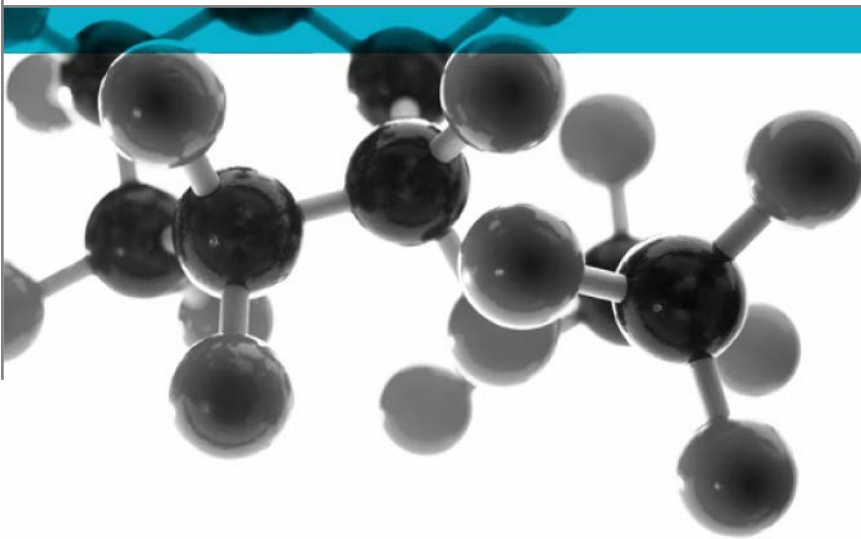


Exova Warringtonfire
Holmesfield Road
Warrington
WA1 2DS
United Kingdom

T : +44 (0) 1925 655116
F : +44 (0) 1925 655419
E : warrington@exova.com
W: www.exova.com



Ad-hoc BS 8434-2:2003 +A2:2009



Ad-hoc investigation to determine the fire performance of a cable junction box, using the principles of BS 8434-2:2003+A2:2009

A Report To: Abtech Limited

Document Reference: 371526

Date: 10th October 2016

Issue No.: 1

Page 1

Testing
Advising
Assuring

Executive Summary

Objective To determine the performance of a cable junction box using the principles of BS 8434-2:2003+A2:2009.


Generic Description	Product reference	Thickness	Density
Cable junction box	"SX6020"	2mm	8.0g/cm ³
Individual components used to manufacture composite:			
Terminals	"Ceramic Pillars"	Not stated	Not stated
Please see pages 5 & 6 of this test report for the full description of the product tested			

Test Sponsor Abtech Limited, Newhall Road, Lower Don Valley, Sheffield, S9 2QJ


Test Results: When tested using the general principles of BS 8434-2: 2003+A2: 2009, the cable junction box maintained its integrity for the duration of the test.

Date of Test 16th September 2016

Signatories



Responsible Officer
 C. Meachin *
 Technical Officer



Authorised
 S. Deeming *
 Business Unit Head

* For and on behalf of **Exova Warringtonfire**.

Report Issued: 10th October 2016

This version of the report has been produced from a .pdf format electronic file that has been provided by **Exova Warringtonfire** to the sponsor of the report and must only be reproduced in full. Extracts or abridgements of reports must not be published without permission of **Exova Warringtonfire**.

CONTENTS	PAGE NO.
EXECUTIVE SUMMARY	2
SIGNATORIES.....	2
TEST DETAILS.....	4
DESCRIPTION OF TEST SPECIMENS	6
TEST RESULTS	7
APPENDIX 1 – PHOTOGRAPHS OF TEST SPECIMENS.....	8
REVISION HISTORY	9

Test Details

Introduction

The sponsor, Abtech Limited, approached **Exova Warringtonfire** and requested that a series of tests be conducted to demonstrate that their cable junction box complies with the requirements of BS 8434-2: 2003 +A2: 2009.

In order to demonstrate that the cable junction box meets the requirements of the standard, it was used in conjunction with standard fire resisting cables whilst they were exposed to the test conditions given in BS 8434-2: 2003 +A2: 2009.

Purpose of test

To determine the performance of a specimen of a cable junction box when it is subjected to the conditions of test specified in BS 8434-2: 2003 + A2: 2009. The purpose of the test method is to determine whether a cable can maintain circuit integrity when it is exposed to the fire conditions described within the method.

The test was performed using the general principles of the procedures specified in BS 8434-2: 2003 + A2 2009 and this report should be read in conjunction with this standard.

Scope of test

BS 8434-2: 2003 + A2: 2009 specifies a method of test to be used for small unprotected cables where the requirements of BS EN 50200: 2006 are modified to use a flame temperature of (930 +40 -0)°C and the application of water spray.

BS EN 50200: 2006 specifies a test method for cables intended for use as emergency circuits for alarm, lighting and communication purposes. It is applicable to cables whose rated voltage does not exceed 600/1000V and overall diameter does not exceed 20mm.

Deviation from test standard

BS 8434-2: 2003 + A2: 2009 specifies a method of test to be used for small unprotected cables where the requirements of BS EN 50200: 2006 are modified to use a flame temperature of (930 +40 -0)°C and the application of mechanical shock and water spray.

Fire test study group/EGOLF

Certain aspects of some fire test specifications are open to different interpretations. The Fire Test Study Group and EGOLF have identified a number of such areas and has agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed.

Instruction to test

The test was conducted on the 16th September 2016 at the request of Abtech Limited, the sponsor of the test.

Provision of test specimens	The specimens were supplied by the sponsor of the test. Exova Warringtonfire was not involved in any selection or sampling procedure.
Conditioning of specimens	<p>The specimens were received on the 7th September 2016.</p> <p>Prior to the test the specimens were conditioned for at least 16 hours in an atmosphere having a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50 \pm 5\%$.</p>
Burner verification procedure	<p>The verification procedure for the burner was conducted in accordance with Section 7 of BS EN 50200: 2006 at the start of the test day, utilising the gas and air flows and temperature requirements provided in BS 8434-2: 2003 + A2: 2009. Temperature measurements recorded by each thermocouple were logged using an Omega 'HH1384' four channel thermometer and datalogger at 1 second intervals over a period of 10 minutes and then averaged. This determined the gas & air flow rates and the position of the burner that were used for the subsequent cable test.</p> <p>The gas and air flows were provided through the use of M&W Instruments mass flow controllers, model numbers 'D-6341-DR' and 'D-6361-DR'.</p>
Form in which the specimens were tested	The cable junction box was mounted to a nominally 10mm thick calcium silicate backing board and used the standard cable supplied and described below.

Description of Test Specimens

The description of the specimens given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

General description		Cable junction box	
Junction box	Product reference	"SX6020"	
	Name of manufacturer	ABTECH	
	Terminals	Product reference	"Ceramic Pillars"
		Detailed description / composition details	Ceramic pillars
		Name of manufacturer	ABTECH
	Steel	Generic type	Stainless steel EN1.4404 (AISI 316L)
		Product reference	"SX Range, size 600mm x 200mm x 140mm"
		Thickness	2mm
		Density	8.0g/cm ³
	Flame retardant details		This component is inherently flame retardant
Dimension of cable junction box		600mm x 200mm x 140mm (specific for test)	
Brief description of manufacturing process		Welded fabrication	
The junction box was fitted to a calcium silicate backing board using stainless steel screws			
Cable	General description	Mineral insulated	
	Product reference	"CCM4L2.5"	
	Name of manufacturer	Pentair -Pyrotenax	
	Diameter	8mm	
	Weight per unit length	2.13kg/m	
	Cable marking	See Note 1 below	
	Cable function	See Note 1 below	
	Colour	"Natural"	
	Number of cores x core size	4 x 2.5mm ²	
	Voltage rating	500V	
	Cable configuration	4 x single strand	
The sponsor was unable to provide any further information regarding the cable			
Brief description of manufacturing process		See Note 1 below	

Note 1: The sponsor was unable to provide this information.

Test Results

Applicability of test results

The test results relate only to the behaviour of the specimen of the cable junction box under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire hazards of the product in use.

The test results relate only to the specimen of the cable junction box in the form in which it was tested. Small differences in the composition of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product, which is supplied or used, is fully represented by the specimen, which was tested.

Results

When a specimen of the cable junction box utilising the standard cable supplied were tested using the principles of the procedure specified in BS 8434-2: 2003 + A2: 2009, for a period of 120 minutes with exposure to fire with mechanical shock and water spray at a temperature of (930 +40 -0) °C and a rated voltage of 600V-rms, the cable junction box maintained its integrity for the duration of the test.

Conclusion

When tested using the general principles of BS 8434-2: 2003+A2: 2009, at a temperature of 930 +40 -0°C for a duration of 2 hours, the cable junction box maintained its integrity for the duration of the test.

Validity

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

This report may only be reproduced in full. Extracts or abridgements shall not be published without permission of **Exova Warringtonfire**.

Appendix 1 – Photographs of test specimens

Before test



After test



After test inside box



Revision History

Issue No :	Issue Date:
Revised By:	Approved By:
Reason for Revision:	

Issue No :	Issue Date:
Revised By:	Approved By:
Reason for Revision:	