11. TEST METHOD FOR SURFACE INCOMBUSTIBILITY OF PROTECTIVE MATERIALS FOR CONTINUOUS FIBER SHEETS (DRAFT)

1. Scope

This test method specifies the method used to evaluate the incombustibility of the surface protection materials that provide continuous fiber sheets with resistance to flame.

2. Normative Reference

The following standards, by being referenced herein, form a portion of these specifications. The most recent version of each standard should be used.

JIS A 5430 Fiber reinforced cement boards

JIS A 1321 Testing method for incombustibility of internal finish material and procedure of buildings

3. Definitions

a) Furnace

A unit that heats the surface-protected side of the test specimen from one direction with electrical or gas heat

b) Smoke collector

A container used to collect the smoke emitted by the furnace and measure the smoke emission coefficient

c) Actinograph

A unit, made up of a white light source and a sensor, that measures the amount of light absorbed between the light source and the sensor

d) Smoke emission coefficient

A coefficient derived from the ratio between the start of overheating by the actinograph and the light transmittance when smoke is produced

e) Set exhaust temperature curve

The exhaust temperature curve when a 10 mm thick pearlite board is used as the test specimen. The heating conditions are set so that the temperature in the furnace is the same as the exhaust temperature curve.

f) Standard temperature curve

A temperature curve with 50°C added to the set exhaust temperature curve. The actual test specimen is tested under identical heating conditions and must be at or below the standard temperature curve in order to pass the test.

4. Test specimens

4.1 Test specimen materials and configuration

The test specimen materials and configuration shall be the asbestos slate board or concrete slab specified in JIS A 5430, to which are applied primer, putty, impregnation adhesive and continuous fiber sheets to form base test specimens. The incombustible covering materials to be evaluated are applied to these base test specimens, forming the test specimens for the incombustibility test. The flame retardant covering materials are processed in accordance with the specifications of the applicable manufacturers.

4.2 Number of test specimens

A number of test specimens suitable for the test objective shall be determined. However, there shall be no fewer than three test specimens.

4.3 Dimensions of test specimens

Test specimens shall measure 22 cm both vertically and horizontally.

4.4 Curing of test specimens

After fabrication, test specimens shall be cured by drying them for at least 24 hours in a dryer at 35-45°C and then leaving them in a dessicator for at least 24 hours.

5. Testing Machine

The testing machine shall be in accordance with the one established in Section 3 "Surface test" in JIS A 1321.

6. Test Method

For the heating test, the heat reception surface of the test specimen shall measure 18 cm both vertically and horizontally. After heating for three minutes with a secondary heat source, the primary heat source shall be added and the test specimen heated for seven hours.

A standard board (10 mm pearlite board) shall be used as the test specimen to set the heating conditions so that the exhaust temperature can be reproduced to an error of within 20°C of the temperature shown in Table 1. Otherwise, the heating conditions shall be in accordance with JIS A 1321.

7. Calculation and Expression of Test Results

Each of the test specimens shall be considered to pass the heating test specified in Section 6 above if a)-e) below are applicable:

a) The test specimen is not melted through its entire thickness and shows no other conspicuous harmful deformation from flame

Table 1 Set exhaust temperature curve

Elapsed time (minutes)	1	2	3	4	5	6	7	8	9	10
Exhaust temperature (°C)	70	80	90	155	205	235	260	275	290	305

Note: The measurements of light passing through the smoke shall be conducted within 15 seconds for each measurement.

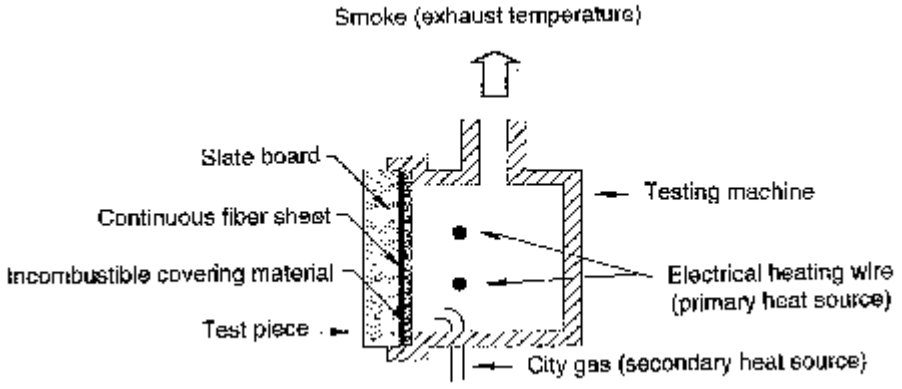

Figure 1 Overview of testing machine

b) There is no flame remaining 30 minutes or more after heating has ended.

c) In the test results, the exhaust temperature curve (the curve indicated by the recording thermometer specified in JIS A 1321; hereafter the same) does not exceed the standard temperature curve (the curve formed by adding 50°C to each of the set exhaust temperatures and connecting these values; hereafter the same) during the heating test. However, after three minutes has elapsed following the start of the test, the exhaust temperature curve may exceed the standard temperature curve within the range of the conditions noted in (d) below.

d) The calculated area (unit °C x minutes) in which the exhaust temperature curve exceeds the standard temperature curve, plus the section enclosed by the exhaust temperature curve and standard temperature curve, is 100 or less.

e) The smoke emission coefficient per unit area (C_A) derived according to Eq. (1) is less than 60.

$$C_A = 240 \log_{10} \frac{I_0}{I} \quad \text{..... (1)}$$

where

I_0 : Light intensity at beginning of heating test (lx)

I : Minimum light intensity during heating test (lx)

8. Report

The report shall include the following items:

a) Pass / fail evaluation for surface incombustibility test
b) Material name, shape, dimensions, configuration, weight, content, surface finishing, and summary of other specifications
c) Heating conditions
d) Test specimen conditions
e) Summary of test results (exhaust temperature, smoke emission curve, cumulative temperature, amount of smoke emitted, amount of time flame remained, melting and other deformation, etc.)
f) Test date, name of testing institution, name of person in charge and name of person implementing test