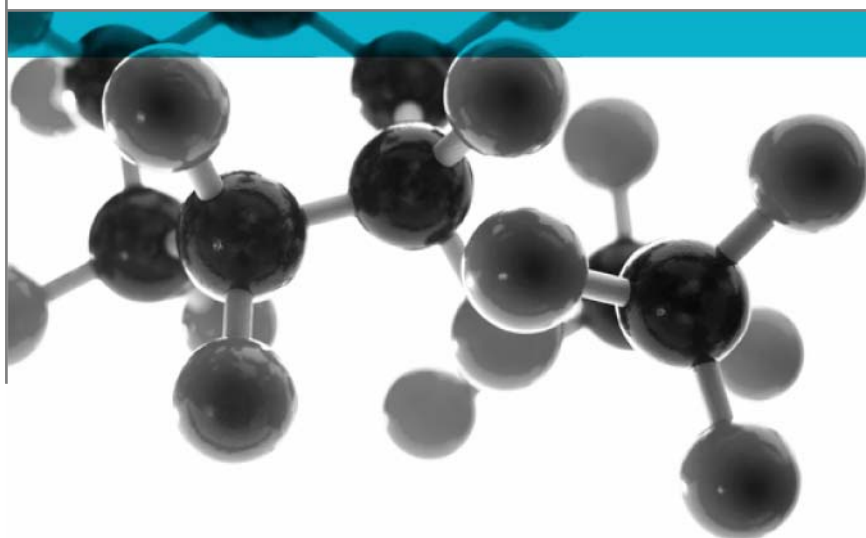


# Ad-hoc investigation to determine the fire resistance of a hospital waste bin



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

A Report To: Rubbermaid Commercial Products

Document Reference: 309915

**Date:** 10<sup>th</sup> August 2011

**Issue No.:** 1

Page 1

**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	"6143"	41.3cm x 40.0cm x 43.5cm	30.3 litres
<b>Individual components used to manufacture composite:</b>			
HDPE main body	"8 Gallon Step-on Can w/o Liner FG6143-00"	2.03mm (0.08")	0.952-0.953g/cm <sup>3</sup>
Polypropylene lid	"Lid for 8 & 12 Gallon Step-on Cans / 61-6143-X1"	3.18mm (0.125")	0.90g/cm <sup>3</sup>
<b>Please see page 5 of this test report for the full description of the product tested</b>			

**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** 4<sup>th</sup> August 2011

## Signatories



Responsible Officer  
S. Deeming \*  
Senior Technical Officer



Authorised  
C. Dean \*  
Operations Manager

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

Report Issued: 10<sup>th</sup> August 2011

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 Extracts or abridgements of reports must not be published without permission of **Exova Warringtonfire**.

<b>CONTENTS</b>	<b>PAGE NO.</b>
<b>EXECUTIVE SUMMARY.....</b>	<b>2</b>
<b>SIGNATORIES.....</b>	<b>2</b>
<b>TEST DETAILS.....</b>	<b>4</b>
<b>DESCRIPTION OF TEST SPECIMENS.....</b>	<b>5</b>
<b>TEST PROCEDURE.....</b>	<b>6</b>
<b>TEST RESULTS.....</b>	<b>7</b>
<b>TABLE 1 – OBSERVATIONS.....</b>	<b>8</b>
<b>PHOTOGRAPHS.....</b>	<b>9</b>
<b>REVISION HISTORY.....</b>	<b>10</b>

## 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 4<sup>th</sup> 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 25<sup>th</sup> 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		"6143"
Dimensions		41.3cm x 40.0cm x 43.5cm
Capacity		30.3 litres
Name of manufacturer		Rubbermaid Commercial Products
Main body	Product reference	"8 Gallon Step-on Can w/o Liner FG6143-00"
	Generic type	High density polyethylene (HDPE)
	Name of manufacturer	Rubbermaid Commercial Products
	Colour	"Beige"
	Thickness	2.03mm (0.08")
	Density	0.952-0.953g/cm <sup>3</sup>
	Flame retardant details	<b>See Note 1 below</b>
Lid	Product reference	"Lid for 8 & 12 Gallon Step-on Cans / 61-6143-X1"
	Generic type	Polypropylene
	Name of manufacturer	Rubbermaid Commercial Products
	Colour	"Beige"
	Thickness	3.18mm (0.125")
	Density	0.90g/cm <sup>3</sup>
Flame retardant details	<b>See Note 1 below</b>	
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	21	21
01:00	Lid closed. Smoke began to emerge from the lid of the bin. No visible flaming	-	-
02:00	Smoke production continued. Some deformation observed to the side of the bin. No visible flaming	87	121
03:00	Smoke production continued. No further deformation observed.	83	115
05:00	No change	73	107
10:00	Smoke production observed to decrease.	53	65
15:00	Smoke production decreased further.	40	44
20:00	No change	33	32
25:00	Temperatures indicate that the combustion of contents inside the bin is decreasing	30	27
30:00	Smoke production ceased.	28	25
35:00	No change	25	23
40:00	No change	24	22
45:00	No change	23	22
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	22	21

## Photographs

---



**Photographs before the test**



**Photographs during the test**



**Photograph after the test**

## Revision History

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

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