



## TEST REPORT

**CLIENT:** LG Hausys America, Inc.  
310 LG Drive SE  
Adaisville, GA 30103  
  
Attn: Joe Rhee

**Test Report No:** 2445583-10

**Date:** July 28, 2011

**SUBJECT:** Testing to ASTM E-84

**SAMPLE:** Sample identified as "**Giallo Ornamentale Engineered Stone**" was received from the client on 6/27/11 in good condition. The test specimen was described by the manufacturer of containing the following items:

- **Sample / Style No.: Giallo Ornamentale Engineered Stone**

**TEST REQUESTED:** Perform standard flame spread and smoke density developed classification tests on the sample supplied by the Client in accordance with ASTM Designation E84-09a, "Standard Method of Test for Surface Burning Characteristics of Building Materials". The test method is also published under the following designations; UL 723, ANSI/NFPA 255, and UBC No. 8-1.

**PREPARATION:** The sample material was submitted in twelve pieces, 21 inches wide by 2 feet long.

**TEST DATE:** 7/14/11

**RESULTS:** Results can be found on the following pages and apply only to the sample tested.

**CLASSIFICATION:** The sample received a 'Class A' rating in accordance with the NFPA and IBC classification chart on page two of this report.

**SIGNED FOR AND ON BEHALF OF  
SGS – NORTH AMERICA, INC.**

KSM

  
Gregory Ertel  
Engineering Technician

  
For: J. Brian McDonald  
Fire Technology Department Manager

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#### METHODOLOGY:

This test method is intended to compare the surface flame spread and smoke developed measurements to those obtained from tests of mineral fiber cement board and select grade red oak flooring. The test specimen (21 inches wide by 24 feet long) is exposed to a flaming fire during the 10 minute duration, while flames spread over its surface and density of the resulting smoke are measured and recorded. Test results are presented as the computed comparisons to the standard calibration materials.

The test apparatus is considered under calibration when a 10 minute test of red oak decking will pass flame out the end of the tunnel in 5 minutes and 30 seconds into the test. Mineral fiber cement board forms the zero point for both flame spread and smoke developed indices, while the red oak flooring smoke developed index is set as 100.

This standard should be used to measure and describe the properties of materials, products, or assemblies in response to hear and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.

#### OBSERVATIONS:

During the test the specimen was observed to behave in the following manner: Steady ignition began at 8:14 (min:sec). The test continued for the 10:00 duration.

#### DESCRIPTION OF TEST SPECIMENS:

Specimen Identification:	Giallo Ornamentale Engineered Stone
Specimen Width:	21 inches
Specimen Length:	2 feet
Specimen Thickness:	1.2 inches
Total Number of Specimens:	12
Adhesive used:	None
Mounting Method:	None



## TEST RESULTS:

The test results, computed on the basis of observed flame front advance and electronic smoke density measurements are presented in the following table. In recognition of possible variations and limitations of the test method, the results are computed to the nearest number divisible by five, as outlined in the test method.

<u>Ignition (minutes: seconds)</u>	08:14
<u>Flame Front (feet)</u>	0.0
<u>Time to Maximum Spread (minutes: seconds)</u>	10:00
<u>Flame Spread</u>	0
<u>Smoke Developed</u>	5
<u>Classification</u>	A

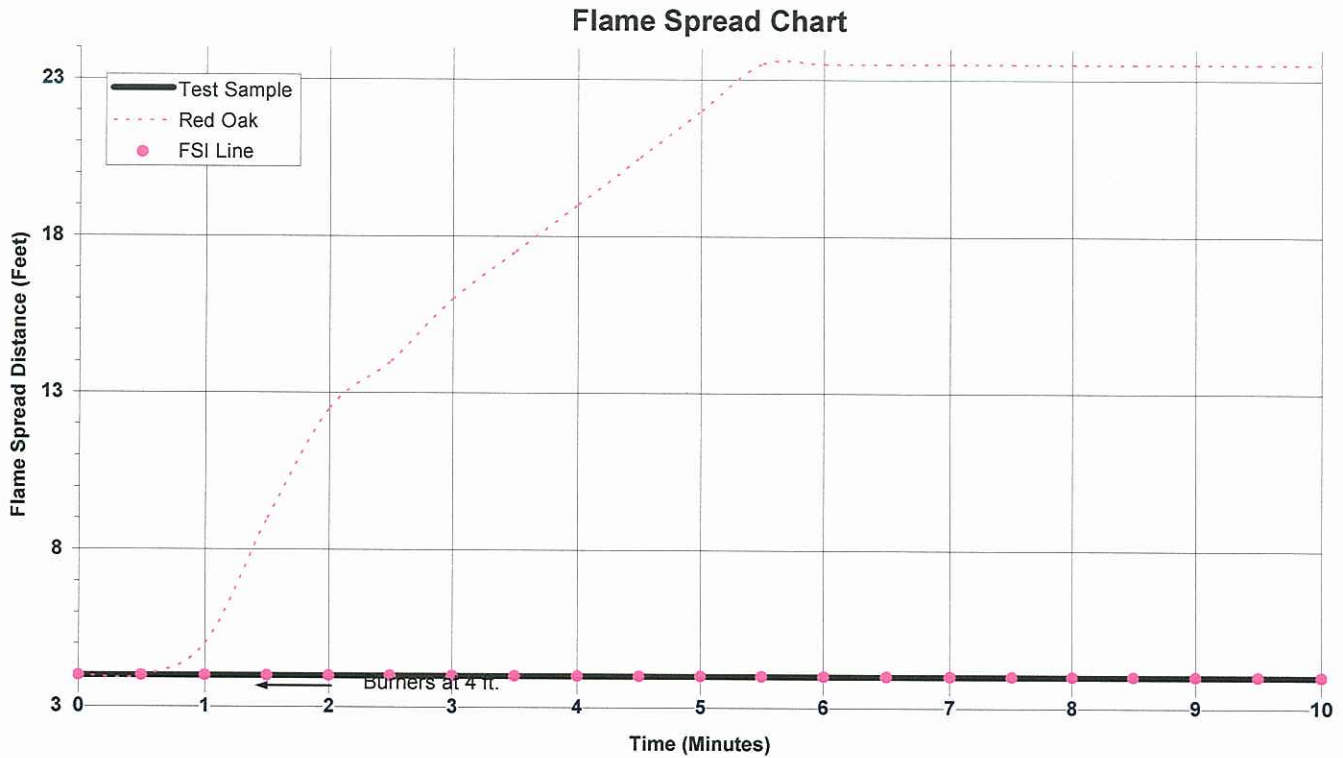
## CLASSIFICATION INTERPRETATION:

<u>NFPA and IBC Class</u>	<u>Flame Spread</u>	<u>Smoke Developed</u>
A	0 through 25	≤ 450
B	26 through 75	≤ 450
C	76 through 200	≤ 450

### Building Codes Cited:

1. National Fire Protection Association, ANSI/NFPA No. 101, "Life Safety Code", 2006 Edition.
2. International Building Code, 2006 Edition, Chapter 8, Interior Finishes, Section 803

## GRAPHICAL RESULTS:



**FIGURE 1. Flame Spread**

## GRAPHICAL RESULTS: (Cont.)

Smoke Developed Chart

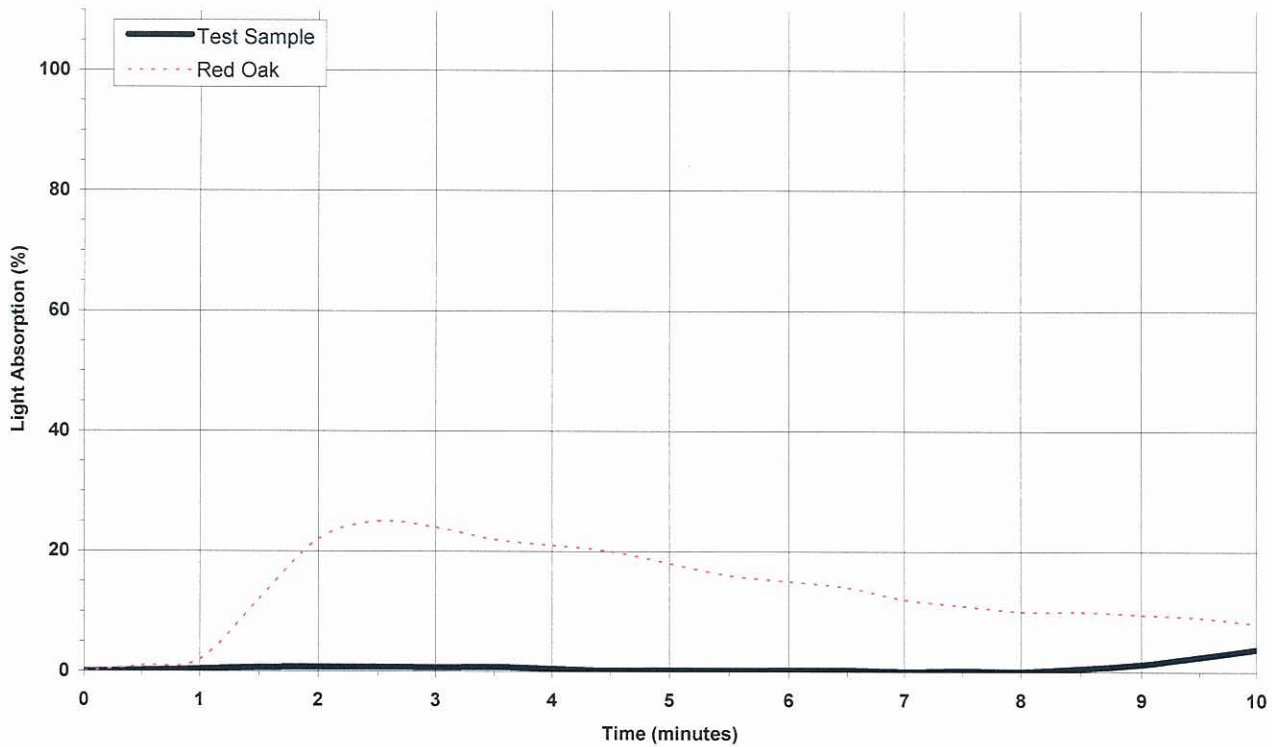


FIGURE 2. Smoke Developed



GRAPHICAL RESULTS: (Cont.)

Temperature - Time Curve

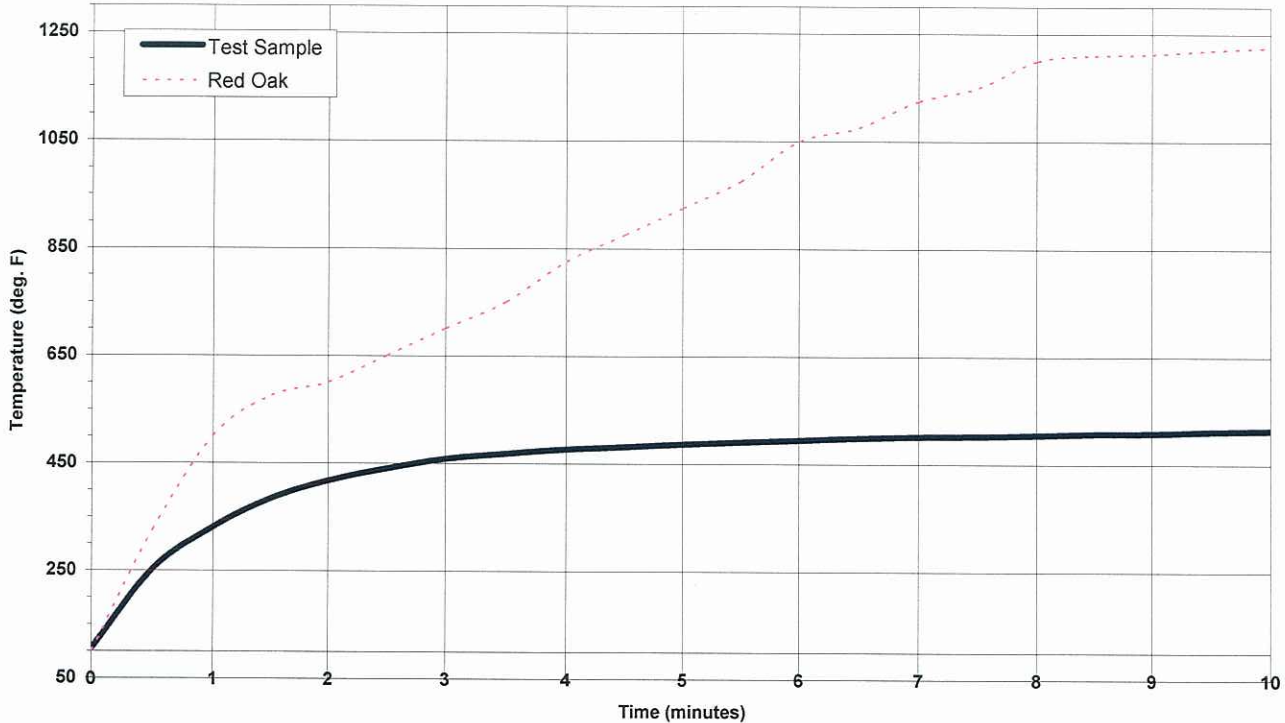


FIGURE 3. Temperature – 24 ft. Air Stream Thermocouple

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End of Report

## GENERAL CONDITIONS OF SERVICE

### 1. General

(a) Unless otherwise agreed in writing or except where they are at variance with (i) the regulations governing services performed on behalf of governments, government bodies or any other public entity or (ii) the mandatory provisions of local law, all offers or services and all resulting contractual relationship(s) between any of the affiliated companies of SGS SA or any of their agents (each a "Company") and Client (the "Contractual Relationship(s)") shall be governed by these general conditions of service (hereinafter the "General Conditions").

(b) The Company may perform services for persons or entities (private, public or governmental) issuing instructions (hereinafter, the "Client").

(c) Unless the Company receives prior written instructions to the contrary from Client, no other party is entitled to give instructions, particularly on the scope of the services or the delivery of reports or certificates resulting therefrom (the "Reports of Findings"). Client hereby irrevocably authorises the Company to deliver Reports of Findings to a third party where so instructed by Client or, at its discretion, where it implicitly follows from circumstances, trade custom, usage or practice.

### 2. Provision of Services

(a) The Company will provide services using reasonable care and skill and in accordance with Client's specific instructions as confirmed by the Company or, in the absence of such instructions:

- (1) the terms of any standard order form or standard specification sheet of the Company; and/or
- (2) any relevant trade custom, usage or practice; and/or
- (3) such methods as the Company shall consider appropriate on technical, operational and/or financial grounds.

(b) Information stated in Reports of Findings is derived from the results of inspection or testing procedures carried out in accordance with the instructions of Client, and/or our assessment of such results on the basis of any technical standards, trade custom or practice, or other circumstances which should in our professional opinion be taken into account.

(c) Reports of Findings issued further to the testing of samples contain the Company's opinion on those samples only and do not express any opinion upon the lot from which the samples were drawn.

(d) Should Client request that the Company witness any third party intervention, Client agrees that the Company's sole responsibility is to be present at the time of the third party's intervention and to forward the results, or confirm the occurrence, of the intervention. Client agrees that the Company is not responsible for the condition or calibration of apparatus, instruments and measuring devices used, the analysis methods applied, the qualifications, actions or omissions of third party personnel or the analysis results.

(e) Reports of Findings issued by the Company will reflect the facts as recorded by it at the time of its intervention only and within the limits of the instructions received or, in the absence of such instructions, within the limits of the alternative parameters applied as provided for in clause 2(a). The Company is under no obligation to refer to, or report upon, any facts or circumstances which are outside the specific instructions received or alternative parameters applied.

(f) The Company may delegate the performance of all or part of the services to an agent or subcontractor and Client authorises Company to disclose all information necessary for such performance to the agent or subcontractor.

(g) Should Company receive documents reflecting engagements contracted between Client and third parties or third party documents, such as copies of sale contracts, letters of credit, bills of lading, etc., they are considered to be for information only, and do not extend or restrict the scope of the services or the obligations accepted by the Company.

(h) Client acknowledges that the Company, by providing the services, neither takes the place of Client or any third party, nor releases them from any of their obligations, nor otherwise assumes, abridges, abrogates or undertakes to discharge any duty of Client to any third party or that of any third party to Client.

(i) All samples shall be retained for a maximum of 3 months or such other shorter time period as the nature of the sample permits and then returned to Client or otherwise disposed of at the Company's discretion after which time Company shall cease to have any responsibility for such samples. Storage of samples for more than 3 months shall incur a storage charge payable by Client. Client will be billed a handling and freight fee if samples are returned. Special disposal charges will be billed to Client if incurred.

### 3. Obligations of Client

The Client will:

- (a) ensure that sufficient information, instructions and documents are given in due time (and, in any event not later than 48 hours prior to the desired intervention) to enable the required services to be performed;
- (b) procure all necessary access for the Company's representatives to the premises where the services are to be performed and take all necessary steps to eliminate or remedy any obstacles to, or interruptions in, the performance of the services;
- (c) supply, if required, any special equipment and personnel necessary for the performance of the services;
- (d) ensure that all necessary measures are taken for safety and security of working conditions, sites and installations during the performance of services and will not rely, in this respect, on the Company's advice whether required or not;
- (e) inform Company in advance of any known hazards or dangers, actual or potential, associated with any order or samples or testing including, for example, presence or risk of radiation, toxic or noxious or explosive elements or materials, environmental pollution or poisons;
- (f) fully exercise all its rights and discharge all its liabilities under any relevant sales or other contract with a third party and at law.

### 4. Fees and Payment

(a) Fees not established between the Company and Client at the time the order is placed or a contract is negotiated shall be at the Company's standard rates (which are subject to change) and all applicable taxes shall be payable by Client.

(b) Unless a shorter period is established in the invoice, Client will promptly pay not later than 30 days from the relevant invoice date or within such other period as may be established by the Company in the invoice (the "Due Date") all fees due to the Company failing which interest will become due at a rate of 1.5% per month (or such other rate as may be established in the invoice) from the Due Date up to and including the date payment is actually received.

(c) Client shall not be entitled to retain or defer payment of any sums due to the Company on account of any dispute, counter claim or set off which it may allege against the Company.

(d) Company may elect to bring action for the collection of unpaid fees in any court having competent jurisdiction.

(e) Client shall pay all of the Company's collection costs, including attorney's fees and related costs.

(f) In the event any unforeseen problems or expenses arise in the course of carrying out the services the Company shall endeavour to inform Client and shall be entitled to charge additional fees to cover extra time and cost necessarily incurred to complete the services.

(g) If the Company is unable to perform all or part of the services for any cause whatsoever outside the Company's control including failure by Client to comply with any of its obligations provided for in clause 3 above the Company shall nevertheless be entitled to payment of:

- (1) the amount of all non-refundable expenses incurred by the Company; and
- (2) a proportion of the agreed fee equal to the proportion of the services actually carried out.

### 5. Suspension or Termination of Services

The Company shall be entitled to immediately and without liability either suspend or terminate provision of the services in the event of:

- (a) failure by the Client to comply with any of its obligations hereunder and such failure is not remedied within 10 days that notice of such failure has been notified to Client; or
- (b) any suspension of payment, arrangement with creditors, bankruptcy, insolvency, receivership or cessation of business by Client.

### 6. Liability and Indemnification

#### (a) Limitation of Liability:

(1) The Company is neither an insurer nor a guarantor and disclaims all liability in such capacity. Clients seeking a guarantee against loss or damage should obtain appropriate insurance.

(2) Reports of Findings are issued on the basis of information, documents and/or samples provided by, or on behalf of, Client and solely for the benefit of Client who is responsible for acting as it sees fit on the basis of such Reports of Findings. Neither the Company nor any of its officers, employees, agents or subcontractors shall be liable to Client nor any third party for any actions taken or not taken on the basis of such Reports of Findings nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to the Company.

(3) The Company shall not be liable for any delayed, partial or total non-performance of the services arising directly or indirectly from any event outside the Company's control including failure by Client to comply with any of its obligations hereunder.

(4) The liability of the Company in respect of any claim for loss, damage or expense of any nature and howsoever arising shall in no circumstances exceed a total aggregate sum equal to 10 times the amount of the fee paid in respect of the specific service which gives rise to such claim or US\$20,000 (or its equivalent in local currency), whichever is the lesser.

(5) The Company shall have no liability for any indirect or consequential loss including without limitation loss of profits, loss of business, loss of opportunity, loss of goodwill and cost of product recall. It shall further have no liability for any loss, damage or expense arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Client.

(6) In the event of any claim, Client must give written notice to the Company within 30 days of discovery of the facts alleged to justify such claim and, in any case, the Company shall be discharged from all liability for all claims for loss, damage or expense unless suit is brought within one year from:

- (i) the date of performance by the Company of the service which gives rise to the claim; or
- (ii) the date when the service should have been completed in the event of any alleged non-performance.

(b) Indemnification: Client shall guarantee, hold harmless and indemnify the Company and its officers, employees, agents or subcontractors against all claims (actual or threatened) by any third party for loss, damage or expense of whatsoever nature including all legal expenses and related costs and howsoever arising relating to the performance, purported performance or non-performance, of any services.

### 7. Miscellaneous

(a) If any one or more provisions of these General Conditions are found to be illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

(b) During the course of providing the services and for a period of one year thereafter Client shall not directly or indirectly entice, encourage or make any offer to Company's employees to leave their employment with the Company.

(c) Use of the Company's corporate name or registered marks for advertising purposes is not permitted without the Company's prior written authorisation.

### 8. Governing Law, Jurisdiction and Dispute Resolution

Unless specifically agreed otherwise, all disputes arising out of or in connection with Contractual Relationship(s) hereunder shall be governed by the substantive laws of Switzerland exclusive of any rules with respect to conflicts of laws and be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said Rules. The arbitration shall take place in Paris (France) and be conducted in the English language.

### 9. Special Condition

Notwithstanding the provisions of clause 8 above, all disputes arising out of or in connection with Contractual Relationship(s) hereunder shall be governed by the substantive laws of New Jersey exclusive of any rules with respect to conflicts of laws and be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said Rules, each party to bear its own costs. The arbitration shall take place in Rutherford, New Jersey.