

SECTION V—DOORS

FIGURE 5.1—RESISTANCE OF DOORS TO FIRE EXPOSURE

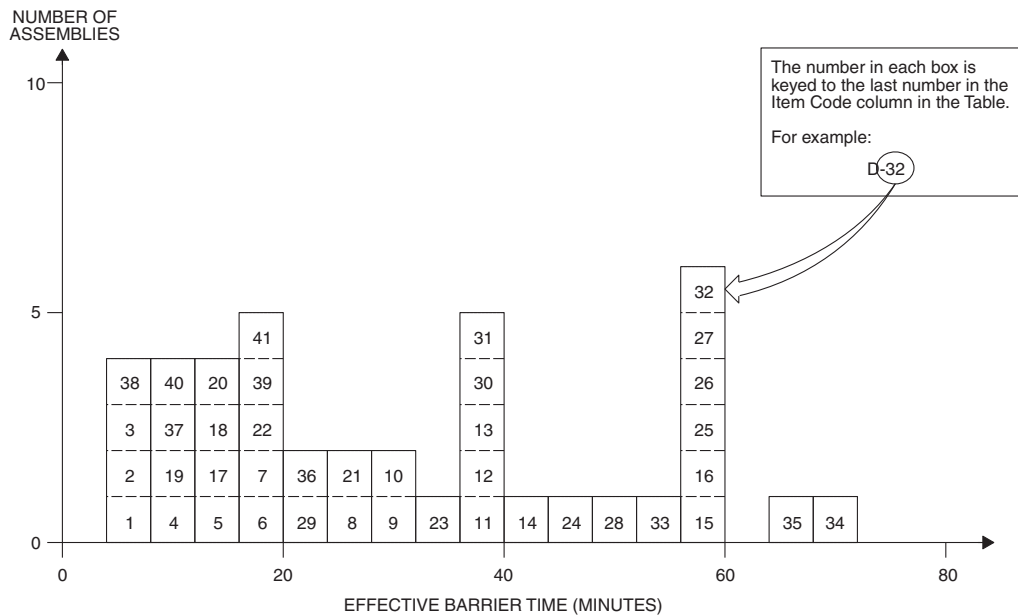


TABLE 5.1—RESISTANCE OF DOORS TO FIRE EXPOSURE

ITEM CODE	DOOR MINIMUM THICKNESS	CONSTRUCTION DETAILS	PERFORMANCE		REFERENCE NUMBER			NOTES	REC. (MIN.)
			EFFECTIVE BARRIER	EDGE FLAMING	PRE-BMS-92	BMS-92	POST-BMS-92		
D-1	3/8"	Panel door; pine perimeter (1 3/8"); painted (enamel).	5 min. 10 sec.	N/A			90	1, 2	5
D-2	3/8"	As above, with two coats U.L. listed intumescent coating.	5 min. 30 sec.	5 min.			90	1, 2, 7	5
D-3	3/8"	As D-1, with standard primer and flat interior paint.	5 min. 55 sec.	N/A			90	1, 3, 4	5
D-4	2 5/8"	As D-1, with panels covered each side with 1/2" plywood; edge grouted with sawdust filled plaster; door faced with 1/8" hardboard each side; paint see (5).	11 min. 15 sec.	3 min. 45 sec.			90	1, 2, 5, 7	10
D-5	3/8"	As D-1, except surface protected with glass fiber reinforced intumescent fire retardant coating.	16 min.	N/A			90	1, 3, 4, 7	15
D-6	1 5/8"	Door detail: As D-4, except with 1/8" cement asbestos board facings with aluminum foil; door edges protected by sheet metal.	17 min.	10 min. 15 sec.			90	1, 3, 4	15
D-7	1 5/8"	Door detail with 1/8" hardboard cover each side as facings; glass fiber reinforced intumescent coating applied.	20 min.	N/A			90	1, 3, 4, 7	20
D-8	1 5/8"	Door detail same as D-4; paint was glass reinforced epoxy intumescent.	26 min.	24 min. 45 sec.			90	1, 3, 4, 6, 7	25

(Continued)

TABLE 5.1—RESISTANCE OF DOORS TO FIRE EXPOSURE—continued

ITEM CODE	DOOR MINIMUM THICKNESS	CONSTRUCTION DETAILS	PERFORMANCE		REFERENCE NUMBER			NOTES	REC. (MIN.)
			EFFECTIVE BARRIER	EDGE FLAMING	PRE-BMS-92	BMS-92	POST-BMS-92		
D-9	1 ⁵ / ₈ "	Door detail same as D-4 with facings of 1/8" cement asbestos board.	29 min.	3 min. 15 sec.			90	1, 2	5
D-10	1 ⁵ / ₈ "	As per D-9.	31 min. 30 sec.	7 min. 20 sec.			90	1, 3, 4	6
D-11	1 ⁵ / ₈ "	As per D-7; painted with epoxy intumescent coating including glass fiber roving.	36 min. 25 sec.	N/A			90	1, 3, 4	35
D-12	1 ⁵ / ₈ "	As per D-4 with intumescent fire retardant paint.	37 min. 30 sec.	24 min. 40 sec.			90	1, 3, 4	30
D-13	1 ¹ / ₂ " (nom.)	As per D-4, except with 24 ga. galvanized sheet metal facings.	39 min.	39 min.			90	1, 3, 4	39
D-14	1 ⁵ / ₈ "	As per D-9.	41 min. 30 sec.	17 min. 20 sec.			90	1, 3, 4, 6	20
D-15	—	Class C steel fire door.	60 min.	58 min.			90	7, 8	60
D-16	—	Class B steel fire door.	60 min.	57 min.			90	7, 8	60
D-17	1 ³ / ₄ "	Solid core flush door; core staves laminated to facings but not each other; Birch plywood facings 1/2" rebate in door frame for door; 3/32" clearance between door and wood frame.	15 min.	13 min.			37	11	13
D-18	1 ³ / ₄ "	As per D-17.	14 min.	13 min.			37	11	13
D-19	1 ³ / ₄ "	Door same as D-17, except with 16 ga. steel; 3/32" door frame clearance.	12 min.	—			37	9, 11	10
D-20	1 ³ / ₄ "	As per D-19.	16 min.	—			37	10, 11	10
D-21	1 ³ / ₄ "	Doors as per D-17; intumescent paint applied to top and side edges.	26 min.	—			37	11	25
D-22	1 ³ / ₄ "	Door as per D-17, except with 1/2" x 1/8" steel strip set into edges of door at top and side facing stops; matching strip on stop.	18 min.	6 min.			37	11	18
D-23	1 ³ / ₄ "	Solid oak door.	36 min.	22 min.			15	13	25
D-24	1 ⁷ / ₈ "	Solid oak door.	45 min.	35 min.			15	13	35
D-25	1 ⁷ / ₈ "	Solid teak door.	58 min.	34 min.			15	13	35
D-26	1 ⁷ / ₈ "	Solid (pitch) pine door.	57 min.	36 min.			15	13	35
D-27	1 ⁷ / ₈ "	Solid deal (pine) door.	57 min.	30 min.			15	13	30
D-28	1 ⁷ / ₈ "	Solid mahogany door.	49 min.	40 min.			15	13	45
D-29	1 ⁷ / ₈ "	Solid poplar door.	24 min.	3 min.			15	13, 14	5
D-30	1 ⁷ / ₈ "	Solid oak door.	40 min.	33 min.			15	13	35
D-31	1 ⁷ / ₈ "	Solid walnut door.	40 min.	15 min.			15	13	20
D-32	2 ⁵ / ₈ "	Solid Quebec pine.	60 min.	60 min.			15	13	60
D-33	2 ⁵ / ₈ "	Solid pine door.	55 min.	39 min.			15	13	40
D-34	2 ⁵ / ₈ "	Solid oak door.	69 min.	60 min.			15	13	60
D-35	2 ⁵ / ₈ "	Solid teak door.	65 min.	17 min.			15	13	60
D-36	1 ¹ / ₂ "	Solid softwood door.	23 min.	8.5 min.			15	13	10
D-37	3/4"	Panel door.	8 min.	7.5 min.			15	13	5
D-38	5/16"	Panel door.	5 min.	5 min.			15	13	5

(Continued)

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			EFFECTIVE BARRIER	EDGE FLAMING	PRE-BMS-92	BMS-92	POST-BMS-92		
D-39	3/4"	Panel door, fire retardant treated.	17 1/2 min.	3 min.			15	13	8
D-40	3/4"	Panel door, fire retardant treated.	8 1/2 min.	8 1/2 min.			15	13	8
D-41	3/4"	Panel door, fire retardant treated.	16 3/4 min.	11 1/2 min.			15	13	8

For SI: 1 inch = 25.4 mm, 1 foot = 305 mm.

Notes:

1. All door frames were of standard lumber construction.
2. Wood door stop protected by asbestos millboard.
3. Wood door stop protected by sheet metal.
4. Door frame protected with sheet metal and weather strip.
5. Surface painted with intumescent coating.
6. Door edge sheet metal protected.
7. Door edge intumescent paint protected.
8. Formal steel frame and door stop.
9. Door opened into furnace at 12 feet.
10. Similar door opened into furnace at 12 feet.
11. The doors reported in these tests represent the type contemporaries used as 20-minute solid-core wood doors. The test results demonstrate the necessity of having wall anchored metal frames, minimum cleaners possible between door, frame and stops. They also indicate the utility of long throw latches and the possible use of intumescent paints to seal doors to frames in event of a fire.
12. Minimum working clearance and good latch closure are absolute necessities for effective containment for all such working door assemblies.
13. Based on British tests.
14. Failure at door - frame interface.