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TEST REPORT

No. FCT XXXX

Fire Risk Assessment of
Multilayer Paint Finishes in
the Upper Corridors of
Westford Town Hall
London Borough of Westford

Sponsored By

London Borough of Westford
Johnson House
255/259 High Street,
Westford NE7 8RS

Date of Inspection: 8th June 2007

Date of Issue: 21st June 2007

1 Introduction

Experience gained over a number of years indicates that multiple coating of paint, applied as a consequence of routine maintenance, can seriously and adversely affect the fire behaviour of wall and ceiling surfaces by reducing the BS 476 Part 7 Surface Spread of Flame performance required by Building Regulations from Class 1 to Class 4. Arising from this, health and safety advice has been issued to public authorities and others to confirm that the fire properties of such surfaces in communal areas are not being undermined to the detriment of public safety.

This fire risk assessment has been conducted by Dr Peter Lake and Dr John Hume of FC&T Ltd. for the London Borough of Westford, Engineering & Building Services Dept. as part of its planned redecoration programme.

2 Methodology

The assessment methodology used is in accordance with that described in the Department of Environment Research Report No. 39/3/204. This involves visual survey, site testing and laboratory microscopic analysis of representative paint specimens.

The visual survey establishes the general construction and layout of the premises together with the nature and condition of the paintwork in the communal areas.

Two types of tests are conducted on site: adhesion tests and blister tests.

The adhesion test evaluates the susceptibility of the paint finish to delamination. A line is cut through the paint finish to the substrate. The point of the knife is inserted and pushed horizontally across the surface to enable the paint to chip. The substrate is not penetrated. The extent and nature of the delamination are noted and classified according to the level of adhesion.

The blister test evaluates the behaviour of the paint finish under the influence of heat. A high temperature hot air gun is directed at the paint finish without direct flame impingement. The temperature of the area is monitored and the occurrence and nature of any blistering are noted. A numerical descriptor from 1-7 is assigned as follows :-

1 = Little or no blistering even on prolonged heat exposure. Limited charring.
2 = Minor blistering developing slowly. Progressive charring.
3 = Several small blisters develop fairly quickly. They char but do not coalesce significantly. Minor fume release.
4 = Smaller blisters progressively join together. Significant fume release with possible flash ignition. Moderate charring.
5 = Smaller blisters develop rapidly into single large blister. Moderate fume release with flash ignition. Rapid, moderate charring.
6 = Large blister forms and grows. Major fume release with flaming. Rapid extensive charring.
7 = Rapidly growing large blister. Copious fume release with period of self-sustained flaming and charring.

The microscopic tests are conducted in the laboratory on paint samples selected on site. The examination evaluates the number, colour, thickness and type of the constituent paint layers thereby providing an indication of the combustible content of the finish.

Specimens are selected for the tests from the communal areas at the site(s). Any painted surface that it is considered could contribute to potentially hazardous flame spread is tested. The number and location of the tested positions are chosen to be fully representative of the risks. Multiple sites are tested as separate entities unless it is clear that they are uniformly decorated and of similar construction, in which case they may be aggregated for sampling purposes.

The assessment is made on the basis of the test and analysis results obtained. Expert opinion is offered both as to the risks present and, where relevant, what measures need to be taken to attain a satisfactory flame spread.

3 Premises

The tested paintwork was sampled from the second, third and fourth floor corridors of Westford Town Hall, High Street, Westford.

4 Condition

The colour schemes used varied from area to area, each with a number of colours/substrates. Overall, the paintwork was in average decorative condition, albeit with localized flaking.

5 Results

The results of the tests are detailed in the appended tables

6 Conclusions

The test results indicate that the existing combustible paint thicknesses are not excessive from a fire point of view and that levels of adhesion are generally adequate. It is considered that these fall within a low risk classification with respect to their potential surface fire spread characteristics. It is therefore concluded that, subject to correct application, the existing paintwork can be overcoated with standard paint without compromising fire performance.

Further painting should use standard, water based, paint formulations capable of achieving a Class 1 designation when tested on a comparable substrate in accordance with BS 476 Part 7. Usual good practice conditions, such as the removal of loose paint, cleaning and rubbing down, should be observed and manufacturer's recommendations should be followed.

It should be noted that this assessment addresses only the likely fire behaviour of the specified paint finishes. It does not cover any other fire safety issues. It has been conducted in accordance with current methodology on the paintwork as found.

A further risk assessment should be undertaken should any further repainting be planned.

Authorised for Issue: **Dr P J Lake**
21st June 2007 **For FC&T Ltd.**

FCT & Ltd.

Westford Town Hall Upper Corridors

Site Test and Inspection Results

No	Site	Floor	Position	Substrate	Adhesion	Blister Temp deg C	Blister Type	Observations
1	North	2	W	C	A	250	6 D	
2	"	"	C	C	P	300	3 D	
3	Centre	"	W	C	G	250	6 D	
4	"	"	C	C	A	350	2 D	
5	South	"	W	C	A	200	7 D	
6	"	"	C	C	F	400	2 D	
7	North	3	W	C	G	200	6 D	
8	"	"	C	C	P	300	3 D	
9	Centre	"	W	C	A	200	6 D	
10	"	"	C	C	A	250	3 D	
11	South	"	W	C	G	350	3 D	
12	"	"	C	P	A	350	4 D	

Key to codings :- Layer 1 is closest to substrate

Position	Colour	Substrate	Adhesion	Blister	Media
C = Ceiling	W = White/ Cream	C = Concrete/	G = Good	1 = Best	O = Oil based
W = Wall	Y = Yellow	Brick (+Plaster)	A = Average	↓ ↓	A = Water based
Stairwell unless	G = Grey/ Green	P = Plaster(board)	P = Poor	7 = Worst	L = Lacquer
otherwise specified	R = Red/ Brown	T = Timber	F = Flaking	I = Inter.delam.	S = Sealant
	B = Blue	B = Board (Timber)		D = Total delam.	

Microscopic Examination Results

No	Average Layer Thickness (T) (microns) Colour (C) Medium (M)																											Total Thickness (microns)
	1			2			3			4			5			6			7			8			9			
	T	C	M	T	C	M	T	C	M	T	C	M	T	C	M	T	C	M	T	C	M	T	C	M	T	C	M	
1	30	W	A	40	W	A	70	Y	A	50	Y	A	40	W	A													230
2	50	W	A	30	W	A	40	W	A																			120
3	50	W	A	40	W	A	60	Y	A																			150
4	60	W	A	40	W	A	50	R	A																			150
5	20	W	A	40	W	A	30	Y	A	50	Y	A																140
6	40	W	A	30	W	A	40	W	A																			110
7	60	W	A	40	W	A	20	Y	A	30	Y	A	50	Y	A													200
8	50	W	A	40	W	A	30	Y	A	20	Y	A	40	Y	A	20	Y	A										200
9	40	W	A	20	W	A	30	Y	A	30	Y	A																120
10	40	W	A	40	Y	A	40	Y	A																			120
11	60	W	A	50	W	A	30	Y	A																			140
12	30	Y	A	40	W	A	50	W	A	30	Y	A																150

FCT & Ltd.

Westford Town Hall Upper Corridors

Site Test and Inspection Results

No	Site	Floor	Position	Substrate	Adhesion	Blister Temp deg C	Blister Type	Observations
13	Corridor	4	W	C	G	300	5 D	
14	"	"	C	C	G	400	2 D	
15	"	"	W	C	G	250	6 D	
16	"	"	C	C	G	350	2 D	
17	"	"	W	B	G	-	1	
18	"	"	C	B	G	400	2 D	
19								
20								
21								
22								
23								
24								

Key to codings :- Layer 1 is closest to substrate

Position	Colour	Substrate	Adhesion	Blister	Media
C = Ceiling	W = White/ Cream	C = Concrete/	G = Good	1 = Best	O = Oil based
W = Wall	Y = Yellow	Brick (+Plaster)	A = Average	↓ ↓	A = Water based
Stairwell unless	G = Grey/ Green	P = Plaster(board)	P = Poor	7 = Worst	L = Lacquer
otherwise specified	R = Red/ Brown	T = Timber	F = Flaking	I = Inter.delam.	S = Sealant
	B = Blue	B = Board (Timber)		D = Total delam.	

Microscopic Examination Results

No	Average Layer Thickness (T) (microns) Colour (C) Medium (M)																											Total Thickness (microns)
	1			2			3			4			5			6			7			8			9			
	T	C	M	T	C	M	T	C	M	T	C	M	T	C	M	T	C	M	T	C	M	T	C	M	T	C	M	
13	30	W	A	40	W	A	70	Y	A	50	Y	A	40	W	A	40	W	A										270
14	50	W	A	30	W	A	30	W	A	50	W	A	30	W	A	30	W	A										220
15	40	W	A	40	W	A	30	W	A	50	W	A	40	W	A	40	W	A										240
16	60	W	A	40	W	A	50	W	A	30	W	A	40	W	A													220
17	40	W	O	30	W	O	20	W	O																			90
18	30	W	O	20	W	O	30	W	O																			80
19																												0
20																												0
21																												0
22																												0
23																												0
24																												0