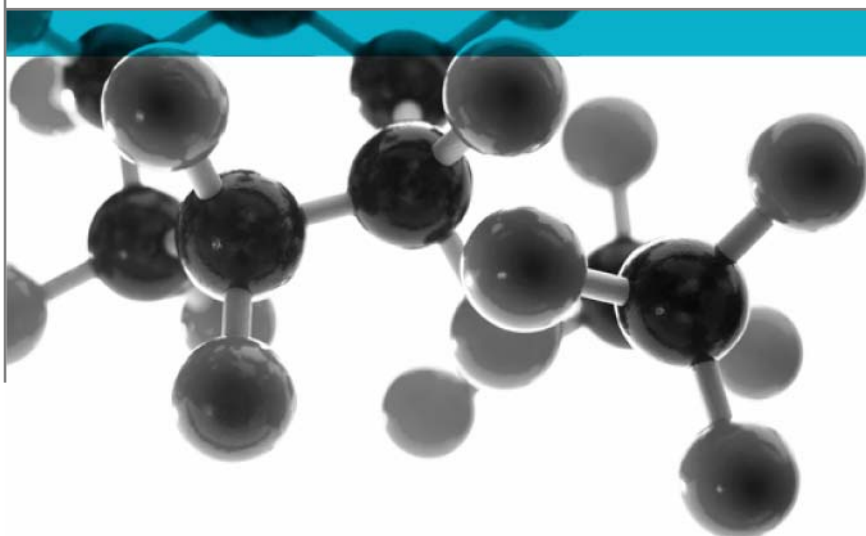


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Summary of Exova Warringtonfire Test Reports



A Report To: Xiamen Wain Electrical Co., Ltd

Document Reference: 308705 & 308706

Date: 2nd September 2011

Issue No.: 1

Page 1

Testing
Advising
Assuring



Executive Summary

Objective Summary of Exova Warringtonfire report Nos. 308705 & 308706. To assess the results of tests to BS EN ISO 4589-2 and BS EN 60695-2-11 and to determine the I rating of the product tested, as defined in clause 6.1.3 of NF F 16-101.



Generic Description	Product reference	Thickness	Density
Fibre glass reinforced polycarbonate material	Material used to produce "Heavy Duty Connector"	6mm	1.33g/cm ³
Individual components used to manufacture composite:			
Polycarbonate	"PC"	Not stated	Not stated
Glass fibre	"GF20"	Not stated	Not stated
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor Xiamen Wain Electrical Co., Ltd, 759-3 Chengbei Industrial Zone, Chaoyuan Road, Tongan District, Xiamen, China

Summary of Test Results: **The results of the tests, confirmed in reports referenced 308705 & 308706 demonstrate that the product, when tested at a thickness of 6mm can be classified as I3 in accordance with the requirements of NF F 16-101 and STM-S-001.**

Date of Test 12th and 14th July 2011

Signatories

	
Responsible Officer T. Mort * Senior Technical Officer	Authorised S. Deeming * Senior Technical Officer

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

Report Issued: 2nd September 2011

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CONTENTS	PAGE NO.
EXECUTIVE SUMMARY	2
SIGNATORIES	2
TEST DETAILS	4
DESCRIPTION OF TEST SPECIMENS	5
TEST RESULTS	6
REVISION HISTORY	8



Test Details

Introduction

Investigations into the behaviour of a product under the conditions of tests specified in BS EN ISO 4589 – 2: 1999 “Plastics Determination of Burning Behaviour By Oxygen Index” and BS EN 60695-2-11: 2001 / IEC 60695-2 11: 2000, Fire Hazard Testing Part 2-11: Glowing / Hot-Wire Based Test Methods – Glow-Wire Flammability Test Methods For End-Products” have been conducted.

The results of the tests are fully reported in Test Reports WF Nos. 308705 and 308706.

This summary test report has been prepared at the request of the sponsor and relates the results of the tests to the requirements for ‘I’ classifications given in NF F 16-101 Table 1 and utilising the guidance of Technical Specification STM-S-001 – “Equipment RATP Technical Specification”.

This summary should be read in conjunction with, and not accepted as a substitute for, the Test Reports, WF No’s 308705 and 308706. These test reports may include additional information which may be relevant to the assessment of the potential fire hazard of the product.

Results of Test

The following test results were obtained for the specimens which were tested:-

BS EN ISO 4589-2

Oxygen Index = 40.0%

BS EN 60695-2-11: 2001 / IEC 60695-2 11: 2000

When the results obtained during the investigation are assessed against the aforementioned specifications, the following conclusions can be made:

- **Ignition did occur at a temperature of 850°C.**
- **Flame did not persist following removal of glow-wire at a temperature of 850°C.**

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.

In the case of BS EN ISO 4589 Part 2, the test was performed on specimens of the fibre glass reinforced material, which was utilised in the production of the connectors. In the case of BS EN 60695-2-11, the test was performed on the connector in its end use form.

General description		Fibre glass reinforced polycarbonate material
Product reference		Material used to produce "Heavy Duty Connector"
Name of manufacturer		Xiamen Wain Electrical Co., Ltd
Colour reference		"Grey"
Overall thickness of material (BS EN ISO 4589-2)		6mm (stated by sponsor) 5.96mm (determined by Exova Warringtonfire)
Overall density		1.36g/cm ³ (stated by sponsor) 1.33g/cm ³ (determined by Exova Warringtonfire)
Overall weight of connector		42.46g (determined by Exova Warringtonfire)
Overall size of connector		65mm x 44.4mm x 31.91mm (determined by Exova Warringtonfire)
Polycarbonate	Generic type	Polycarbonate (PC)
	Product reference	"PC"
	Name of manufacturer	See Note 1 below
	Trade name of flame retardant	See Note 1 below
	Generic type of flame retardant	Non-halogen flame retardant See Note 1 below
	Amount of flame retardant	0.5 to 5%
Glass fibre	Type	Fibrous glass
	Product reference	"CAS Number - 65997-17-3"
	Name of manufacturer	See Note 1 below
Resin to glass ratio (by weight)		4 : 1
Percentage glass reinforcement (by weight)		20%
Brief description of manufacturing process		Design mould → Injection moulding → Deburring → Semi-finished products (reinforced PC body in practice)

Note 1. The sponsor of the test was unable to provide this, or further information, as their supplier is unwilling to provide this information.

Test Results

Classification According to the values obtained for a material it is classified in one of the six classes, I0 to I4, and NC (1), as defined in Table 1 of NFF 16-101 and reproduced below

CLASS	RESULTS OF TESTS	
	Oxygen index	Glow wire
I0	≥70	No ignition at 960°C
I1	≥45	No ignition at 960°C
I2	≥32	No ignition at 850°C
I3	≥28	*Ignition does not persist at 850°C after glow wire is withdrawn
I4	≥20	-
NC (1)	<20	-

(1) NC: Non-classified

*This expression means that the flame is extinguished within a period of less than or equal to 2 seconds following the removal of the glow wire. (This point is not indicated in standard NF F 16-101 of October 1988 nor in NF EN 60695-2-10 and NF EN 60695-2-11).

* Note: NF F 16-101 states that during the Glow Wire test to BS EN 60695-2-11: 2001 / IEC 60695-2-11: 2000, when testing at a temperature of 850°C (Class I3 only), ignition is deemed not to have taken place when the resulting flame lasts for two seconds or less.

Conclusion

The results of the tests, confirmed in reports referenced 310479 & 310480 demonstrate that the product, when tested at a thickness of 6mm, can be classified as I3 in accordance with the requirements of NF F 16-101 and STM-S-001.

This classification is based on the requirements given in NF F 16-101: October 1988 and utilising the guidance of Technical Specification STM-S-001 – “RATP Technical Equipment Specification” October 2006. If the specification is revised or amended in any way subsequent to that date, care must be taken to ensure that this opinion is not invalidated by those revisions or amendments.

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.

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Revision History

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Revised By:	Approved By:
Reason for Revision:	

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