

BRE Test Report

Tests to PAS 59:2014 on Forest Safety Products Timber Frame Fall Arrest Bags

Prepared for: Julie Boon, Managing Director, Forest Safety Products Limited
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Summary of test results

PAS 59:2014 Drop Test

Result of tests carried out according to PAS 59:2014

Bag Tested: Single Stacked Forest Safety Products Timber Frame Fall Arrest Bags	
Dimensions: 450mm x 750mm x 2500mm (each bag)	
Configuration: A single layer of six Timber Frame fall arrest bags connected together with standard clips. Overall depth 750mm.	
Client: Forest Safety Products Ltd	
Date of test: 7 th April 2015	Report Number: P01038-1004
Report Prepared by: Dr P Blackmore – Associate Director, Building Technology Group	
Signed: 	Date: 10 th April 2015
Approved on behalf of BRE by: Dr J Bregulla – Director, Building Technology Group	
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Results	
Drop test 1 - Drop height 2.0m: Maximum deceleration – 9.80g	
Drop test 2 - Drop height 2.0m: Maximum deceleration – 8.69g	
Drop test 3 - Drop height 2.0m: Maximum deceleration – 8.41g	
Overall Result: PASS at drop height of 2.0m	



1 Introduction

This report describes testing of Forest Safety Products Timber Frame fall arrest bags to the requirements of PAS 59:2014 incorporating corrigendum No 1, here after referred to as PAS 59:2014 [1]. This work is based on BRE proposal number 137-383 dated 24th February 2015, which was accepted by Ms Jo Summers of Forest Safety Products Ltd, Stardens Works, Tewkesbury Road, Newent, GL18 1LG.

The tests were carried out under the BRE Standard Terms and Conditions of Business for testing as BRE project number PR1038.

2 Description of Test Specimens

The bags tested were supplied by Forest Safety Products Ltd. These bags comprise of an outer woven polypropylene fabric, sealed with a continuous stitched seam and filled with filler type REPS (Recycled Expanded Polystyrene) encapsulated in polythene bags.

The bags were Forest Safety Products Timber Frame Fall Arrest Bags with nominal dimensions of 450mm x 750mm x 2500mm long. The bags were stacked in a single layer for these tests as shown in Figure 1.

The bags were connected together using the clips provided on the bags.



Figure 1 View of the Timber Frame bags



3 Details of the Tests Carried Out

The tests were carried out according to PAS 59:2014 Annex A which specifies the requirements for filled collective fall arrest systems used to absorb kinetic energy of a falling person from a height. The deceleration was measured using a calibrated tri-axial accelerometer. The resultant vector sum vertical axis deceleration results were used and are presented in this report. The sample rate for the deceleration measurements was 1024Hz. The raw deceleration signal was filtered at 60Hz using a Fast Fourier Transform Digital Filter.

The bags were positioned on a rigid concrete floor and were contained within a wooden crib as shown in Figure 1. A mass was allowed to free fall from a height of 2.0m (measured above the highest point of the bags) onto the bags.

The mass used for these tests was a rigid steel cylindrical block of diameter 200mm conforming to the specifications of BS EN 364:1993. An accelerometer was rigidly attached to the top face to measure maximum deceleration force. A disc of plywood simulating the floor area of an EU male boot size 42/43 (280 ± 5) mm diameter and (20 ± 5) mm thick was secured to the underside of the steel mass, as required by BS EN 364.

The deceleration generated during the impact was measured by the accelerometer attached to the top of the mass. A time/acceleration curve was recorded for each impact from which the maximum deceleration was identified. Figure 2 shows the drop positions used in this test

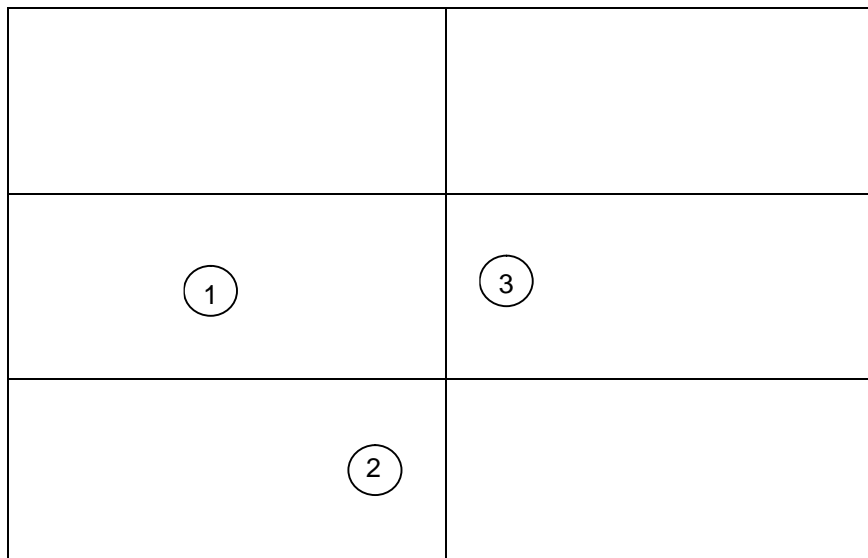


Figure 2 Impact positions on three of the six bags used in this test



4 Results

The maximum deceleration measured for each drop is given in Table 1. Annex A shows the time-deceleration curves measured during the testing.

Table 1 Summary of test results for a single layer of Timber Frame bags

Test No.	Drop Height (m)	Test Mass (kg)	Temperature (°C)	Humidity (%RH)	Peak Deceleration (g)
1	2.0	101Kg	20.2	51.9	9.80
2	2.0	101Kg	20.2	51.9	8.69
3	2.0	101Kg	20.2	51.9	8.41

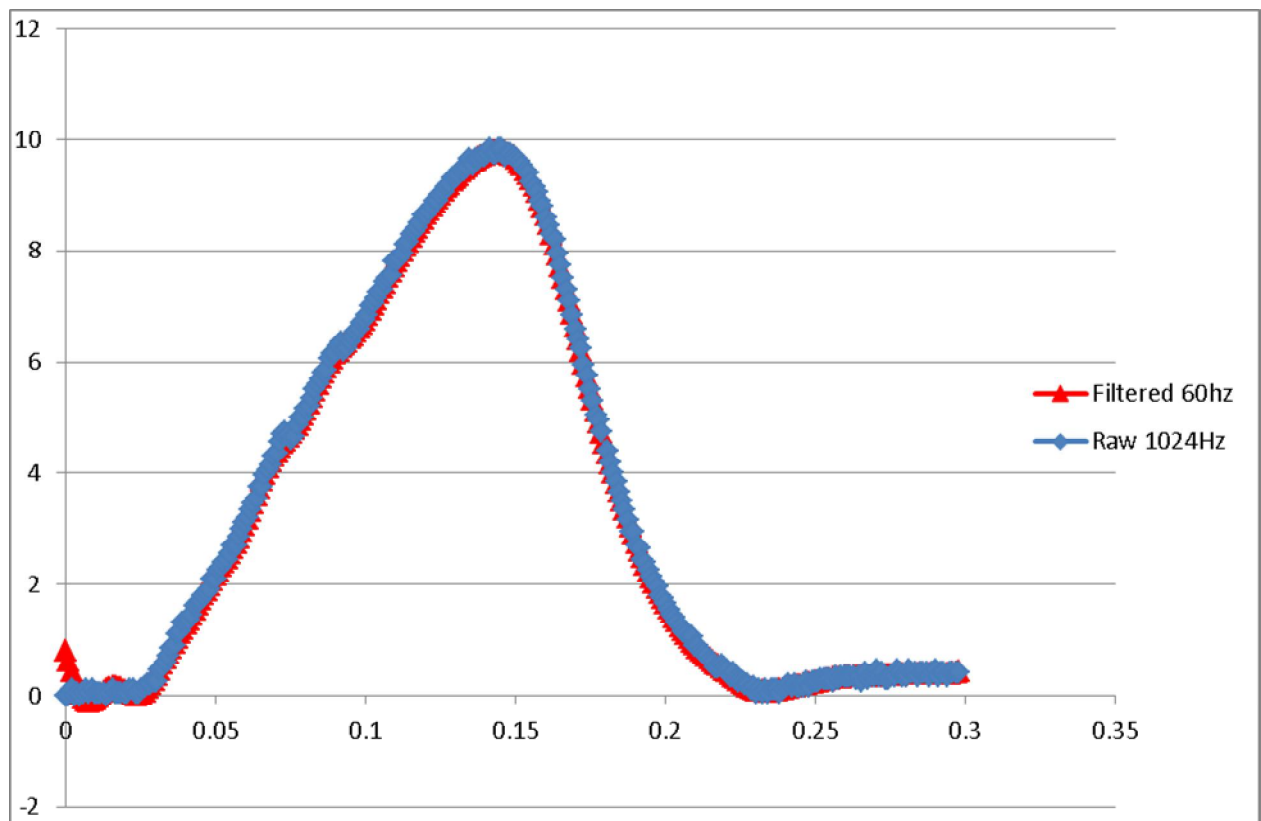


5 References

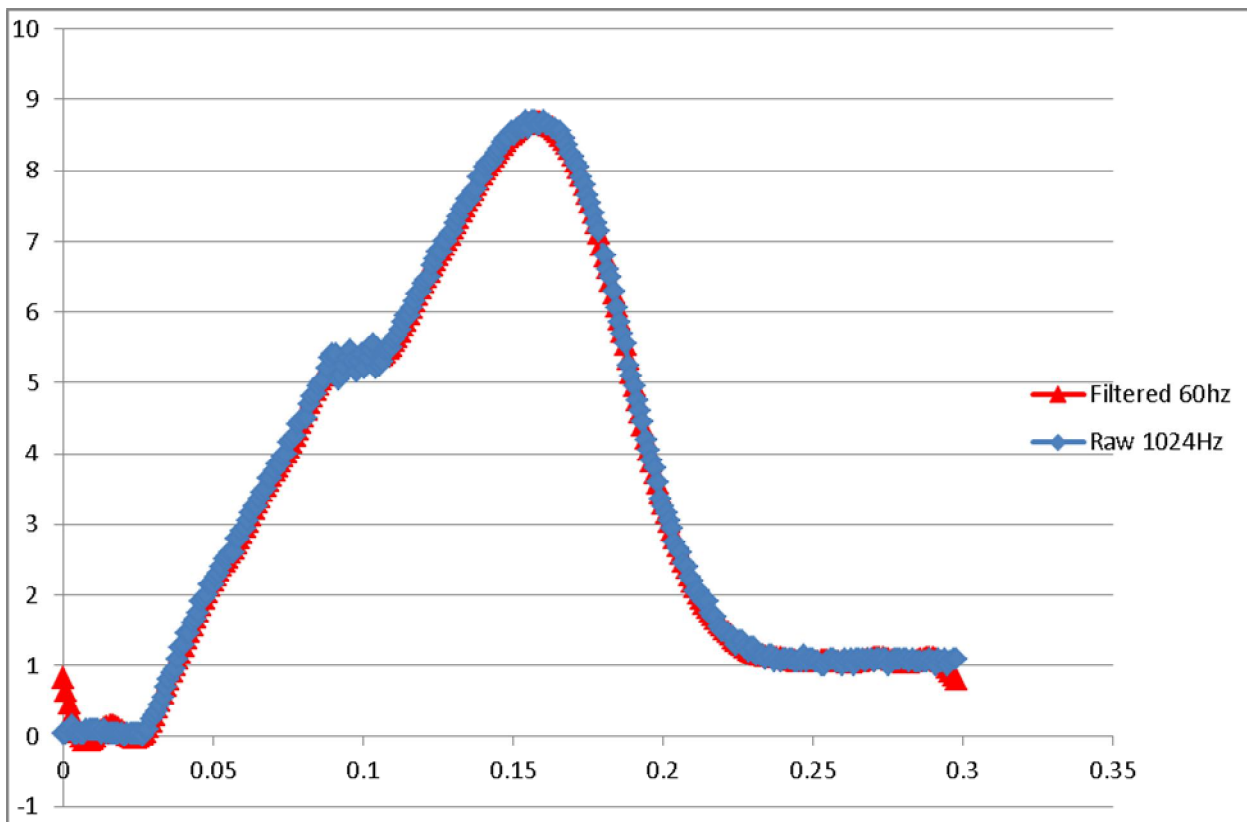
- 1) PAS 59:2014 incorporating corrigendum No 1 (January 2015), Specification for collective fall arrest soft landing systems, BSI.



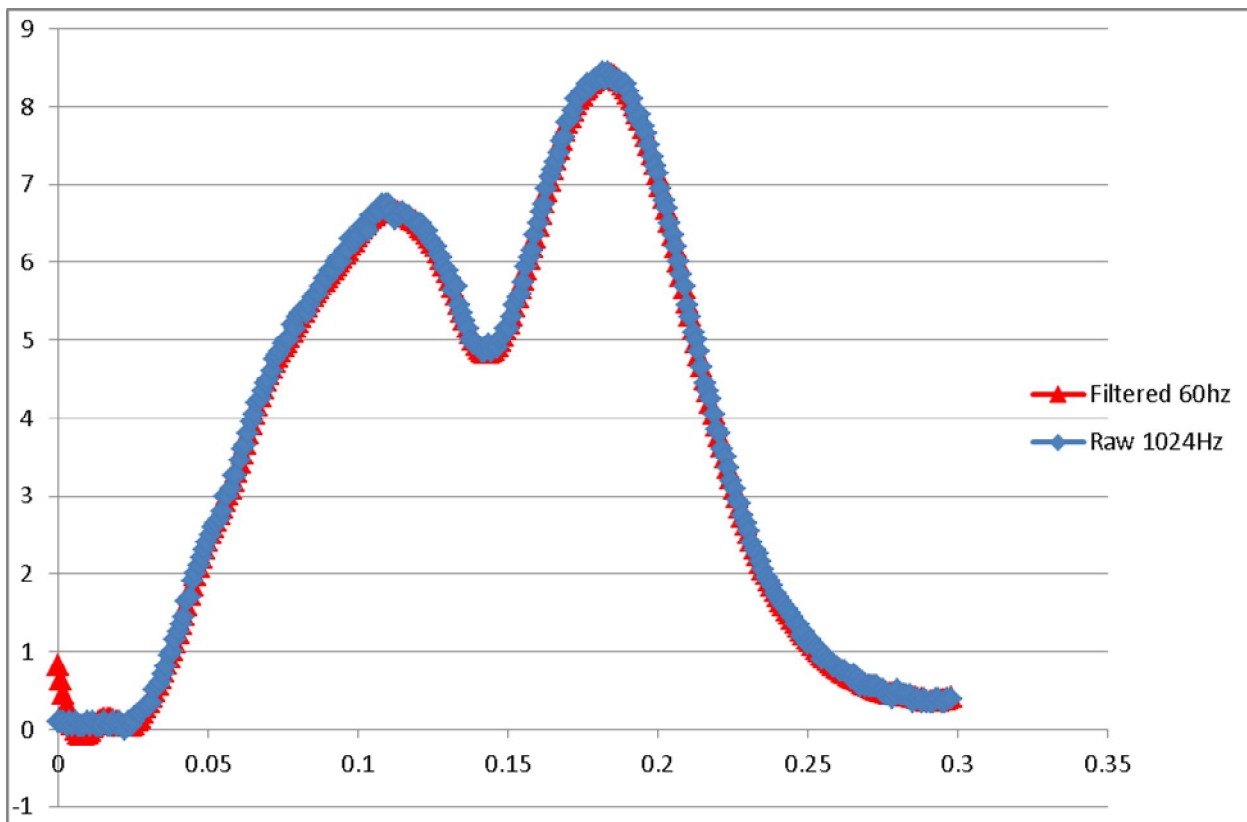
Appendix A Measured time – deceleration plots



Test 1



Test 2



Test 3