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RESEARCH LABORATORY REPORT

Report No RLR.1

Date 22 November 2007

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Subject **TESTING OF ROAD MARKING PAINTS**
TO BS EN 1871;2000

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Expert Witness

*Failure
Investigation*

*Raw Material &
Finished Product
Evaluation*

*Specification
Testing*

Analysis

1. Introduction

1.1 Two samples of paint for use at level crossings were received on 25 June 2007 under our references C.27575 and C.27580, described as follows:

C.27580 Protecta-Kote Level Crossing Paint 1 litre + accelerator, white
C.27575 Protecta-Kote Level Crossing Paint 1 litre + accelerator, yellow

1.2 Testing was required against the following clauses of BS EN 1871:2000:

Clause 4.1.1 chromaticity and luminance
Clause 4.1.2 hiding power
Clause 4.1.4.3 UVB ageing
Clause 4.1.5 bleed resistance

1.3 The results are given in Section 2 below.

2. Tests and results (23 October - 16 November 2007)

2.1 Application rates

Because of the fine aggregate in the samples and in order to avoid tramlining during application, the white paint was applied at 900 microns wet and the yellow paint at 800 microns wet.

2.2 Clause 4.1.1 Chromaticity and luminance

		<u>Result</u>	<u>Specification requirement</u>			
Luminance factor, β						
White		0.79	LF5	\geq	0.75	
			LF6	\geq	0.80	
			LF7	\geq	0.85	
Yellow		0.56	LF1	\geq	0.40	
			LF2	\geq	0.50	
Chromaticity co-ordinates			<u>Corner point number</u>			
			<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
White	x	0.320	0.355	0.305	0.285	0.335
	y	0.338	0.355	0.305	0.325	0.375
Yellow	x	0.470	0.494	0.545	0.465	0.427
	y	0.468	0.427	0.455	0.535	0.483

2.3 Clause 4.1.2 Hiding power

		<u>Result</u>	<u>Specification requirement</u>
White		98.7%	not less than 95%
Yellow		95.8%	not less than 90%

2.4 Clause 4.1.4.3 UVB ageing (168 hours)

			<u>Result</u>	<u>Specification requirement</u> (for white and yellow)			
Difference in luminance factor, β							
White			0.03	UV0 no requirement			
Yellow			0.01	UV1 \leq 0.05			
Chromaticity co-ordinates				<u>Corner point number</u>			
				<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
White	x		0.327	0.355	0.305	0.285	0.335
	y		0.345	0.355	0.305	0.325	0.375
Yellow	x		0.458	0.494	0.545	0.465	0.427
	y		0.458	0.427	0.455	0.535	0.483

2.5 Clause 4.1.5 Bleed resistance

			<u>Result</u>	<u>Specification requirement</u> (for white and yellow)			
Difference in luminance factor, β							
White			0.46	BR0 no requirement			
Yellow			0.01	BR1 \leq 0.03			
				BR2 \leq 0.05			
Chromaticity co-ordinates				<u>Corner point number</u>			
				<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
White	x		0.354	0.355	0.305	0.285	0.335
	y		0.375	0.355	0.305	0.325	0.375
Yellow	x		0.461	0.494	0.545	0.465	0.427
	y		0.461	0.427	0.455	0.535	0.483

3. Conclusions

- 3.1 The samples of Protecta-Kote Level Crossing Paint, white (applied at 900 microns wet) and yellow (applied at 800 microns wet) that were submitted satisfied the requirements of clause 4.1.1 Chromaticity and luminance, clause 4.1.2 Hiding power and clause 4.1.4.3 UVB ageing.
- 3.2 The sample of Protecta-Kote Level Crossing Paint, yellow (applied at 800 microns wet) also satisfied the requirements of clause 4.1.5 Bleed resistance. However, the sample of Protecta-Kote Level Crossing Paint, white (applied at 900 microns wet) showed significant bleeding and did not satisfy the requirements of clause 4.1.5 Bleed resistance.
- 3.3 The yellow paint was classified as LF2 UV1 BR1.

Report prepared by Dr C J Chatfield, Managing Director
on behalf of Chatfield Applied Research Laboratories Ltd

Report authorised by

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Our handling of your enquiry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clarity and coverage of quotation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comment.....					
Progress report (if requested)					
Provided on-time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comment.....					
Final report/certificate(s)					
Issued to agreed timescale	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Notification of any delays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accuracy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Satisfied requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comment.....					
Communications					
Ease of contacting our personnel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Efficiency of calls, faxes, letters etc; eg handled by one person?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Courtesy/politeness of our staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How knowledgeable did our staff appear to be	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comment.....					
Invoices					
Accuracy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comment.....					
Overall					
Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost/price	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How did we compare to other options	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comment.....					
Would you use us again?	*yes	*no			
Would you recommend us?	*yes	*no			
Name.....	Company.....				
Report Reference	Report date				