

# SOUTHWEST RESEARCH INSTITUTE

POST OFFICE DRAWER 28610

6220 CULEBAA ROAD  
DEPARTMENT OF FIRE TECHNOLOGY

SAN ANTONIO, TEXAS 78284

(512) 684-5111

## INTERMITTENT FLAME EXPOSURE TEST ANSI/ASTM E108-78 FIRE TESTS OF ROOF COVERINGS

Project No.: 01-5849-272d      Report Date: October 3, 1980  
Sponsor: AmDal Chemical Corporation      Date Material Received:  
P. O. Box 31707      May 22, 1980  
Dallas, Texas 75231      Date of Test: August 29, 1980

### TEST PROCEDURE

A test deck was mounted on the framework and the blower adjusted to produce an air current of 12 mph. The test deck, located 33 inches from the air outlet duct, was subjected to a luminous gas flame approximately the width of the deck at its bottom edge that uniformly bathed the top surface of the material being tested except for the two upper corners. The gas supply was regulated to develop a temperature of  $1300 \pm 50^\circ\text{F}$ , as determined by a No. 16 B&S gauge (1.63-mm) Chromel-Alumel wire thermocouple located 1 in. (25 mm) above the surface and 1/2 in. (13 mm) toward the source of flame from the lower edge of the test deck.

The flame was applied intermittently for 1-minute periods, with 2 minute flame off periods between applications. The air current was maintained throughout the test and after the last application of flame until all evidence of flame, glow, and smoke had disappeared from both the exposed surface of the material being tested and the underside of the test deck, or until failure occurred.

During and after the intermittent flame test, including "on" and "off" periods of flame application, observations were made for the appearance of sustained flaming on the underside of the test deck production of flaming or glowing brands, displacement of portions of the test sample and appearance or falling away of portions of the roof deck.

### TEST SPECIMENS

The test decks were 3-1/3 ft (1.0 m) wide x 4-1/4 ft (1.30) long. Nominal 1 x 4-in. No. 2 white pine planks, 3-1/3 ft (1.0 m), spaced 2 in. (50.8mm) apart were securely nailed to two nominal 2 x 4-in. No. 2 construction grade wood battens located under and flush with the outer edges of the deck. The wood shingles were nailed to the wood substrate. A 6-1/2-in. (16.51-cm) length of exposed shingle surface was used in constructing the test decks.

### TEST CONDITIONS

The test decks were exposed to 3 cycles (3 weeks) of rain/drying, simulating 200 in. of rain. The test decks were then stored for three days at  $70 \pm 3^\circ\text{F}$  and  $50 \pm 5$ -percent relative humidity prior to testing. Moisture contents, as determined by a moisture meter, were in the range of 8 to 10 percent. The



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slope of the test deck was 5 in. per' horizontal foot. The wind current was 1040 to 1070 ft/min. The ambient temperature was 80 to 90°F.

TEST RESULTS

Specimen No. 1  
3 on/off cycles; no ignition.

Specimen No. 2  
3 on/off cycles; no ignition.

ACCEPTANCE REQUIREMENTS

Method of Test	Flame-On, min	Flame-Off, min	No. No. of Test Cycles
Class A	2	2	15
Class B	2	2	8
Class C	1	2	3

At no time during or after the intermittent flame test shall:

1. Any portion of the roof covering material be blown or fall off the test deck in the form of flaming or glowing brands that continue to glow after reaching the floor' , or;
2. The roof deck be exposed, or;
3. Portions of the roof deck fall away in the form of particles that continue to glow after reaching the floor.


At no time during the intermittent flame tests shall there be sustained flaming of the underside of the deck. If flaming does occur, conduct another series of tests, during which no sustained flaming shall occur.

ACCEPTANCE LEVEL

Class A \_\_\_\_\_  
Class C X

Class B \_\_\_\_\_  
Unacceptable \_\_\_\_\_

Reported by:

  
Eugene L. Anderson  
Senior Research Engineer  
Special Projects

