

ISO 834-1:2025-05 (E)

Fire-resistance tests - Elements of building construction - Part 1: General requirements

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Symbols	3
5	Test equipment	3
5.1	General	3
5.2	Furnace	4
5.3	Loading equipment	4
5.4	Restraint and support frames	4
5.5	Instrumentation	4
5.5.1	Temperature	4
5.5.2	Pressure	8
5.5.3	Load	10
5.5.4	Deformation	10
5.5.5	Integrity	10
5.6	Accuracy of measuring equipment	11
6	Test conditions	12
6.1	Furnace temperature	12
6.1.1	Heating curves	12
6.1.2	Tolerances	17
6.2	Furnace pressure differential	17
6.2.1	General	17
6.2.2	Vertical elements	17
6.2.3	Horizontal elements	18
6.3	Loading	18
6.4	Restraint/boundary conditions	18
6.5	Ambient conditions	18
6.6	Deviation from specified test conditions	18
6.7	Calibration	19
6.8	Furnace atmosphere	19
7	Test specimen preparation	19
7.1	Construction	19
7.2	Size	19
7.3	Number of test specimens	20
7.4	Conditioning	20
7.5	Test specimen verification	20
8	Application of instrumentation	21
8.1	Temperature	21
8.1.1	Furnace thermocouples (plate thermometers)	21
8.1.2	Unexposed surface thermocouples	21
8.1.3	Roving thermocouple	22
8.1.4	Interior thermocouples	22
8.2	Pressure	22
8.2.1	Furnaces for vertical elements	22

8.2.2	Furnaces for horizontal elements	22
8.3	Deformation	22
8.4	Integrity	22
8.4.1	Cotton wool pad	22
8.4.2	Gap gauges	23
9	Test procedure	23
9.1	Restraint application	23
9.2	Load application	23
9.3	Commencement of test	24
9.4	Measurements and observations	24
9.4.1	General	24
9.4.2	Temperature	24
9.4.3	Furnace pressure	24
9.4.4	Deformation	24
9.4.5	Integrity	24
9.4.6	Load and restraints	25
9.4.7	General behaviour	25
9.5	Termination of test	25
10	Performance criteria	25
10.1	General	25
10.2	Specific performance criteria	25
10.2.1	General	25
10.2.2	Loadbearing capacity	26
10.2.3	Integrity	26
10.2.4	Insulation	27
11	Validity of the test	27
12	Expression of test results	27
12.1	Fire resistance	27
12.2	Performance criteria	27
12.2.1	Insulation and integrity versus loadbearing capacity	27
12.2.2	Insulation versus integrity	27
12.3	Termination prior to failure	27
12.4	Expression of test result	27
13	Test report	28
Annex A (informative) Commentary on test method and guide to the application of the outputs from the fire resistance test		29
Bibliography		47