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RESEARCH LABORATORY TEST REPORT

Report No RLR.4

Date 24 October 2008

Instigator J M Vemmer Esq
Greenstreak Group, Inc
3400 Tree Court Industrial Boulevard
St Louis
Missouri 63122
USA

Subject **TESTING OF FLEXIBLE PVC WATERSTOP**

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A UKAS Accredited Testing Laboratory No. 0140

<i>Expert Witness</i>	<i>Failure Investigation</i>	<i>Raw Material & Finished Product Evaluation</i>	<i>Specification Testing</i>	<i>Analysis</i>
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1. Description of sample

1.1 PVC Waterstop reference CM9100 was received on 28 August 2008, under cover of your Order reference 20211 000, dated 26 August 2008. The sample was assigned our reference C.28584 and was tested to various parts of BS.2782 and more recent standards derived from original BS 2782 standards as detailed below, using UKAS-accredited methods, at our own laboratories and those of Smithers RAPRA Technology.

Tensile strength and elongation at break tests were conducted in the direction of extrusion, as indicated on the attached diagram that was submitted with the test plaques.

2. Tests and results (5 September - 2 October 2008)

2.1	<u>Tensile strength</u> , MPa	1)	17.4
	BS EN ISO 525-2	2)	16.2
	500mm/minute grip separation,	3)	17.3
	Type 5A dumbbell	4)	16.6
		5)	17.4
		mean	17.0
2.2	<u>Elongation at break</u> , %	1)	374
	BS EN ISO 525-2	2)	361
	500mm/minute grip separation	3)	392
		4)	361
		5)	400
		mean	378
2.3	<u>Tensile modulus*</u> , MPa	1)	8.48
	BS EN ISO 525-2	2)	9.05
		3)	8.71
		4)	7.03
		5)	8.95
		mean	8.45
2.4	<u>Density</u> , kg/m ³		1336
	BS EN ISO 1183-1		
2.5	<u>Hardness</u> , IRHD		
	BS EN ISO 48 Method M		76
	Shore A		
	BS EN ISO 868		76

2.6	<u>Softness number</u> , (0.01mm) BS 2782 Method 365A		42
2.7	<u>Water absorption</u> , % BS EN ISO 62 24 hours @ 23°C	1) 2) 3) mean	0.18 0.12 0.15 0.15
2.8	<u>Cold bend temperature</u> ** BS 2782 Method 151A	minus 55°C:no failures minus 60°C:2 failures result:minus 55°C	

*This was unable to be obtained using the Type 5A dumbbell, and a parallel test piece 10mm wide was used with a 1mm/minute grip separation. The modulus was obtained as the slope of the regression line between 0.05% and 0.25% strain

**The thickness of the test specimen (nominally 1.8mm) did not conform to the thickness requirement of 1.27 ± 0.08 mm given in BS 2782 Method 151A

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

Report authorised by

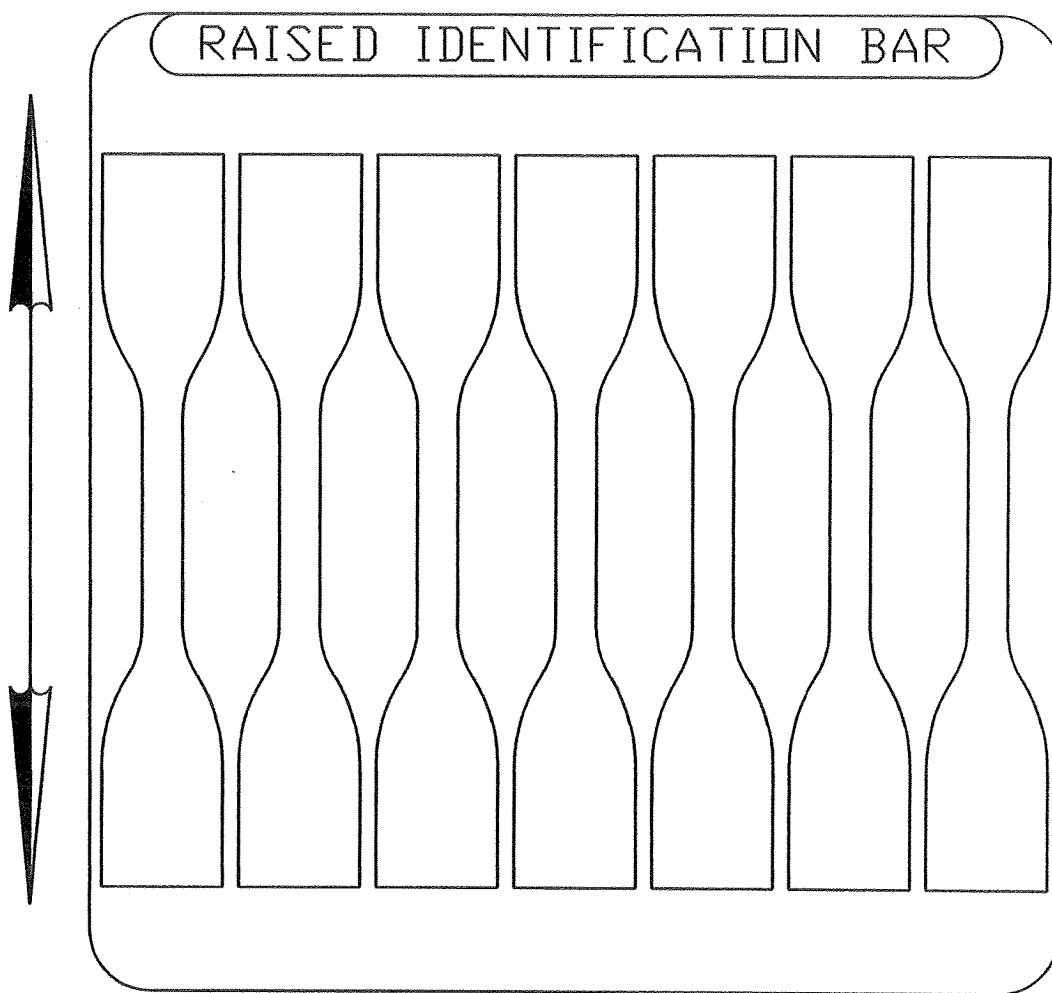


C J Chatfield (Dr)
Managing Director
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EXTRUSION DIRECTION



Please cut specimens in the direction indicated!