



**PRIEST & ASSOCIATES
CONSULTING, LLC**

October 24, 2013

John M. Schwartz
VP International Marketing
Contego International Inc
1013 Arthur Street
P.O. Box 49
Rochester, IN 46975

Re: Engineering Letter 10190 – Compliance of Contego Fire Barrier Coating with BS 476 Part 7, Class 1

Dear Mr. Schwartz:

The purpose of this Engineering Letter is to substantiate the compliance of Contego Fire Barrier/Fire Barrier HS applied to steel substrates with BS 476 Part 7, Class 1 requirements. This letter addresses the equivalence of a Class A Flame Spread Index obtained with the ASTM E84/UL 723 Surface Burning Characteristics of Building Materials (tunnel test) standard with a Class 1 designation as defined in BS 476 Part 7.

Contego International's Fire Barrier coating is currently listed in the Underwriters Laboratories (UL) Certification Directory with a Class A classification (0 Flame Spread Index, 0 – 30 Smoke Developed Index) when applied to a combustible Douglas fir substrate (the UL listing is provided in Appendix A). The test results from the UL test report (referenced by UL Report No. 06CA51291) that form the basis for the listing are summarized in Table 1 below.

Table 1: Test Summary

Test No.	Test Code	Sample Description	CFS Calculated Flame Spread	FSI Flame Spread Index	CSD Calculated Smoke Developed	SDI Smoke Developed Index
1	12190606	blank doug fir.	62.74	65	68.9	70
2	12190607	Fire Barrier coated doug fir.	0.00	0	1.4	0
3	12190609	Fire Barrier coated doug fir.	1.77	0	28.2	30
4	12190610	Fire Barrier coated doug fir.	0.09	0	12.1	10

The comparative relationship between flame spread test results obtained from ASTM E84/UL 723 and BS 476 Part 7 is derived from the publications cited below:

1. C.W. Leung and W.K. Chow, *Review on Four Standard Tests on Flame Spreading*, International Journal on Engineering Performance-Based Fire Codes, Volume 3, No. 2, p. 67-86, 2001.
2. J.A. Wilson, *Surface Flammability of Materials: A Survey of Test Methods and Comparison of Results*, Symposium on Fire Test methods, ASTM Special Technical Publication No. 301, 1961.

These publications describe a direct correlation in the comparative classification of materials by both test methods.

Leung and Chow (Ref. 1) report that for untreated solid sawn lumber and wood structural panels, a Class C flame spread classification in the E84 is consistent with a Class 3 rating in the BS 476 Part 7 method. Likewise, for noncombustible cement board, a 0 FSI in the E84 (Class A) is shown to be consistent with a Class 1 rating by the BS method. Furthermore, it is reported that sawn lumber with a fire retardant coating produces a Class A E84 FSI of 6 and a Class 1 in BS 476 Part 7.

Wilson (Ref. 2) provides a clear correlation of the classifications obtained with both methods, as shown in his Table II below.

TABLE II.—APPROXIMATE RELATION OF CLASSIFICATIONS BY VARIOUS METHODS.

ASTM E84 TUNNEL TEST	25 50 75 100 125 150 175 200									
	Flame Spread Classification									
FEDERAL TEST SS-A-118 b	CLASS A Noncombustible	CLASS B Fire Retardant	CLASS C Slow Burning	CLASS D Combustible						
RADIANT PANEL TEST					50	100	150	200		
	Flame Spread Index									
SMALL TUNNEL TEST					50	100	120	140		
	Flame Spread Index									
SPREAD OF FLAME TEST-BS476	CLASS I			CLASS II	CLASS III	CLASS IV				
NEW BRITISH BUILDING BOARD TEST	CLASS A	CLASS B	CLASS C	CLASS D						
PILOT IGNITION TEST	5	15	35	50	55	60	63			
	Early Fire Spread Index									

The “Spread of Flame Test – BS 476” referenced in Wilson’s Table II is the same as the BS 476 Part 7 method, and the referenced “New British Building Board Test” is now the BS 476 Part 6 standard.

It is notable that the Class I category for the BS 476 Part 7 test broadly overlaps the 0 to 25 Class A flame spread classification category for the ASTM E84 tunnel test. In other words, **a Class A result in the tunnel test easily meets the Class 1 BS 476 Part 7 requirement.**

CONCLUSION

Contego International's UL certification shows that the spread of flame properties for untreated Douglas fir are improved to a level expected for gypsum wallboard when applied in accordance with the listing. Clearly, these results are easily extended to the performance of the coating when applied to a steel substrate. Therefore, in consideration of the overlapping classification categories with the two methods, PAC has successfully determined that the Contego fire retardant coating product applied to a steel substrate is judged to be in compliance with the Class 1 requirements specified by BS 476 Part 7.



I hope this answers your question adequately.

Sincerely,

Howard Stacy
 Sr. Scientist/Principal
 Priest & Associates Consulting, LLC

Appendix A



ONLINE CERTIFICATIONS DIRECTORY

BMQX.R25382 Coatings, Fire Retardant

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Coatings, Fire Retardant

[See General Information for Coatings, Fire Retardant](#)

CONTEGO INTERNATIONAL INC
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R25382

Fire Retardant Coating	Fire Barrier and Fire Barrier HS
Surface	Douglas Fir
Flame spread	0
Smoke developed	0-30
Number of preliminary coats	None
Rate per coat (sq ft per gal)	—
Number of fire retardant coats	2
Rate per coat (sq ft per gal)	145
Number of overcoats	None
Rate per coat (sq ft per gal)	—

