characteristics of the assembly.

1-3.4 The test methods do not provide the following:

(a) Full information on the performance of all door assemblies in walls constructed of materials other than those tested.

(b) An evaluation of the degree to which a door assembly contributes to the fire hazard through generation of smoke, toxic gases, or other products of combustion.

(c) A measurement that determines a limit on the number of openings allowed in glazed areas or the number and size of lateral openings between the door and frame.

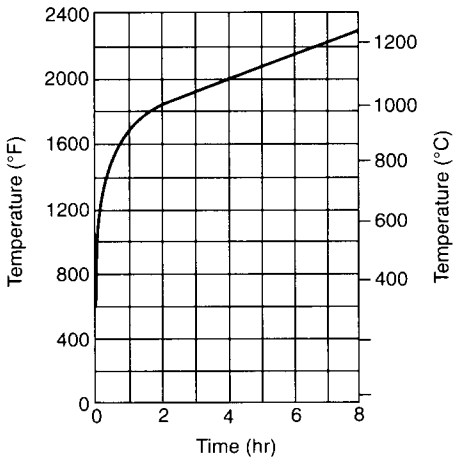
(d) A measurement of the degree of control or limitation of the passage of smoke or products of combustion through the door assembly.

(e) A measurement that determines a temperature limit on the unexposed side of the door assembly.

Chapter 2 Control of Fire Tests

2-1 Time-Temperature Curve.

2-1.1 The fire exposure of door assemblies shall be controlled to conform to the applicable portion of the standard time-temperature curve shown in Figure 2-1.1. The points that determine the curve are specified immediately below Figure 2-1.1:



1000°F (538°C).....at 5 minutes
1300°F (704°C).....at 10 minutes
1550°F (843°C).....at 30 minutes
1638°F (892°C).....at 45 minutes
1700°F (927°C).....at 1 hour
1792°F (978°C).....at 1.5 hours
1925°F (1052°C).....at 3 hours

Figure 2-1.1 Time-temperature curve.

2-1.2 For a more detailed time-temperature curve, see Table 2-1.2.

2-1.3 The temperature inside the furnace at the start of the test shall be ambient.

2-2 Furnace Temperatures.

2-2.1 Test exposure temperatures shall be determined by using the average temperature obtained from the readings of not fewer than nine thermocouples symmetrically disposed and distributed to indicate the temperature near all parts of the test assembly. The thermocouples shall be protected by sealed porcelain tubes having $\frac{3}{4}$-in. (19-mm) outside diameter and $\frac{1}{8}$-in. (3-mm) wall thickness, or, as an alternate, in the case of base metal thermocouples, protected by $\frac{1}{2}$-in. (13-mm) wrought steel or wrought iron pipe of standard weight. The junction of the thermocouples shall be

Table 2-1.2 Standard Time–Temperature Curve for Control of Fire Tests

Time	Temperature	Area Above 68°F Base		Temperature	Area Above 20°C Base	
(hr/min)	(°F)	(°F-min)	(°F-hr)	(°C)	(°C-min)	(°C-hr)
0:00	68	00	0	20	00	0
0:05	1000	2330	39	538	1290	22
0:10	1300	7740	129	704	4300	72
0:15	1399	14,150	236	760	7860	131
0:20	1462	20,970	350	795	11 650	194
0:25	1510	28,050	468	821	15 590	260
0:30	1550	35,360	589	843	19 650	328
0:35	1584	42,860	714	862	23 810	397
0:40	1613	50,510	842	878	28 060	468
0:45	1638	58,300	971	892	32 390	540
0:50	1661	66,200	1103	905	36 780	613
0:55	1681	74,220	1237	916	41 230	687
1:00	1700	82,330	1372	927	45 740	762
1:05	1718	90,540	1509	937	50 300	838
1:10	1735	98,830	1647	946	54 910	915
1:15	1750	107,200	1787	955	59 560	993
1:20	1765	115,650	1928	963	64 250	1071
1:25	1779	124,180	2070	971	68 990	1150
1:30	1792	132,760	2213	978	73 760	1229
1:35	1804	141,420	2357	985	78 560	1309
1:40	1815	150,120	2502	991	83 400	1390
1:45	1826	158,890	2648	996	88 280	1471
1:50	1835	167,700	2795	1001	93 170	1553
1:55	1843	176,550	2942	1006	98 080	1635
2:00	1850	185,440	3091	1010	103 020	1717
2:10	1862	203,330	3389	1017	112 960	1882
2:20	1875	221,330	3689	1024	122 960	2049
2:30	1888	239,470	3991	1031	133 040	2217
2:40	1900	257,720	4295	1038	143 180	2386
2:50	1912	276,110	4602	1045	153 390	2556
3:00	1925	294,610	4910	1052	163 670	2728
3:10	1938	313,250	5221	1059	174 030	2900
3:20	1950	332,000	5533	1066	184 450	3074
3:30	1962	350,890	5848	1072	194 940	3249
3:40	1975	369,890	6165	1079	205 500	3425
3:50	1988	389,030	6484	1086	216 130	3602
4:00	2000	408,280	6805	1093	226 820	3780
4:10	2012	427,670	7128	1100	237 590	3960
4:20	2025	447,180	7453	1107	248 430	4140
4:30	2038	466,810	7780	1114	259 340	4322
4:40	2050	486,560	8110	1121	270 310	4505
4:50	2062	506,450	8441	1128	281 360	4689
5:00	2075	526,450	8774	1135	292 470	4874
5:10	2088	546,580	9110	1142	303 660	5061
5:20	2100	566,840	9447	1149	314 910	5248
5:30	2112	587,220	9787	1156	326 240	5437
5:40	2125	607,730	10,129	1163	337 630	5627
5:50	2138	628,360	10,473	1170	349 090	5818
6:00	2150	649,120	10,819	1177	360 620	6010
6:10	2162	670,000	11,167	1184	372 230	6204
6:20	2175	691,010	11,517	1191	383 900	6398
6:30	2188	712,140	11,869	1198	395 640	6594
6:40	2200	733,400	12,223	1204	407 450	6791
6:50	2212	754,780	12,580	1211	419 330	6989
7:00	2225	776,290	12,938	1218	431 270	7188
7:10	2238	797,920	13,299	1225	443 290	7388
7:20	2250	819,680	13,661	1232	455 380	7590
7:30	2262	841,560	14,026	1239	467 540	7792
7:40	2275	863,570	14,393	1246	479 760	7996
7:50	2288	885,700	14,762	1253	492 060	8201
8:00	2300	907,960	15,133	1260	504 420	8407

located 6 in. (152 mm) from the exposed face of the test assembly, or from the masonry in which the assembly is installed, during the entire test exposure.

2-2.2 The temperatures shall be measured at intervals not exceeding 1 minute during the test period.

2-2.3 The accuracy of the furnace control shall be such that the area under the time–temperature curve, obtained by averaging the results from the thermocouple readings, is within 10 percent of the corresponding area as specified in Table 2-1.2 for fire tests of 1 hour or less duration, within 7.5 percent for those tests lasting more than 1 hour and not more than 2 hours, and within 5 percent for tests exceeding 2 hours duration.

2-3 Unexposed Surface Temperatures.

2-3.1 Unexposed surface temperatures shall be recorded and shall be determined in the following manner:

(a) Unexposed surface temperatures shall be taken at not fewer than three points, with at least one thermocouple in each 16-ft^2 (1.5-m^2) area of the door. Thermocouples shall not be located over reinforcements extending through the door, over vision panels, or nearer than 12 in. (305 mm) from the edge of the door.

(b)* Unexposed surface temperatures shall be measured with thermocouples placed under dry, felted pads meeting the requirements specified in A-2-3.1(b). The pads shall be held firmly against the surface of the door and shall fit closely about the thermocouples. The thermocouple leads shall be positioned under the pad for a distance of not less than 3 1/2 in. (89 mm), with the hot junction under the center of the pad. The thermocouple leads under the pads shall not be heavier than No. 18 AWG (0.82 mm^2) and shall be electrically insulated with heat-resistant and moisture-resistant coatings.

(c) Unexposed surface temperatures shall be measured at intervals not exceeding 1 minute during the first 30 minutes of the test.

Exception: Single-layer metal doors need not comply with 2-3.1 (a) through (c).

Chapter 3 Test Assemblies

3-1 Construction and Size.

3-1.1 The construction and size of a test door assembly, which can include single doors, doors in pairs, special-purpose doors (e.g., Dutch doors, double-egress doors), or multisection doors, shall be representative of that type of assembly for which the classification or rating is desired.

3-1.2 A floor structure shall be provided as part of the opening to be protected. The floor segment shall be of noncombustible material and shall project into the furnace for a distance that is approximately twice the thickness of the test door or to the limit of the frame, whichever is greater.

Exception: A floor structure shall not be required to be part of the protected opening where the floor interferes with operation of the door.

3-2 Mounting.

3-2.1 Swinging doors shall be mounted to open into the furnace chamber.

3-2.2 Sliding and rolling doors shall be mounted on the exposed side of the opening in the wall enclosing the furnace chamber.

Exception: Horizontal slide-type elevator doors.

3-2.3 Horizontal slide-type elevator doors shall be mounted on the unexposed side of the opening in the wall enclosing the furnace chamber.

3-2.4 Access-type doors and their frame assemblies and chute-type doors and their frame assemblies shall be mounted to have one assembly open into the furnace chamber and another assembly open away from the furnace chamber.

3-2.5 Dumbwaiter doors and frame assemblies and service-counter doors and frame assemblies shall be mounted on the exposed side of the opening in the wall.

3-2.6 Door frames shall be evaluated when mounted to verify that the doors open either away from or into the furnace chamber, at the discretion of the testing authority, to obtain representative information on the performance of the construction under test.

3-2.7 Surface-mounted hardware (fire-exit devices) for use on fire doors shall be evaluated under conditions where it is installed in one door assembly that swings into the furnace chamber and in another door assembly that swings away from the furnace chamber.

3-2.8 The mountings of all doors shall be such that they fit snugly within the frame, against wall surfaces, or in guides, but such mounting shall not prevent free and easy operation of the test door.

3-3 Clearances.

3-3.1 Clearances for swinging doors shall be as follows:

With a minus 1/16-in. (1.6-mm) tolerance: 1/8 in. (3 mm) along the top, 1/8 in. (3 mm) along the hinge and latch jambs, 1/8 in. (3 mm) along the meeting edge of doors in pairs, 3/8 in. (10 mm) at the bottom edge of a single swinging door, and 1/4 in. (6 mm) at the bottom of a pair of doors.

3-3.2 Clearances for horizontal sliding doors not mounted within guides shall be as follows:

With a minus 1/8-in. (3-mm) tolerance: 1/2 in. (12.7 mm) between door and wall surfaces, 3/8 in. (10 mm) between door and floor structure, and 1/4 in. (6 mm) between the meeting edges of center-parting doors. A maximum overlap of 4 in. (102 mm) of the door over the wall opening at sides and top shall be provided.

3-3.3 Clearances for vertical sliding doors moving within guides shall be as follows:

With a minus 1/8-in. (3-mm) tolerance: 1/2 in. (12.7 mm) between the door and wall surfaces along top or bottom door edges, or both, with guides mounted directly to the wall surface, and 3/16 in. (5 mm) between meeting edges of bi-parting doors or 3/16 in. (5 mm) between the door and the floor structure or sill.

3-3.4 Clearances for horizontal slide-type elevator doors shall be as follows:

With a minus 1/8-in. (3-mm) tolerance: 3/8 in. (10 mm) between the door and wall surface, 3/8 in. (10 mm) between multisection door panels, and 3/8 in. (10 mm) from the bottom of a panel to the sill. Multisection door panels shall overlap 3/4 in. (19 mm). Door panels shall overlap the wall opening 3/4 in. (19 mm) at sides and top.

Chapter 4 Conduct of Tests

4-1 Test Assembly.

4-1.1 The wall or partition in which the door assembly is tested shall be adequate to retain the assembly throughout the fire and the hose stream test; it shall be constructed of masonry or other materials representative of wall or partition construction.

4-1.2 Door frame wall anchors, where used, shall be suitable for the wall or partition construction.

4-2 Fire Endurance Test.

4-2.1 Furnace Pressure.

(a) The vertical pressure distribution within the furnace shall be measured in the following manner:

1. The vertical pressure distribution within the furnace shall be measured by at least two probes separated by a vertical distance [minimum of 6 ft (1.8 m)] within the furnace. Based on the vertical separation and pressure differences of the probes, a calculation of the neutral plane (zero differential pressure) location shall be made.

2. The pressure-sensing probes shall be as shown in either Figure 4-2.1(a) or (b).

3. The pressure-sensing probes shall be located as near as practical to the vertical centerline of the furnace opening.

4. The pressure at each location shall be measured using a differential pressure instrument capable of reading in graduated increments no greater than 0.01 in wg (2.5 Pa) with a precision of not less than ± 0.005 in wg (± 1.25 Pa). The differential pressure measurement instrument shall be located to minimize "stack" effects caused by vertical runs of pressure tubing between the furnace probe and instrument locations.

(b) The furnace pressure shall be measured and recorded throughout the test at intervals not exceeding 1 minute.

(c) Control of the furnace pressure shall be established beginning no longer than 10 minutes after the start of the test and shall be maintained throughout the remainder of the test period.

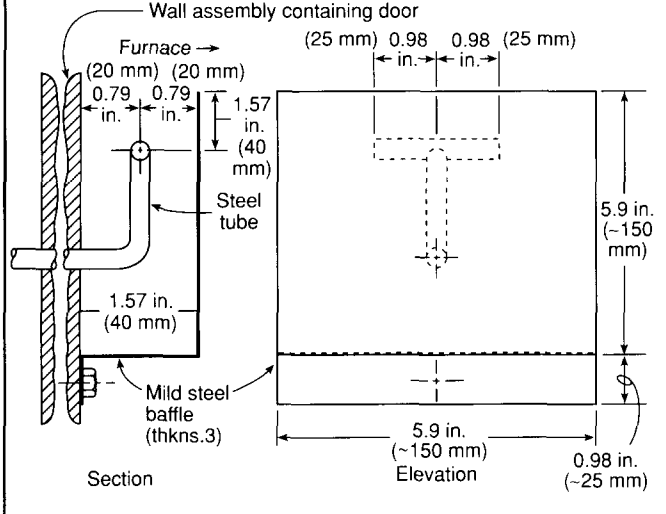


Figure 4-2.1(a) Static pressure-measuring device dimensions.

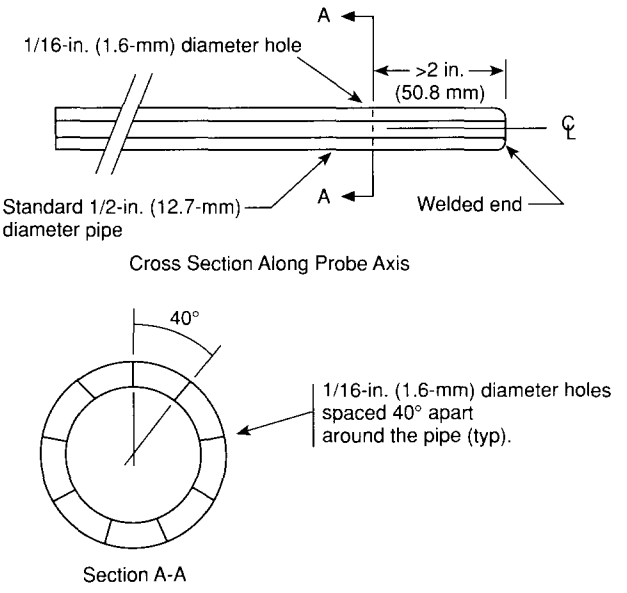


Figure 4-2.1(b) Pressure probe.

4-2.2 The test shall be continued until the exposure period of the desired classification or rating is reached, unless the conditions of acceptance required in Chapter 5 are exceeded in a shorter period.

4-3 Hose Stream Test.

4-3.1* Immediately following the fire endurance test, the test assembly shall be subjected to the impact, erosion, and cooling effects of a hose stream directed first at the middle and then at all parts of the exposed surface, making changes in direction slowly.

*Exception:** *For 20-minute rated test assemblies, at the option of the test sponsor, the hose stream test shall not be required to be performed.*

4-3.2 The stream shall be delivered through a 2½-in. (64-mm) hose discharging through a national standard play pipe as described in UL 385, *Standard for Safety Play Pipes for Water Supply Testing in Fire-Protection Service*. The play pipe shall have an overall length of 30 in. (762 mm) and shall be equipped with a 1⅛-in. (28.5-mm) discharge tip of the standard-taper, smooth-bore pattern without shoulder at the orifice. The play pipe shall be fitted with a 2½-in. (64-mm) inside dimension × 6-in. (153-mm) long nipple mounted between the hose and the base of the play pipe. The pressure tap for measuring the water pressure at the base of the nozzle shall be normal to the surface of the nipple, shall be centered in its length, and shall not protrude into the water stream. The water pressure shall be measured with a suitable pressure gauge [minimum 0-50 psi (0-344.8 kPa)] graduated in no greater than 2 psi (13.8 kPa) increments. The water pressure and duration of application shall be as specified in Table 4-3.2.

4-3.3 The tip of the nozzle shall be located 20 ft (6 m) from and on a line normal to the center of the test door. If impossible to be so located, the nozzle shall be permitted to be on a line deviating not more than 30° from the line normal to the center of the test door. Where so located, the distance from the center shall be less than 20 ft (6 m) by a length equal to 1 ft (0.3 m) for each 10° of deviation from the normal.

Table 4-3.2* Water Pressure at Base of Nozzle and Duration of Application

Desired Rating	Water Pressure at Base of Nozzle psi (kPa)	Duration of Application sec/ft² (sec/m²)
3 hr and over	45 (310)	3.0 (32)
1½ hr and over, if less than 3 hr	30 (207)	1.5 (16)
1 hr and over, if less than 1½ hr	30 (207)	0.0 (10)
Less than 1 hr	30 (207)	0.6 (6)

Chapter 5 Report

5-1 Results.

5-1.1 Results shall be reported based on performance in the tests specified in these test methods. The report shall include:

(a) The performance for the desired exposure period chosen from the following: 20 minutes, 30 minutes, ¾ hour, 1 hour, 1½ hours, or 3 hours and over (in hourly increments);

(b) The temperature measurements of the furnace;

(c) The temperature measurements of the unexposed side;

(d) The pressure measurements made inside the furnace and the calculation showing the position of the neutral plane with respect to the top of the door assembly during the test;

(e) All observations having a bearing on the performance of the test assembly;

(f) Flaming, if any, on the unexposed surface of the door leaf;

(g) The amount of movement of any portion of the edges of the door adjacent to the door frame from the original position (*see Chapter 6*);

(h) The materials and the construction of the door, frame, and wall or partition and the details of the installation, hardware, door frame, and wall anchors, hangers, guides, trim, finish and clearance or lap shall be recorded or appropriately referenced to ensure positive identification or duplication in all respects.

Chapter 6 Conditions of Acceptance

6-1 General.

6-1.1 A door assembly shall be considered as meeting the requirements for acceptable performance where it remains in the opening during the fire endurance test and the hose stream test under the following conditions:

(a) The test assembly shall withstand the fire endurance test and the hose stream test without developing any openings through the assembly.

NOTE: Openings, for purposes of this provision, are defined as through-holes in the assembly that can be seen from the unexposed side when observing the location of the suspected opening from a position perpendicular to the plane of the assembly.

Exception No. 1: Dislodging of small portions of glass light during the hose stream test.

Exception No. 2: Permitted separation between meeting edges of pairs of doors in accordance with 6-2.4, 6-3.4, and 6-3.10.

Exception No. 3: Permitted openings between the bottom edges of doors and sills in accordance with 3-3.1 through 3-3.4 and 6-3.3.

(b) No flaming shall occur on the unexposed surface of a door assembly during the first 30 minutes of the classification period.

(c) After 30 minutes, some intermittent light flames [approximately 6 in. (152 mm) long], shall be permitted to occur along the edges of doors for periods not to exceed 5 minutes.

(d) Light flaming shall be permitted to occur during the last 15 minutes of the classification period on the unexposed surface area of the door, provided it is contained within a distance of 1½ in. (38 mm) from a vertical door edge and within 3 in. (76 mm) from the top edge of the door and within 3 in. (76 mm) from the top edge of the frame of a vision panel.

(e) Where hardware is evaluated for use on fire doors, it shall secure the door closed in accordance with the conditions of acceptance for an exposure of 3 hours and, in addition, the latch bolt shall remain projected and shall be intact after the test. The hardware shall not be required to be operable following the test.

6-2 Swinging Doors.

6-2.1 The movement of swinging doors shall not result in any portion of the edges adjacent to the door frame moving in a direction that is perpendicular to the plane of the door a distance from its original position that is greater than the thickness of the door during the first half of the classification period, or greater than 1½ times the door thickness during the entire classification period, or moving as a result of the hose stream test.

6-2.2 The movement of swinging doors mounted in pairs shall not result in any portion of the meeting edges moving from its original position a distance that is greater than the thickness of the door away from the adjacent door edge in a direction that is perpendicular to the plane of the doors during the entire classification period, or as a result of the hose stream test.

6-2.3 An assembly consisting of a pair of swinging doors incorporating an astragal shall not separate in a direction parallel to the plane of the doors by more than ¾ in. (19 mm) or a distance equal to the throw of the latch bolt at the latch location.

6-2.4 An assembly consisting of a pair of swinging doors, without an overlapping astragal, for a fire and hose stream exposure of 1½ hours or less, shall not separate along the meeting edges by more than ⅜ in. (10 mm), including the initial clearance between doors.

6-2.5 An assembly consisting of a single swinging door shall not separate by more than ½ in. (13 mm) at the latch location.

6-2.6 Door frames to be evaluated with doors shall remain securely fastened to the wall on all sides and shall not permit through-openings between the frame and the doors or between the frame and the adjacent wall.

6-3 Sliding Doors.

6-3.1 Doors mounted on the face of the wall shall not move from the wall sufficiently to develop a separation of more than 2 7/8 in. (73 mm) during the entire classification period or as a result of the hose stream test.

6-3.2 Doors mounted in guides shall not release from the guides, and the guides shall not loosen from the fastenings.

6-3.3 The bottom bar of rolling steel doors shall not separate from the floor structure by more than 3/4 in. (19 mm) during the entire classification period or as a result of the hose stream test.

6-3.4 The meeting edge of center-parting horizontal sliding doors and bi-parting vertical sliding doors shall not separate by a distance greater than the door thickness measured in a direction perpendicular to the plane of the doors.

6-3.5 The meeting edges of center-parting horizontal sliding doors and bi-parting vertical sliding doors without an overlapping astragal, for a fire and hose stream exposure of 1 1/2 hours or less, shall not separate in a direction parallel to the plane of the doors by more than 3/8 in. (10 mm) along the meeting edges, including the initial clearance between doors.

6-3.6 The meeting edges of center-parting horizontal sliding doors incorporating an astragal shall not separate in a direction parallel to the plane of the doors by more than 3/4 in. (19 mm) or a distance equal to the throw of the latch bolt along the meeting edges.

6-3.7 The bottom edge of service-counter doors or single-slide dumbwaiter doors shall not separate from the sill by more than 3/8 in. (10 mm).

6-3.8 A resilient astragal, if provided, shall not deteriorate sufficiently to result in through-openings during the fire endurance test, but small portions shall be permitted to be dislodged during the hose stream test.

6-3.9 The lap edges of horizontal slide-type elevator doors, including the lap edges of multisection doors, shall not move from the wall or adjacent panel surfaces sufficiently to develop a separation of more than 2 7/8 in. (73 mm) during the entire classification period or immediately following the hose stream test.

6-3.10 The meeting edges of center-parting horizontal slide-type elevator door assemblies, for a fire and hose stream exposure of 1 1/2 hours or less, shall not move apart more than 1 1/4 in. (32 mm) as measured in any horizontal plane during the entire classification period or immediately following the hose stream test.

Chapter 7 Referenced Publications

7-1 The following document or portions thereof are referenced within this standard and shall be considered part of the requirements of this document. The edition indicated for the reference is the current edition as of the date of the NFPA issuance of this document.

7-1.1 UL Publication. Underwriters Laboratories, 333 Pfingsten Road, Northbrook, IL 60062.

UL 385, *Standard for Safety Play Pipes for Water Supply Testing in Fire-Protection Service*, 1993.

Appendix A Explanatory Material

This Appendix is not a part of this NFPA document but is included for informational purposes only.

A-2-3.1(b) Refractory Fiber Pads. Comparative fire tests have demonstrated that a refractory fiber material designated Ceraform 126®,[1] placed with the softer surfaces in contact with the thermocouple, should be substituted for the previously specified asbestos pad where the distortion of the unexposed face of the sample is minimal. The pads are relatively rigid and should not be used on surfaces subject to sharp distortions or discontinuities during the test.[2] The specifications for Ceraform 126 material are as follows:

(a) Length and width, 6 in. ± 1/8 in. (152 mm ± 3 mm).

(b) Thickness, 0.375 in. ± 0.063 in. (9.5 mm ± 1.6 mm). The thickness measurement should be made under the light load of a 1/2-in. (13-mm) diameter pad of a dial micrometer gauge.

(c) Dry weight, 0.147 lb ± 0.053 lb (67 g ± 24 g).

(d) Thermal conductivity [at 150°F (66°C)], 0.37 Btu in./h ft^2–F ± 0.03 Btu in./h ft^2–F (0.053W/m-K) ± 0.004 W/m-K.

(e) Hardness indentation on the soft face shall be 0.075 in. ± 0.025 in. (1.9 mm ± 0.6 mm). Indentation shall be determined in accordance with ASTM Test Method C569. Modified Brinell values of hardness are determined by the following equation:

$$\text{Hardness} = \frac{2.24}{y}$$

where y = the measured indentation in inches.

(f) The pads should be shaped by wetting, forming, and then drying to constant weight to provide complete contact on sharply contoured surfaces.

A-4-3.1 Additional information on the hose stream application can be found in Section B-13.

A-4-3.1 Exception. The elimination of the hose stream test for some 20-minute rated assemblies is based on their field application.

A-4-3.2 Table. The exposed area is permitted to be calculated using the outside dimensions of the test specimen, including a frame, hangers, tracks, or other parts of the assembly, if provided, but normally not including the wall into which the specimen is mounted. Where multiple test specimens are mounted in the same wall, the rectangular or square wall area encompassing all of the specimens is considered the exposed area, since the hose stream has to traverse this area during its application.

Appendix B Commentary

This Appendix is not a part of the requirements of this NFPA document but is included for informational purposes only.

The numbers in parentheses refer to the list of references at the end of this appendix.

[1] Ceraform 126 is a registered trade name of Manville Specialty Products Group, P.O. Box 5108, Denver, CO 8-217.

[2] Supporting data are available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103, Request RR:E05-1004.

B-1 Introduction. This commentary has been prepared to provide the user of NFPA 252, *Standard Methods of Fire Tests of Door Assemblies*, with background information on the development of the standard and its application in the fire protection of buildings. It also provides guidance in the planning and performance of fire tests and in the reporting of results. No attempt has been made to incorporate all of the available information on fire testing in this commentary. The serious student of fire testing is strongly urged to examine the referenced documents for a better appreciation of the history of fire-resistant design and the intricate problems associated with testing and with interpretation of test results.

B-2 Application.

B-2.1 Compartmentation of buildings by fire-resistive walls has been recognized for many years as an efficient method of restricting fires to the area of origin [1, 2, 5, 6, 7, 8, 16] or limiting their spread. The functional use of buildings, however, demands a reasonable amount of communication between compartments necessitating openings in these fire-resistive walls. Fire door assemblies are utilized to protect these openings and maintain the integrity of the fire barrier [11]. Openings in walls have been classified by fire protection standards [8, 9, 15] and building codes in accordance with the location and purpose of the wall in which the opening exists, and these standards and codes specify the fire rating of the assembly required to protect the openings.

B-2.2 These fire protection standards and building codes permit labeled wire glass panels and other penetrations, such as labeled ventilation louvers, in some rated doors. Refer to the model building codes, NFPA 80, *Standard for Fire Doors and Fire Windows* [8], and the specific fire door manufacturer's label service for information on the types and sizes of these openings.

B-2.3 Fire doors should be properly installed to maintain their fire rating. NFPA 80, *Standard for Fire Doors and Fire Windows* [8], and the specific fire door manufacturer's label service should be consulted for details on the installation of fire door assemblies and for limitations on the application of specific labeled fire doors.

B-3 Historical Aspects. The first effort to test fire doors was reported in a series of tests conducted in Germany in 1893 [3, 4, 10]. The British Fire Prevention Committee began testing in 1899 and produced a *Standard Table of Fire Resisting Elements*, including *Fire Resisting Doors* [1]. Underwriters Laboratories Inc. was involved in testing and listing fire doors shortly after 1900, using its own standards. In 1941, ASTM adopted ASTM E152, *Standard Methods of Fire Tests of Door Assemblies*, on fire door assembly tests.

B-4 Scope and Significance.

B-4.1 NFPA 252 provides methods for measuring the relative performance of fire door assemblies where exposed to predetermined standard fire conditions. The standard provides for testing of several classifications, types, and methods of door operation including swinging, sliding, rolling, and sectional doors [8]. Since the effectiveness of the opening protection is dependent upon the entire assembly, proper attention should be paid to the installation as a unit. Accordingly, fire door assemblies are required to be tested as an assembly of all necessary elements and equipment, including the door frame and hardware.

B-4.2 Fire protection ratings are assigned to indicate that the assembly has continued to perform as required for periods of 1/3, 1/2, 3/4, 1, 1 1/2, 3, or more hours. Labels on assemblies also carry the letter designations of A, B, C, D, or E. These letter designations are not a part of the NFPA 252 standard classification system but are used to designate the class of opening for which the door is designed as determined by other standards [8, 9].

B-4.3 The 1/3-hour or 20-minute fire-rated door is relatively new. Concern about the uniform adequacy of the 1 3/4-in. (44.5-mm) solid bonded wood core construction and the difficulty of determining the equivalency of other types of doors led to a voluntary consensus to test such doors for 20 minutes in the test furnace described in this document using the same acceptance criteria specified for door assemblies traditionally tested for a longer period of time, with the exception that the hose stream test is required by the test method but might not be required by regulatory codes.

B-4.4 It is common for a fire door to have a fire protection rating lower than the wall in which it is installed; for example, a 1 1/2-hour fire-rated door in a wall having a fire resistance rating of 2 hours. This is justified in part by the fact that, under normal conditions of use, the potential fire exposure in the vicinity of a door opening is decreased, since there will be a clear space on both sides of the opening for traffic purposes. Wall assemblies are put together at the site, and their uniformity is not as certain as a fire-rated door assembly that is factory assembled (e.g., undesigned penetrations tend to show up in wall assemblies). For this reason, any factor of safety that is tacitly called for in a wall assembly requirement should exceed that of a door assembly. If the opening is not used, combustibles could be piled against the door, and the assumed enclosure protection will not be maintained. In these instances, ratings for the openings should be equivalent to the rating of the wall, or precautions should be taken to prevent storage of combustibles against the doors [2, 8].

B-5 Limitations.

B-5.1 The test methods intend that the door be tested until the conditions of acceptance are met for the desired exposure period unless the conditions of acceptance are exceeded in a shorter period. It is not intended that a fire door subjected to a building fire is satisfactory for use following the fire.

B-5.2 The variations in material performance preclude any prediction of an assembly's performance in walls other than those types used in the test. The standard also makes no provisions for measuring the generation of smoke and gases or other products of combustion from the unexposed side of the door. Temperature measurements on the unexposed side, where recorded, are stopped after 30 minutes.

B-6 Furnace.

B-6.1 The methods provide details on the operating characteristics and temperature-measurement requirements of the test furnace. The walls of the furnace typically should be of furnace refractory materials and should be sufficiently rugged to maintain the overall integrity of the furnace during the fire exposure period.

B-6.2 The thermocouples in the furnace are located 6 in. (152 mm) from the face of the door or the wall in which the door is installed. Otherwise, no furnace depth is specified. A depth of 8 in. to 18 in. (203 mm to 457 mm) is considered desirable by most laboratories. Reference documents should be consulted for a more comprehensive review of furnace design and performance [12, 13].

B-7 Time–Temperature Curve.

B-7.1 A specific time–temperature relationship for the test fire is defined in the standard and in Table 2-1.2. The actual recorded time–temperature condition obtained in the furnace is required to be within specified percentages of those of the standard curve. The number and type of temperature-measuring devices are outlined in the standard. Specific standard practices for location and use of these temperature-measuring devices are also outlined in the standard.

B-7.2 The standard time–temperature (t–T) curve used in NFPA 252 represents a severe building fire [5]. The curve was adopted in 1918 as a result of several conferences by eleven technical organizations, including testing laboratories, insurance underwriters, fire protection associations, and technical societies [14, 15, 16]. It should be recognized that the t–T relationship of these test methods represents only one real fire situation [14, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27].

B-8 Furnace Control. The standard contains specific instruction for measuring temperatures in the furnace and for selection of the required thermocouples. Thermocouples of the design specified are sufficiently rugged to retain accuracy throughout anticipated test periods. However, their massive construction results in a significant time delay in response to temperature change and results in temperatures exceeding the indicated temperatures during the early stages of the test period when the temperature rises rapidly. The iron or porcelain tubes surrounding the junction and leads of the thermocouple provide a shield against degradation of the junction and increase the thermal inertia. It is customary for laboratories to replace furnace thermocouples after three or four accumulated hours of use.

B-9 Unexposed Surface Temperature.

B-9.1 Conditions of acceptance for fire-resistive walls specify that the temperature increase on the unexposed side of the wall not exceed an average of 250°F (121°C) above ambient, and that there be no passage of flames or gases hot enough to ignite combustibles. It is obvious that the necessity of maintaining some clearances for efficient operation of the door and the possibility of warping preclude completely any attempt to restrict escape of gases and minor flames on the periphery of doors.

B-9.2 The standard describes a standard procedure for measuring the unexposed surface temperatures. However, unexposed surface temperatures are not a condition of acceptance for NFPA 252. Building regulations do restrict temperature transmission for some wall-opening protectives [8, 9]. For instance, it is usual for codes to limit the temperature rise on the unexposed side of fire doors protecting exit stairways to 450°F (232°C) during the first 30 minutes of test. This criterion assumes that a higher temperature would provide enough radiant heat to discourage if not prevent occupants from passing by the door during an emergency. It is current practice for testing laboratories to provide labels on fire doors indicating that the maximum transmitted temperature on the unexposed side is 250°F, 450°F, or 650°F (121°C, 232°C, or 343°C) above ambient. If not indicated on the label, the temperature rise during the first 30 minutes might or might not be in excess of 650°F (343°C). Temperature rise on the unexposed side of glass panels and louvers is not measured.

B-10 Test Assemblies.

B-10.1 NFPA 252 provides a relative measure of performance for door assemblies. In order to establish confidence that the tested doors will perform in a building as expected, the tested assembly and its installation in the test frame need to be representative of actual use conditions. Therefore, NFPA 80, *Standard for Fire Doors and Fire Windows* [8], or such other standards or specifications should be consulted before testing an assembly.

B-10.2 The standard provides additional minimum requirements including direction of door swing, location in relation to the exposed side of the wall, and specific clearance between the door and its frame or wall, or both. Regardless of other specifications, these instructions should be followed in order to make a comparative judgment on test results.

B-11 Conduct of Tests. The test frame or wall in which a door assembly is installed should be rugged enough to endure exposure to the fire during the specified period without affecting the door assembly. Traditionally, this wall has been of masonry construction. Today, fire doors are installed in other than masonry walls and have been tested in walls framed with metal and wood studs covered with a number of materials.

B-12 Furnace Pressures.

B-12.1 A fire in a building compartment creates both negative and positive pressures on door assemblies depending on atmospheric conditions, height above ground, wind conditions, and ventilation of the compartment at the start of and during the fire.

B-12.2 In the past, NFPA 252 specified that the pressure in the furnace be maintained as nearly equal to atmospheric pressure as possible. This method of test generally resulted in the test assembly being subjected to a negative pressure during the test, since most laboratories set the neutral plane in the furnace at or above the top of the assembly. As revised, the standard permits tests to be conducted under any pressure, depending on the needs and/or requirements of the manufacturer, test laboratory, or the authority having jurisdiction. The pressure in the furnace is required to be measured and reported.

B-13 Hose Stream Test. Immediately following a fire test, the test frame is removed from the furnace, and the door assembly is subjected to the impact, erosion, and cooling effects of a stream of water from a 2½-in. (63.5-mm) hose discharging through a standard play pipe equipped with a 1⅛-in. (28.5-mm) tip under specified pressures. Just as the standard fire exposure is not intended to be representative of any or all actual fire conditions, the standard hose stream exposure is not intended to be representative of any actual fire-fighting or fire suppression activity. The

fire exposure test and the hose stream test provide a relative measure of the performance of constructions and assemblies under specified, standard exposure conditions.

The hose stream test provides a method for evaluating the integrity of constructions and assemblies and eliminating inadequate materials or constructions. The cooling, impact, and erosion effects of the hose steam provide important tests of the integrity of the specimen being evaluated.

The rapid cooling and thermal shock imposed by the hose stream test following the fire exposure test eliminates materials that are subject to failure under such conditions. The orthogonal load imposed by the hose stream subjects vertical specimens to a load in a direction perpendicular to the normal dead load on the specimen. This effect eliminates construction or assemblies with marginal factors of safety for structural loading. The erosion effects of the hose stream might remove char formed during the standard fire exposure that provide minimal contribution to the structural strength of the assembly.

The hose stream test provides a real and measurable load on the specimen. Testing by Ingberg at the National Bureau of Standards reported that the standard hose stream test produced a 57.7-lb (26.2 kg) force on the specimen.

The combined effects of the hose stream test provide a method for screening the integrity of a specimen that cannot be achieved by any other means.

B-14 Conditions of Acceptance. The standard provides a specific set of conditions by which the performance of the door is measured, the most important being that the door remain in place during both the fire test and the hose stream test. Instructions for conducting the hose stream test are detailed in the standard.

B-15 References.

[1] Bird and Docking, *Fire in Buildings*, D. Van-Nostrand Co., Inc., New York, 1949.

[2] Ferguson, R. S., "Principles of Fire Protection," National Building Code of Canada Technical Paper No. 272, Div. of Building Research, National Research Council of Canada, Ottawa, March 1970.

[3] Shoub, Harry, "Early History of Fire Endurance Testing in the United States," Symposium on Fire Test Methods, ASTM STP 301, American Society of Testing and Materials, 1961.

[4] Konicek, L. and Lie, T. T., "Temperature Tables for Ventilation Controlled Fires," Building Research Note No. 94, National Research Council of Canada, September 1974.

[5] Gordon, C., "Considerations of Life Safety and Building Use," DBR Paper No. 699, Division of Building Research, National Research Council of Canada, Ottawa, January 1977.

[6] Gross, D., "Field Burnout Tests of Apartment Dwelling Units," Building Science Series 10, U.S. Dept. of Commerce, National Bureau of Standards, Sept. 29, 1967.

[7] Law, Margaret, "Radiation from Fires in a Compartment," Fire Research Technical Paper No. 20, Her Majesty's Stationery Office, London, 1968.

[8] NFPA 80, *Standard for Fire Doors and Fire Windows*, 1992, National Fire Protection Association.

[9] Model Building Codes: *Basic Building Code*, Building Officials and Code Administrators International Inc.; *Uniform Building Code*, International Conference of Building Officials Inc.; *Standard Building Code*, Southern Building Code Congress International.

[10] Babrauskas, Vytenis and Williamson, Robert Brady, "The Historical Basis of Fire Resistance Testing, Part I and Part II," *Fire Technology*, Vol. 14, No. 3 and No. 4, 1978, pp. 184-194, 304-316.

[11] Shoub, H. and Gross, D., "Doors as Barriers to Fire and Smoke," Building Science Series 3, National Bureau of Standards, March 25, 1966.

[12] Seigel, L. G., "Effects of Furnace Design on Fire Endurance Test Results," Fire Test Performance, ASTM STP 464, American Society of Testing and Materials, 1970, pp. 56-67.

[13] Harmathy, T. Z., "Design of Fire Test Furnaces," *Fire Technology*, Vol. 5, No. 2, May 1969, pp. 140-150.

[14] Seigel, L. G., "The Severity of Fires in Steel-Framed Buildings," Symposium No. 2, Her Majesty's Stationery Office, 1968, London. Proceedings of the Symposium held at the Fire Research Station, Boreham Woods, Herts (England), January 1967.

[15] *Fire Protection Handbook*, Revised Fourteenth Edition, National Fire Protection Association, Boston, 1978.

[16] Harmathy, T. Z., "Designer's Option: Fire Resistance or Ventilation," Technical Paper No. 436, Division of Building Research, National Research Council of Canada, Ottawa, NRCC 14746, 1974.

[17] Odeen, Kai, "Theoretical Study of Fire Characteristics in Enclosed Spaces," Bulletin No. 10, Royal Institute of Technology, Division of Building Construction, Stockholm, 1963.

[18] Shorter, G. W., "The Fire Protection Engineer and Modern Building Design," *Fire Technology*, Vol. 4, No. 3, August 1968, pp. 206-213.

[19] Stone, Richard, "Danger—Flammable," *Wall Street Journal*, Dec. 8, 1970.

[20] Ryan, J. E., "Assessment of Fire Hazards in Buildings, Ignition, Heat Release, and Noncombustibility of Materials," ASTM STP 502, American Society of Testing and Materials, 1972.

[21] Harmathy, T. Z., "Design Approach to Fire Safety in Buildings," *Progressive Architecture*, April 1974, pp. 82-87, National Research Council of Canada, Ottawa, NRCC 14076.

[22] Harmathy, T.Z., "A New Look at Compartment Fires Part I and Part II," *Fire Technology*, Vol. 8, No. 3 and No. 4, 1972, pp. 196-217, 326-351.

[23] Robertson, A. F. and Gross, Daniel, "Fire Load, Fire Severity, and Fire Endurance," Fire Test Performances, ASTM, STP 464, American Society of Testing and Materials, 1970.

[24] Ingberg et al., "Combustible Contents in Buildings," National Bureau of Standards BMS 149, July 1957.

[25] Heselden, A. J. M., "Parameters Determining the Severity of Fire," Symposium No. 2, Her Majesty's Stationery Office, 1968, London. Proceedings of the Symposium held at the Fire Research Station, Boreham Woods, Herts (England), January 1967.

[26] Gross, Daniel and Robertson, A. F., "Experimental Fires in Enclosures," Tenth Symposium (International) on Combustion, The Combustion Institute, 1965, pp. 731-942.

[27] Harmathy, T. Z., "Performance of Building Elements in Spreading Fire," DBR Paper No. 752, National Research Council of Canada, NRCC 16477, *Fire Research*, Vol. 1, 1977/1978, pp. 119-132.

Appendix C Referenced Publications

C-1 The following documents or portions thereof are referenced within this standard for informational purposes only and thus are not considered part of the requirements of this document. The edition indicated for each reference is the current edition as of the date of the NFPA issuance of this document.

C-1.1 ASTM Publications. American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM C569, *Standard Test Method for Indentation Hardness of Performed Thermal Insulation*, 1983 (Discontinued 1989).

ASTM Research Report E05-1004, Research Report: *Support Data for Alternate Pads for E119 and B152*, May 1982.

Index

The NFPA Codes and Standards Development Process

Since 1896, one of the primary purposes of the NFPA has been to develop and update the standards covering all areas of fire safety.

Calls for Proposals
The code adoption process takes place twice each year and begins with a call for proposals from the public to amend existing codes and standards or to develop the content of new fire safety documents.

Report on Proposals
Upon receipt of public proposals, the technical committee members meet to review, consider, and act on the proposals. The public proposals – together with the committee action on each proposal and committee-generated proposals – are published in the NFPA's Report on Proposals (ROP). The ROP is then subject to public review and comment.

Report on Comments
These public comments are considered and acted upon by the appropriate technical committees. All public comments – together with the committee action on each comment – are published as the Committee's supplementary report in the NFPA's Report on Comments (ROC).

The committee's report and supplementary report are then presented for adoption and open debate at either of NFPA's semi-annual meetings held throughout the United States and Canada.

Association Action
The Association meeting may, subject to review and issuance by the NFPA Standards Council, (a) adopt a report as published, (b) adopt a report as amended, contingent upon subsequent approval by the committee, (c) return a report to committee for further study, and (d) return a portion of a report to committee.

Standards Council Action
The Standards Council will make a judgement on whether or not to issue an NFPA document based upon the entire record before the Council, including the vote taken at the Association meeting on the technical committee's report.

Voting Procedures
Voting at an NFPA Annual or Fall Meeting is restricted to members of record for 180 days prior to the opening of the first general session of the meeting, except that individuals who join the Association at an Annual or Fall Meeting are entitled to vote at the next Fall or Annual Meeting.

"Members" are defined by Article 3.2 of the Bylaws as individuals, firms, corporations, trade or professional associations, institutes, fire departments, fire brigades, and other public or private agencies desiring to advance the purposes of the Association. Each member shall have one vote in the affairs of the Association. Under Article 4.5 of the Bylaws, the vote of such a member shall be cast by that member individually or by an employee designated in writing by the member of record who has registered for the meeting. Such a designated person shall not be eligible to represent more than one voting privilege on each issue, nor cast more than one vote on each issue.

Any member who wishes to designate an employee to cast that member's vote at an Association meeting in place of that member must provide that employee with written authorization to represent the member at the meeting. The authorization must be on company letterhead signed by the member of record, with the membership number indicated, and the authorization must be recorded with the President of NFPA or his designee before the start of the opening general session of the Meeting. That employee, irrespective of his or her own personal membership status, shall be privileged to cast only one vote on each issue before the Association.

Sequence of Events Leading to Publication of an NFPA Committee Document

Call for proposals to amend existing document or for recommendations on new document.

▼

Committee meets to act on proposals, to develop its own proposals, and to prepare its report.

▼

Committee votes on proposals by letter ballot. If two-thirds approve, report goes forward. Lacking two-thirds approval, report returns to committee.

▼

Report is published for public review and comment. (Report on Proposals - ROP)

▼

Committee meets to act on each public comment received.

▼

Committee votes on comments by letter ballot. If two-thirds approve, supplementary report goes forward. Lacking two-thirds approval, supplementary report returns to committee.

▼

Supplementary report is published for public review. (Report on Comments - ROC).

▼

NFPA membership meets (Annual or Fall Meeting) and acts on committee report (ROP and ROC).

▼

Committee votes on any amendments to report approved at NFPA Annual or Fall Meeting.

▼

Complaints to Standards Council on Association action must be filed within 20 days of the NFPA Annual or Fall Meeting.

▼

Standards Council decides, based on all evidence, whether or not to issue standard or to take other action, including hearing any complaints.

▼

Appeals to Board of Directors on Standards Council action must be filed within 20 days of Council action.

FORM FOR PROPOSALS ON NFPA TECHNICAL COMMITTEE DOCUMENTS

Mail to: Secretary, Standards Council
National Fire Protection Association, 1 Batterymarch Park, Quincy, Massachusetts 02269-9101
Fax No. 617-770-3500

Note: All proposals must be received by 5:00 p.m. EST/EDST on the published proposal-closing date.

If you need further information on the standards-making process, please contact the Standards Administration Department at 617-984-7249.

Date 9/18/93 **Name** John B. Smith **Tel. No.** 617-555-1212

Company _____

Street Address 9 Seattle St., Seattle, WA 02255

Please Indicate Organization Represented (if any) Fire Marshals Assn. of North America

1. a) NFPA Document Title National Fire Alarm Code **NFPA No. & Year** NFPA 72, 1993 ed.

b) Section/Paragraph 1-5.8.1 (Exception No.1)

2. Proposal recommends: (Check one)
- ☐ **new text**
- ☐ **revised text**
- ☒ **deleted text**

FOR OFFICE USE ONLY
Log # _____
Date Rec'd _____

3. Proposal (include proposed new or revised wording, or identification of wording to be deleted):

Delete exception.

4. Statement of Problem and Substantiation for Proposal: (Note: State the problem that will be resolved by your recommendation; give the specific reason for your proposal including copies of tests, research papers, fire experience, etc. If more than 200 words, it may be abstracted for publication.)

A properly installed and maintained system should be free of ground faults. The occurrence of one or more ground faults should be required to cause a "trouble" signal because it indicates a condition that could contribute to future malfunction of the system. Ground fault protection has been widely available on these systems for years and its cost is negligible. Requiring it on all systems will promote better installations, maintenance and reliability.

5. ☒ This Proposal is original material. (Note: Original material is considered to be the submitter's own idea based on or as a result of his/her own experience, thought, or research and, to the best of his/her knowledge, is not copied from another source.)

☐ **This Proposal is not original material; its source (if known) is as follows:** _____

Note 1: Type or print legibly in black ink.
Note 2: If supplementary material (photographs. diagrams, reports, etc.) is included, you may be required to submit sufficient copies for all members and alternates of the technical committee.

I hereby grant NFPA the non-exclusive, royalty-free rights, including non-exclusive, royalty-free rights in copyright, in this proposal and I understand that I acquire no rights in any publication of NFPA in which this proposal in this or another similar or analogous form is used.

John B. Smith
Signature (Required)

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FORM FOR PROPOSALS ON NFPA TECHNICAL COMMITTEE DOCUMENTS

Mail to: Secretary, Standards Council
National Fire Protection Association, 1 Batterymarch Park, Quincy, Massachusetts 02269-9101
Fax No. 617-770-3500

Note: All proposals must be received by 5:00 p.m. EST/EDST on the published proposal-closing date.

If you need further information on the standards-making process, please contact the Standards Administration Department at 617-984-7249.

Date _____ **Name** _____ **Tel. No.** _____

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1. a) NFPA Document Title _____ **NFPA No. & Year** _____

b) Section/Paragraph _____

2. Proposal Recommends: (Check one)
- ❑ **new text**
- ❑ **revised text**
- ❑ **deleted text**

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3. Proposal (include proposed new or revised wording, or identification of wording to be deleted):

4. Statement of Problem and Substantiation for Proposal: (Note: State the problem that will be resolved by your recommendation; give the specific reason for your proposal including copies of tests, research papers, fire experience, etc. If more than 200 words, it may be abstracted for publication.)

5. ❑ This Proposal is original material. (Note: Original material is considered to be the submitter's own idea based on or as a result of his/her own experience, thought, or research and, to the best of his/her knowledge, is not copied from another source.)

❑ This Proposal is not original material; its source (if known) is as follows: _____

Note 1: Type or print legibly in black ink.
Note 2: If supplementary material (photographs. diagrams, reports, etc.) is included, you may be required to submit sufficient copies for all members and alternates of the technical committee.

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