

ISO/TS 5660-4:2016-12 (E)

Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 4: Measurement of low levels of heat release

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	Symbols and units	3
5	Principle	4
6	Apparatus	4
6.1	General	4
6.2	Cone-shaped radiant electrical heater	6
6.3	Radiation shield	6
6.4	Irradiance control	6
6.5	Weighing device	6
6.6	Specimen holder	6
6.7	Retainer frame	7
6.8	Exhaust gas system with flow measuring instrumentation	8
6.9	Gas sampling apparatus	10
6.10	Ignition circuit	10
6.11	Ignition timer	10
6.12	Oxygen analyser	11
6.13	Heat flux meters	11
6.14	Calibration burner	11
6.15	Data collection and analysis system	11
6.16	Optional side screens	11
7	Suitability of a product for testing	12
7.1	Surface characteristics	12
7.2	Asymmetrical products	12
7.3	Materials of short burning time	12
7.4	Composite specimens	12
7.5	Products with unknown burning behaviour	12
8	Specimen construction and preparation	13
8.1	Specimens	13
8.2	Conditioning of specimens	13
8.3	Preparation	13
8.3.1	Specimen wrapping	13
8.3.2	Specimen preparation	14
9	Test environment	14
10	Calibration	14
10.1	Initial calibrations	14
10.1.1	General	14
10.1.2	Weighing device response time	15
10.1.3	Weighing device output drift	15

10.1.4	Oxygen analyser delay and response times	15
10.1.5	Oxygen analyser output noise and drift	15
10.2	Operating calibrations	16
10.2.1	General	16
10.2.2	Weighing device accuracy	16
10.2.3	Oxygen analyser	16
10.2.4	Heat release rate calibration	16
10.2.5	Heater calibration	17
10.3	Less frequent calibrations	17
10.3.1	Working-standard heat flux meter calibration	17
10.3.2	Linearity of heat release rate measurements	17
10.3.3	Accuracy of calibration burner flow meter	17
11	Test procedure	17
11.1	General precautions	17
11.2	Initial preparation	18
11.3	Test procedure	18
12	Test data limitations	19
13	Calculations	19
13.1	General	19
13.2	Calibration constant for oxygen consumption analysis	19
13.3	Heat release rate	20
13.4	Exhaust duct mass flow rate	20
13.5	Mass loss rate	21
14	Test report	21
Annex A (informative) Overview		23
Annex B (informative) Calibration of the working heat flux meter		26
Annex C (informative) Calculation of heat release with additional gas analysis		27
Annex D (informative) Data obtained in initial round robin		31
Bibliography		34