3M Commercial Graphics
3M Center
St. Paul, MN 55144-1000
General 1-800-374-6772

Product Flammability Information

The attached ASTM E-84 is for 3M™ Scotchcal™ Graphic Film with Comply™ Adhesive IJ40C-10R. Due to similar film construction, we expect 3M™ Scotchcal™ Graphic Film IJ40C-20R to have comparable results to 3M™ Scotchcal™ Graphic Film with Comply™ Adhesive IJ40C-10R when tested per ASTM E-84.

After a material is subjected to the ASTM E-84 test, it is given a rating based on its performance during the test. Materials are classified into one of three groups based on their tested flame spread characteristics. These groups and their flame spread indexes are listed below:

Class Flame Spread Index
I (A) 0-25
II (B) 26-75
III (C) 76-200

Class I or (A) rating means it is the most fire resistant category that NFPA recognizes as necessary for interior wall and ceiling finish materials. It will be acceptable in any building in any locality that models its building code after NFPA 101 for wall or ceiling materials.

NFPA 101 is a code that provides minimum requirements for the design, operation and maintenance of building and structures for safety to life from fire and similar emergencies. The requirements differ depending on the type of building.

Many building codes require a smoke developed rating of 450 or less for building materials. The 3M™ Scotchcal™ Graphic Film with Comply™ Adhesive IJ40C-10R meets the requirements of Class I (A) and the smoke developed rating of less than or equal to 450.

If you have any questions about the features or performance of this 3M product, please call Commercial Graphics Division Technical Service at 1-800-328-3908.

Sincerely,
3M Commercial Graphics Product Responsibility

COMMERCIAL TESTING COMPANY
Post Office Box 985 • 1215 South Hamilton Street • Dalton, Georgia 30722
Telephone (706) 278-3935 • Facsimile (706) 278-3936

Standard Method of Test for
Surface Burning Characteristics of Building Materials

ASTM E 84–07

3M™ Scotchcal™ Graphic Film
with Comply Adhesive Series IJ40C–10R

Report Number 07–08140

Test Number 3922–9472
August 13, 2007

3M Company
St. Paul, Minnesota

Commercial Testing Company

Demare Jackson

(Authorized Signature)

This report is provided for the exclusive use of the client to whom it is addressed. It may be used in its entirety to gain product acceptance from duly constituted authorities. The test results presented in this report apply only to the samples tested and are not necessarily indicative of apparent identical or similar materials. Sample selection and identification were provided by the client. A sampling plan, if described in the referenced test procedure, was not necessarily followed. This report, or the name of Commercial Testing Company, shall not be used under any circumstance in advertising to the general public.

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INTRODUCTION

This report is a presentation of results of a surface flammability test on a material submitted by 3M Company, St. Paul, Minnesota.

The test was conducted in accordance with the ASTM International fire test response standard E 84–07, *Surface Burning Characteristics of Building Materials*, sometimes referred to as the Steiner tunnel test. This test is applicable to exposed surfaces such as walls and ceilings. The test is conducted with the specimen in the ceiling position with the surface to be evaluated exposed face down to the ignition source. The ASTM E 84 test method is the technical equivalent of NFPA No. 255 and UL No. 723.

This standard is used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions, but does not by itself incorporate all factors required for fire–hazard or fire–risk assessment of materials, products, or assemblies under actual fire conditions.

PURPOSE

The purpose of the test is to provide only the comparative measurements of surface flame spread and smoke development of materials with that of select grade red oak and fiber–reinforced cement board, Grade II, under specific fire exposure conditions. The test exposes a nominal 24-foot long by 20-inch wide test specimen to a controlled air flow and flaming fire adjusted to spread the flame along the entire length of a red oak specimen in 5.50 minutes. During the 10-minute test duration, flamespread over the specimen surface and density of the resulting smoke are measured and recorded. Test results are calculated relative to red oak, which has an arbitrary rating of 100, and fiber–reinforced cement board, Grade II, which has a rating of 0.

The test results are expressed as Flame Spread Index and Smoke Developed Index. The Flame Spread Index is defined in ASTM E 176 as "a number or classification indicating a comparative measure derived from observations made during the progress of the boundary of a zone of flame under defined test conditions." The Smoke Developed Index, a term specific to ASTM E 84, is defined as "a number or classification indicating a comparative measure derived from smoke obscuration data collected during the test for surface burning characteristics." There is not necessarily a relationship between the two measurements.

The method does not provide for measurement of heat transmission through the surface tested, the effect of aggravated flame spread behavior of an assembly resulting from the proximity of combustible walls and ceilings, or classifying a material as noncombustible solely by means of a Flame Spread Index.

The zero reference and other parameters critical to furnace operation are verified on the day of the test by conducting a 10–minute test using 1/4–inch fiber–reinforced cement board, Grade II. Periodic tests using NOFMA certified 23/32–inch select grade red oak flooring provide data for the 100 reference.

TEST SAMPLE

The test sample, selected by the client, was identified as **3M™ Scotchcal™ Graphic Film with Comply Adhesive Series IJ40C–10R**, a self–adhering film having a thickness of 0.004 inch. Three test panels, each measuring two feet wide by eight feet in length, were prepared by adhering the material to 1/4–inch thick fiber–reinforced cement board, Grade II, using the self–adhering properties of the film. The film was applied to the smooth side of the cement board and smoothed with a brush and roller. After dead–stacking overnight, the prepared panels were transferred to storage racks and conditioned to equilibrium in an atmosphere with the temperature maintained at 71 ± 2°F and the relative humidity at 50 ± 5 percent. For testing, the panels were placed end–to–end on the ledges of the tunnel furnace and tested with no auxiliary support mechanism.

TEST RESULTS

The test results, calculated on the basis of observed flame propagation and the integrated area under the recorded smoke density curve, are presented below. The Flame Spread Index obtained in E 84 is rounded to the nearest number divisible by five. Smoke Developed Indices are rounded to the nearest number divisible by five unless the Index is greater than 200. In that case, the Smoke Developed Index is rounded to the nearest 50 points. The flame spread and smoke development data are presented graphically on Page 4 of this report.

Test Specimen	Flame Spread Index	Smoke Developed Index
Fiber–Reinforced Cement Board, Grade II	0	0
Red Oak Flooring	100	100
3M™ Scotchcal™ Graphic Film with Comply Adhesive Series IJ40C–10R	**15**	**10**

OBSERVATIONS

Specimen ignition over the burners occurred at 0.37 minute. Surface flame spread was observed to a maximum distance of 3.44 feet beyond the zero point at 1.57 minutes. The maximum temperature recorded during the test was 602°F.

CLASSIFICATION

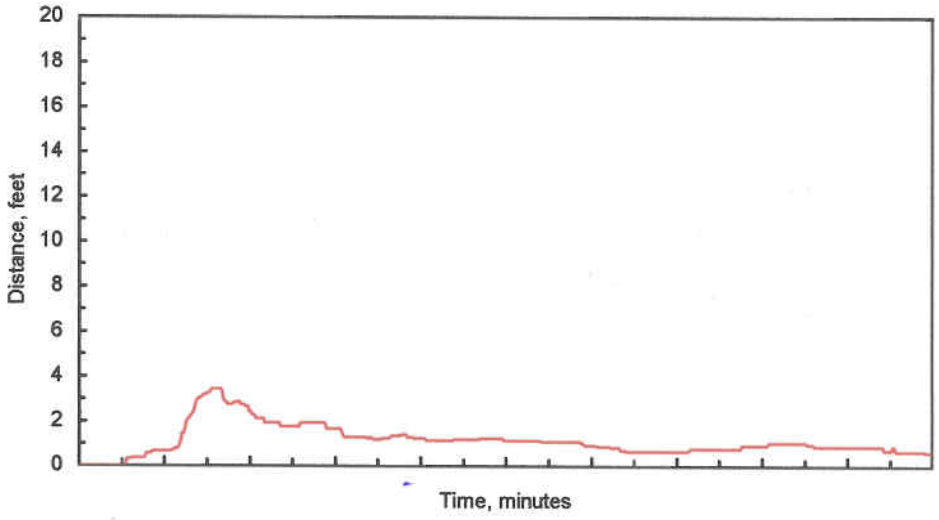
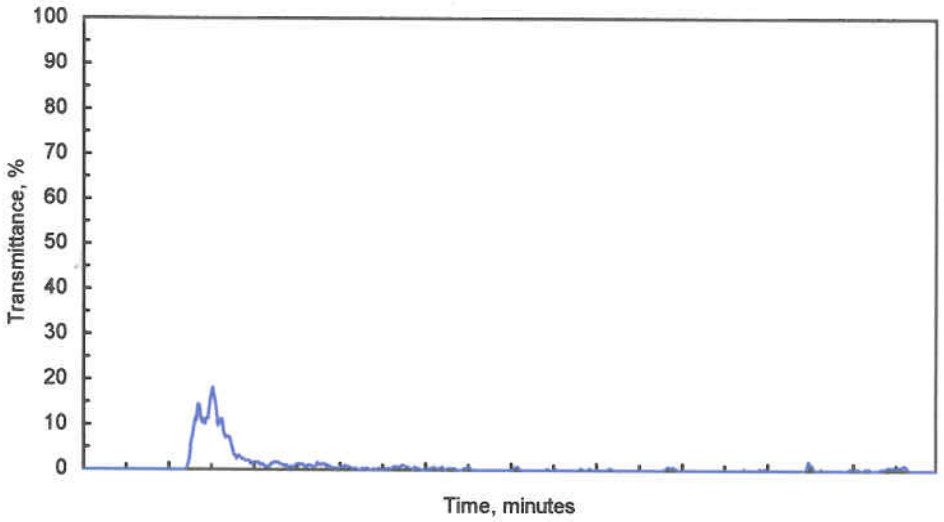
The Flame Spread Index and Smoke Developed Index values obtained by ASTM E 84 tests are frequently used by code officials and regulatory agencies in the acceptance of interior finish materials for various applications. The most widely accepted classification system is described in the National Fire Protection Association publication NFPA 101 *Life Safety Code*, where:

Class A	0 – 25 Flame Spread Index	0 – 450 Smoke Developed Index
Class B	26 – 75 Flame Spread Index	0 – 450 Smoke Developed Index
Class C	76 – 200 Flame Spread Index	0 – 450 Smoke Developed Index

Class A, B, and C correspond to Type I, II, and III respectively in other codes. They do not preclude a material being otherwise classified by the authority of jurisdiction.

ASTM E 84 TEST DATA

Client: 3M Company
Test Number: 3922-9472
Material Tested: 3M™ Scotchcal™ Graphic Film with Comply Adhesive Series IJ40C-10R
Date: August 13, 2007

Test Results:

Time to Ignition	=	00.37 minutes
Maximum Flamespread Distance	=	03.44 feet
Time to Maximum Spread	=	01.57 minutes
Flame Spread Index	=	15
Smoke Developed Index	=	10