

NFP 92-503

Electric Burner Test

WF Report Number:

175898

Date: 17th September 2008

Test Sponsor:

**Plato Chemical Company
Limited**



0249

Bodycote warringtonfire

Test Report No. 175898

Electric Burner Test NFP 92-503

Sponsored By

**Plato Chemical Company Limited
Unit A, 12/ F
Cheung Lung Industrial Building**



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Test Details

Purpose of test	<p>To determine the performance of specimens of a product when they are subjected to the conditions of the test specified in NFP 92-503 "Building – Reaction To Fire Tests; Electric Burner Test For Flexible Materials".</p> <p>The test was performed in accordance with the procedure specified in NFP 92-503 and this report should be read in conjunction with that Standard. The specimens were not subjected to the accelerated ageing test.</p>
Scope of test	<p>NFP 92-503 specifies a method of test which subjects test specimens to the effects of radiant heat and hot gases sweeping the surface of test specimens under specified conditions. A pilot flame is used to ignite any pyrolysis gases which may be formed. Ignition times, flame persistence and the nature of combustion and its effects are noted.</p>
Fire test study group/ EGOLF	<p>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 have 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.</p>
Instruction to test	<p>The test was conducted on the 22nd August 2008 at the request of, Plato Chemical Company Limited, the sponsor of the test.</p>
Provision of test specimens	<p>The specimens were supplied by the sponsor of the test. Bodycote warringtonfire was not involved in any selection or sampling procedure.</p>
Conditioning of specimens	<p>The specimens were received on the 14th August 2008.</p> <p>Prior to testing the specimens were conditioned to constant mass at a temperature of $23 \pm 3^{\circ}\text{C}$ and a relative humidity of $50 \pm 10\%$.</p>
Specimen orientation	<p>Initial tests were carried out on one specimen cut in the direction of production with the front face exposed to the radiant heat of the test, one specimen cut in the production direction with the reverse face exposed, one specimen cut at 90° to the production direction with the front face exposed and one specimen cut at 90° to the production direction with the reverse face exposed.</p>

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		Polyvinyl Chloride (PVC) coated polyester base fabric
Product reference		"610g/m ² Vinyl Tarpaulin"
Name of manufacturer		Plato Chemical Co., Ltd
Overall thickness		0.55mm (stated by sponsor) 0.53mm (determined by Bodycote warringtonfire)
Overall weight per unit area		610g/m ² (stated by sponsor) 687.8g/m ² (determined by Bodycote warringtonfire)
Pattern reference		"B6"
Colour reference		Green
Product configuration		PVC Coating (test face)/ base fabric/ PVC Coating (reverse face) Note: both faces are identical
Base fabric	Product reference	"Polyester 1000D-20x22"
	Generic description	Polyester based woven fabrics
	Type of weave	Yarns – Warp 9/cm Yarns – weft 8/cm
	Thickness	0.3mm
	Weight per unit area	180g/m ²
	Flame retardant details	See Note 1
Coating 1 (test face)	Product reference	"PVC"
	Generic type	Polyvinyl Chloride (PVC)
	Name of manufacturer	Plato Chemical Co., Ltd.
	Colour	White
	Number of coats	One
	Application rate per coat	See Note 1
	Application method (spray)	See Note 1
	Curing process (duration and temperature)	See Note 1
Flame retardant details	See Note 1	
Coating 2 (reverse face)	Product reference	"PVC"
	Generic type	Polyvinyl Chloride (PVC)
	Name of manufacturer	Plato Chemical Co., Ltd.
	Colour	White
	Number of coats	One
	Application rate per coat	See Note 1
	Application method (spray)	See Note 1
	Curing process (duration and temperature)	See Note 1
	Trade name of flame retardant	See Note 1
Brief description of manufacturing process		Coating



NOTE 1: The sponsor was unwilling to provide this information.

Test Results

Test results	The results of the tests are given in Table 1.
Observations taken during the test	None.
Classification	<p>The results of this test, when assessed in accordance with the stipulations of the order from the Ministère de l'Industrie et de la Décentralisation, dated 28th August 1991 relating to reaction to fire, indicate that the specimens, as tested, are classified as M2.</p> <p>The indicated classification in no way prejudices the conformity of the materials commercialised to the samples submitted to the tests and can in no way be considered as a certificate of qualification as defined by the act of 10th January 1978. This conformity can be tested by the certificates of qualification acknowledged by the "Ministère de l'Industrie" and notably by the NF quality mark Réaction au feu.</p> <p>The test procedures for classifying flexible materials and flexible materials of less than 5mm thickness are detailed in Appendix 1 to this report.</p>
Durability of classification	The accelerated aging test has not been conducted
Applicability of test result	<p>The test results relate only to the behaviour of the test specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.</p> <p>The test results relate only to the specimens of the product in the form in which they were tested. Small differences in the composition or thickness 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 specimens which were tested.</p>
Validity	<p>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.</p> <p>This report may only be reproduced in full. Extracts or abridgements shall not be published without permission of Bodycote warringtonfire.</p>

Signatories


Responsible Officer 


Approved  Deputy Operations Manager


Authorised  Operations Manager

* For and on behalf of **Bodycote warringtonfire**.

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Table 1**Initial Test Results**

Specimen No.	Combustion Time (seconds)	Extent of Damage (mm)		Formation of Droplets	Non -Burning	Burning
		Length	Width			
1	19,1,0,0,0,0,0,0,0,0	197	-	NO	N/a	N/a
2	7,0,0,0,0,0,0,0,0,0	222	-	NO	N/a	N/a
3	11,1,0,0,0,0,0,0,0,0	199	-	NO	N/a	N/a
4	9,0,0,0,0,0,0,0,0,0	195	-	NO	N/a	N/a

On the basis of the results obtained during the initial tests, the formal test was completed on specimens cut in the production direction with the front face exposed.

Formal Test Results

Specimen No.	Combustion Time (seconds)	Extent of Damage (mm)		Formation of Droplets	Non -Burning	Burning
		Length	Width			
3	11,1,0,0,0,0,0,0,0,0	199	-	NO	N/a	N/a
5	15,0,0,0,0,0,0,0,0,0	201	-	NO	N/a	N/a
6	12,2,0,0,0,0,0,0,0,0	195	-	NO	N/a	N/a
7	12,0,0,0,0,0,0,0,0,0	198	-	NO	N/a	N/a

Average Value for Combustion Times:	8.8 seconds
Average Extent of Damaged Length:	198.25 mm
Average Extent of Damaged Width:	- mm

The specimens are designated "M2".

Appendix 1

Test Procedures For Classifying Flexible Materials less than 5 mm Thick

Heat Radiation Test

These tests consist in submitting the samples, in clearly defined conditions, to the action of a radiating heat source and producing:

(Articles 26 to 42)

- a) Ignition of the gases released, if it occurs,
- b) Flame propagation.

The test sample (60 x 180 cm) inclined at 30° is submitted to a clearly defined radiation, emitted by an electric radiator, whose surface is 3.0 cm below the surface of the test sample. The gases released pass in contact with gas igniters located on either side of the test sample.

The duration of the test is 5 minutes.

Complementary Tests

Article 42: The materials which display very special behaviour during the tests are submitted to complementary tests.

Tests on Fusible Materials (Articles 43 to 45)

70 mm side square samples, so as to obtain a weight of over 2 g, are installed on a clearly defined metal grid, and submitted to the radiation of a radiator located 3.0 cm above. On each ignition it is moved aside and replaced after extinction, during the first 5 minutes; then for 5 further minutes, it remains in position.

The determining elements are:

- The presence or not of burning drops
- The ignition of the cellulose wool placed under the test sample.

Flame Propagation Tests (Articles 46 to 48)

The test sample (400 x 35 mm), placed horizontally on edge, is submitted to the action of a small burner flame described in ISO 6940. The non-persistence or non-propagation of the flame is checked with the possible speed of propagation between 2 marks 25 cm apart.

Conditioning of the Samples

The samples submitted with normal dimensions are kept in a conditioned enclosure (23°C ± 3°C and 50% ± 10% relative humidity) until their mass has stabilised.

Classification of Materials

These are established subsequent to the above tests. Combustible materials are classified M.1, M.2, M.3, M.4. Only those materials classified M.1 can claim to M.0 classification (P.C.S. < 2500 kJ/kg, i.e. 600 kcal/kg).

(Articles 65 to 86)

Durability

To determine the durability of the classification, the tests are made in accordance with chapters 1 and 2 of appendix 22 which define the type of test to be applied to the material, depending on its nature, its use and its method of maintenance.

(appendix 22)



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