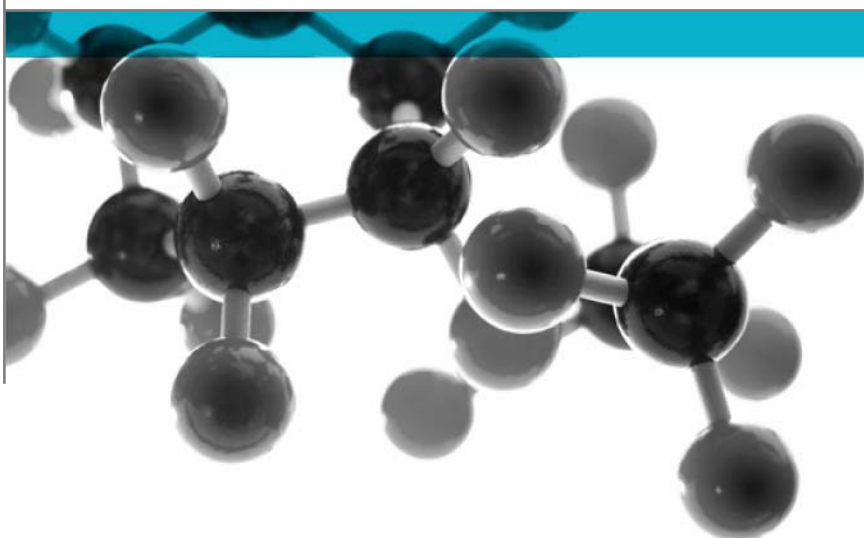


Ad-hoc investigation to determine the fire resistance of a hospital waste bin



Ad-hoc investigation to determine the fire resistance of a hospital waste bin

A Report To: Rubbermaid Commercial Products

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Date: 10th August 2011

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**Testing
Advising
Assuring**

Executive Summary

Objective To demonstrate the capability of the following bin to withstand and contain a fire


Generic Description	Product reference	Thickness / dimensions	Weight per unit area / density / capacity
Step on bin	"6145"	50.2cm x 41.0cm x 67.3cm	68.1 litres
Individual components used to manufacture composite:			
HDPE main body	"18 Gallon Step-on Can w/o Liner FG6145-00"	3.18mm (0.125")	0.952-0.953g/cm ³
Polypropylene lid	"Lid for 18 & 23 Gallon Step-on Cans / 61-6145-X1"	3.18mm (0.125")	0.90g/cm ³
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor Rubbermaid Commercial Products, Halifax Ave, Fradley Park, Lichfield, Staffordshire, WS13 8SS


Test Results: The test has demonstrated the ability of the waste bin to contain an internal fire and maintain its integrity without any external flaming. This, in conjunction with its construction, demonstrates that the bin meets the requirements of Clause 3.1.2 of "Firecode – Fire Safety In The NHS Health Technical Memorandum 05-03: Operational Provisions – Part A General Fire Safety: August 2008".

Date of Test 4th August 2011

Signatories



Responsible Officer
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Senior Technical Officer



Authorised
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Operations Manager

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

Report Issued: 10th August 2011

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Test Details

Introduction

The sponsor, Rubbermaid Commercial Products, supply a range of bins for use in hospitals. The sponsor approached **Exova Warringtonfire** with a HDPE / polypropylene “step on bin” type bin and requested that a test be performed on the bin to demonstrate its capability to withstand and contain a fire.

“Firecode – Fire Safety In The NHS Health Technical Memorandum 05-03: Operational Provisions – Part a General Fire Safety: August 2008” (which supersedes Clause 3.15 of the Firecode, Health Technical Memorandum 83, ‘Fire safety in healthcare premises – General fire precautions’), details the following requirements :-

“General Principles – Clause 3.1.2 – Waste should be stored in secure receptacles such as imperforate non-flammable or metallic bins, with well-fitting lids.”

The memorandum does not specify a test procedure, however, the sponsor has requested that **Exova Warringtonfire** conduct a test to demonstrate the fire resisting properties of the bin.

Purpose of test

Ad-hoc test to demonstrate fire resistance of a design of hospital waste bin when its contents are ignited and an internal fire is allowed to establish.

Instruction to test

The test was conducted on the 4th August 2011 at the request of Rubbermaid Commercial Products, the sponsor of the test.

Provision of test specimens

The specimen was supplied by the sponsor of the test on the 25th July 2011. **Exova Warringtonfire** was not involved in any selection or sampling procedure.

Description of Test Specimens

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

General description		Step on bin
Product reference		"6145"
Dimensions		50.2cm x 41.0cm x 67.3cm
Capacity		68.1 litres
Name of manufacturer		Rubbermaid Commercial Products
Main body	Product reference	"18 Gallon Step-on Can w/o Liner FG6145-00"
	Generic type	High density polyethylene (HDPE)
	Name of manufacturer	Rubbermaid Commercial Products
	Colour	"Beige"
	Thickness	3.18mm (0.125")
	Density	0.952-0.953g/cm ³
	Flame retardant details	See Note 1 below
Lid	Product reference	"Lid for 18 & 23 Gallon Step-on Cans / 61-6145-X1"
	Generic type	Polypropylene
	Name of manufacturer	Rubbermaid Commercial Products
	Colour	"Beige"
	Thickness	3.18mm (0.125")
	Density	0.90g/cm ³
Flame retardant details	See Note 1 below	
Brief description of manufacturing process of complete unit		Injection moulding

Note 1. The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the product / component.

Test Procedure

As no test method is specified in Clause 3.1.2 of "Firecode – Fire Safety In The NHS Health Technical Memorandum 05-03: Operational Provisions – Part A General Fire Safety: August 2008", the following test procedure was considered to best demonstrate the ability of a waste bin to contain a fire when typical combustible contents are ignited and the flaming allowed to establish.

- A commercially available plastic sack was fitted to the bin and was held in place using the securing trap.
- The bin was filled to a depth of approximately $\frac{3}{4}$ height with typical combustible waste material. The waste consisted of a mix of paper sheets, plastic vending machine cups, paper towels, shredded paper and plastic bags.
- At the start of the test, the lid was held open and the surface of the waste material was ignited in several places using a butane torch.
- The flaming was allowed to establish for 1 minute before closing the lid.
- Observations were made of any external burning behaviour throughout the test. To enable the progress of the combustion within the bin to be assessed without opening the lid, a hand-held infra-red thermometer was used to measure the temperature of the external surfaces.
- The test was discontinued following a period of 50 minutes.
- At the end of the test, the lid was opened and the bin and its contents were examined.
- Still photographs and a video recording were taken of the test.

Test Results

Observations

The visual observations taken during the tests are shown in Table 1.

Photographs taken at intervals during the test are shown on page 9.

Discussion of results

The test has demonstrated the ability of the waste bin to contain an internal fire and maintain its integrity without any external flaming. This, in conjunction with its construction, demonstrates that the bin meets the requirements of Clause 3.1.2 of "Firecode – Fire Safety In The NHS Health Technical Memorandum 05-03: Operational Provisions – Part A General Fire Safety: August 2008".

The lid is well fitting and has an effective self-closing mechanism. Although some smoke leakage was observed from around the lid, the test showed that it created a sufficient seal to limit the duration of flaming combustion of the contents.

The effectiveness of the lid was further demonstrated when it was opened after 50 minutes test duration had elapsed. The contents of the bin had extinguished and there was no re-ignition of any of the materials inside the bin.

Applicability of test results

The test results relate only to the behaviour of the test specimen of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the performance of the product in its end use.

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.

Table 1 - Observations

Time (min:sec)	Observation	Maximum Temperature (°C)	
		Lid	Sides
00:00	Surface of waste material ignited. Lid held open whilst flaming is allowed to establish	23	21
01:00	Lid closed. Smoke began to emerge from the lid of the bin. No visible flaming	-	-
02:00	No change	89	110
03:00	No change	92	109
05:00	No change	77	101
10:00	Smoke production observed to decrease.	59	70
15:00	Smoke production decreased further. Temperatures indicate that the combustion of contents inside the bin is decreasing	47	53
20:00	No change	42	40
25:00	No change	35	31
30:00	Smoke production ceased.	32	31
35:00	No change	29	29
40:00	No change	27	26
45:00	No change	25	25
50:00	Lid opened by the test operator to check the combustion progress of the contents of the bin. There was no visible evidence of continued flaming or smouldering of the contents of the bin. Test terminated	25	24

Photographs



Photographs before the test



Photograph during the test (prior to lid closure)



Photograph after the test

Revision History

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

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