

SOUTHWEST RESEARCH INSTITUTE

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CHEMISTRY AND CHEMICAL ENGINEERING DIVISION
DEPARTMENT OF FIRE TECHNOLOGY FAX (512) 522-3377

June 14, 1991

Flame Safe Chemical Corporation
2653 Warfield Avenue
Fort Worth, Texas 76106

Attn: Mr. Louis Jacobini

Re: SwRI Project No. 01-3779-388 FINAL REPORT
"Test for Surface Flammability of Materials Using a Radiant Energy
Source (ASTM E162-90)"

Gentlemen:

This letter constitutes our final report on a fire retardant treated cardboard identified as "Flame Safe - Paper Safe", submitted for evaluation by the referenced test method.

The results apply specifically to the specimens tested, in the manner tested, and not to the entire production of these or similar materials, nor to the performance when used in combination with other materials. All test data are on file and are available for review by authorized persons.

TEST OBJECTIVE AND PROCEDURE

The procedures followed in this test cover the Surface Flammability of Materials as outlined in the standard test procedure. They shall be used solely to define the properties of materials in response to heat and flames under controlled laboratory conditions. The results shall not be used as measures of fire hazards under actual fire conditions, but only for research and development purposes. The test defines the ignition properties and the rate of heat release which are combined to provide a Flame Spread Index.

Test specimens are preconditioned at 140°F (60°C) for 24 hours followed by stabilization at 70°F (21°C) and 50-percent relative humidity. The 6 x 18-in. (0.15 x 0.46-m) specimen is affixed in a metal frame and the assembly is placed in front of the 12 x 19-in. (0.31 x 0.48-m) radiant panel at an inclined angle (30°)--being closer, 4.75 in. (0.12 m), at top. A 2- to 3-in. pilot flame impinges on the uppermost area of the specimen and flame propagation advances downward on the specimen. Observations such as dripping, cracking, delamination and distortion are noted and recorded. The Flame Propagation Factor (Fs), Heat Release Factor (Q) and Flame Spread Index (Is) are calculated using incremental flame front propagation rates and predetermined radiant panel characterization formulae ($Is = Fs \times Q$).



This report is for the information of the client. It may be used in its entirety for the purpose of securing product acceptance from duly constituted approval authorities. Neither this report nor the name of the Institute shall be used in publicity or advertising.

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MATERIAL DESCRIPTION

Date Received: June 7, 1991
Type: Fire retardant treated cardboard Flame Safe -
Identification: Paper Safe
Color: Brown cardboard/clear coating 0.17 in. (4.32
mm)
Nominal Thickness: mm)
Nominal Unit Weight: 0.208 lb/ft² (1016 g/m²)

PREPARATION AND CONDITIONING

Preparation: None other than conditioning required
Conditioning Time: 5 days, 70°F and 50% relative humidity

TEST DATA

Date of Test: June 13, 1991
Mounting Procedure: The specimen was removed from the conditioning chamber and mounted in the specimen holder with a 6 x 18-in. (0.15 x 0.46-mm) sheet of 1-in. (25-mm) hexagonal 20 AWG wire mesh placed against the face of the specimen. A sheet of 0.25-in. (6.35-mm) inorganic cement board, wrapped around the back and edges with aluminum foil with the bright side facing the specimen, was used to back the specimen. A retaining rod was used to secure the specimen in place.

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Specimens Tested:

All data remains on file and is available to authorized personnel.

CALIBRATION CONSTANTS

Maximum stack temperature, °F (°C) 456.0 (235.6) 5.7
C (arbitrary constant) 27.15
Beta Factor (°C/kW)

TEST RESULTS

Fs = Flame Spread Factor
Q = Heat Evolution Factor
Is = Flame Spread Index

	<u>Run 1</u>	<u>Run 2</u>	<u>Run 3</u>	Run 4	Average
Fs	2.9	3.1	2.4	6.5	3.7
Q	1.4	1.4	1.3	1.3	1.4
Is	4.1	4.3	3.1	8.5	5.0

OBSERVATIONS

No flaming drip or running was observed. Cracks were noticed on the specimen face. Small nonflaming particles fell onto the floor. Specimen charred to the 12-in. mark.

Sincerely,

Gladys M. Finley
Gladys M. Finley Research
Engineer Fire Testing Services

GMF/rr

Approved by:

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FLAME SAFE CHEMICAL CORPORATION