

# Consultancy Report

## Testing Labels to BS 5609, Section 3

(One type of printed label: Matt White PE)

Prepared for OKI Europe Limited

By Annalise Martins  
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19<sup>th</sup> September 2017

Ref: 17-143312

*Commercial in confidence*

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**This report is made subject to the conditions that it is confidential and may not be disclosed in whole or in part to others without the written consent of Smithers Pira**



## 1 Introduction

Smithers Pira was requested by OKI Europe Limited, to carry out testing to BS5609: 1986 – Section 3 on one printed self-adhesive label.

## 2 Samples received

*Table 1 – Details of samples received 26<sup>th</sup> July 2017*

Smithers Pira Reference	Product Description	Base Substrate	Ink/Toner Type	Printer Manufacturer/Model
Z1	Narrow Format Label Printer	Matt White PE	CYMK Micro crushed toner	Pro1040, Pro1050

## 3 Test methods and performance requirements

The samples were conditioned for a minimum of 24 hours at  $23 \pm 2^\circ\text{C}$  and  $50 \pm 5\%$  rh prior to testing.

### 3.1 Print key effectiveness (clause reference 8.1)

Tested in accordance with appendices H and G.

This test measures the resistance of removal of the print by adhesive tape (samples were tested using 3M 6204 self-adhesive tape with average bond strength of 4.86 N/25mm).

#### **Requirements**

- Ink shall not be removed from more than 5% of the printed area of each colour.
- Any changes should be no less than grade 3 of the British Standard greyscale.
- Any legends or symbols should remain identifiable.

### **3.2 Abrasion resistance (clause reference 8.2)**

Tested in accordance with appendices J and G.

This test measures the abrasion resistance of the print after exposure to a sea water/sand abrasion cycle.

#### ***Requirements***

- Colour should remain recognisable.
- Any change should be no less than grade 2 of the British Standard greyscale.
- Any legends or symbols should remain identifiable.

### **3.3 Permanence of print (clause reference 8.3)**

Tested in accordance with appendices E and G.

This test measures the resistance to change after exposure to salt spray/accelerated light cycles.

#### ***Requirements***

- Colour should remain recognisable.
- Any fading or colour change should be no less than grade 2 of the British Standard greyscale.
- Any legends or symbols should remain identifiable.

## 4 Results

**Table 2 – Print key effectiveness (clause reference 8.1)**

Smithers Pira References	Printing Ink	Grey Scale Rating	Observations	Pass/Fail
Z1	Black	5	No print removal	Pass
	Red	4.5	Very slight print removal	Pass
	Green	5	No print removal	Pass
	Dark Blue	5	No print removal	Pass
	Blue	4.5	Very slight print removal	Pass
	Magenta	5	No print removal	Pass
	Yellow	5	No print removal	Pass

**Table 3 – Abrasion resistance (clause reference 8.2)**

Smithers Pira References	Printing Ink	Grey Scale Rating	Observations	Pass/Fail
Z1	Black	4	Slight print removal	Pass
	Red	4	Slight print removal	Pass
	Green	4.5	Very slight print removal	Pass
	Dark Blue	4.5	Very slight print removal	Pass
	Blue	4.5	Very slight print removal	Pass
	Magenta	4	Slight print removal	Pass
	Yellow	4.5	Very slight print removal	Pass

**Table 4 – Permanence of print (clause reference 8.3)**

Smithers Pira References	Printing Ink	Grey Scale Rating	Observations	Pass/Fail
Z1	Black	3.5	Some print fade	Pass
	Red	3.5	Some print fade	Pass
	Green	4.5	Very slight print fade	Pass
	Dark Blue	4	Slight print fade	Pass
	Blue	4	Slight print fade	Pass
	Magenta	3.5	Some print fade	Pass
	Yellow	4	Slight print fade	Pass

**Note:**

The half tone prints had an overall lower Grey Scale Rating, however, passed the requirements.

## 5 Conclusion

The printed self-adhesive '**Matt White PE**' label supplied by OKI Europe Limited, has met all of the requirements of BS 5609 Section 3. A certificate is attached.

Prepared by



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*Materials Technologist*  
*Technical Investigations*

Checked by



Maggie Carnegie  
*Principal Consultant*  
*Technical Investigations*

# Appendix

## Photographs of the test results

## Print key effectiveness

Figure 1 – Sample reference: Z1 – ‘Matt White PE’



## Abrasion resistance

Figure 2 – Sample reference: Z1 – ‘Matt White PE’







# TEST CERTIFICATE

## BS 5609 (Section Three)

**Supplier:** OKI Europe Limited  
**Product Description:** Narrow Format Label Printer  
**Base Substrate:** Matt White PE  
**Ink:** CMYK Micro crushed toner  
**Printer:** Pro1040, Pro1050

**Smithers Pira reference:** 17-143312

Tests passed	Test methods	Clause reference
Print key effectiveness	H, G	8.1
Abrasion resistance	J, G	8.2
Permanence of print	E, G	8.3

This is to certify that the above label base material had been tested by Smithers Pira and conforms to:

**BS 5609: 1986 Section 3 - 'Laboratory Performance of Printed Labels'.**

Signed .....  .....

Maggie Carnegie

**Dated 19<sup>th</sup> September 2017**