

Firm: Stanbee Asia Ltd
700/273 Moo 1
Amata Nakorn Industrial Estate
Tambol Bankao
Amphur Panthong
Chonburi 20160
Thailand

Job reference: FWT0206416/1230/Z

Date: 8th August 2012

Samples received: 26th July 2012

Attention of: Chutipa Laoprasertsiri

Testing completed: 8th August 2012

TECHNICAL SERVICES REPORT

Subject: Evaluation of stiffener material

Sample reference: Vantage 35 1ME

Tests requested

SATRA TM 1 1992 Thickness of leather and insole materials

The samples were stored in a standard controlled environment of $20 \pm 2^\circ\text{C}/65 \pm 2\%\text{RH}$ for at least 24 hours prior to testing and testing was carried out in this atmosphere.

SATRA TM 83 2009 (2012) Measurement of the area shape retention and collapsing load of formed toe puff and stiffener materials

The samples were stored in a standard controlled environment of $20 \pm 2^\circ\text{C}/65 \pm 2\%\text{RH}$ for at least 24 hours after forming. Testing was carried out in a conditioned atmosphere of $23 \pm 2^\circ\text{C}/50 \pm 2\%\text{RH}$.

Conditions of Issue:

This report may be forwarded to other parties provided they are members of SATRA and that it is not changed in any way. It must not be given to non-members nor published, for example by including it in advertisements, without the prior, written permission of SATRA.

Results given in this report refer only to the samples submitted for analysis and tested by SATRA. Comments are for guidance only.

Tests marked † fall outside the UKAS Accreditation Schedule for SATRA. All interpretations of results of such tests and the comments based upon them are outside the scope of the UKAS accreditation and are based on current SATRA knowledge.

A satisfactory test report in no way implies that the product tested is approved by SATRA and no warranty is given as to the performance of the product tested. SATRA shall not be liable for any subsequent loss or damage incurred by the customer as a result of information supplied in the report.

Please note uncertainty of measurement has not been applied to the results in this report. SATRA uncertainty of measurement values are available on request.

Report signed by: Kala Tidball-Wykes
Footwear Consultant
Footwear Technology - Testing
On behalf of SATRA Technology Centre Ltd

RESULTS

Reference:		Vantage 35 1ME					
Type:		Thermoplastic					
Activation conditions:		95°C for 8.5 minutes					
Test Method	Property	Result	Hardness categories and related performance levels				Category
			Very hard	Hard	Medium	Soft	
SATRA TM 1 1992	Thickness (mm)	0.84	-	-	-	-	-
SATRA TM 83 2009 (2012)	Initial collapsing load (N)	25	>130	130-81	80-31	30 or less	Soft
	Resilience ⁽¹⁾ (%)	76	Min 25	Min 30	Min 40	Min 50	Satisfactory
Properties not related to hardness			SATRA performance levels			Category	
			A	B	C		
SATRA TM 83 2009 (2012)	Moisture resistance ⁽²⁾ (%)	96	Min 80	Min 60	Min 40	A	
	Dry area shape retention (%)	Initial	93	Min 85	Min 70	Min 55	A
		After 10 collapses	89	Min 75 ⁽³⁾	Min 60	Min 45	A

- Note: 1 Resilience is percentage retention of initial collapsing load after ten collapses.
 2 Moisture resistance is percentage retention of initial dry collapsing load after 1 hour immersion.
 3 60% minimum is applicable to hard or very hard stiffeners.

COMMENTS

This material falls into the soft category and, as such, the resilience is satisfactory. Overall, the properties not related to hardness meet Performance Level A.

This material should be suitable for use in all footwear applications requiring a soft stiffener.

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Signed:

TERMS AND CONDITIONS OF BUSINESS

1. **GENERAL**
Work done or services undertaken are subject to the terms and conditions detailed below and all other conditions, warranties and representations, expressed or implied are hereby excluded.
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Prices are based on current material and production costs, exchange rates, duty and freight and are subject to change without notice.
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Delivery estimates are made in good faith and date from receipt of a written order and full information to enable us to proceed. While SATRA or its subsidiaries (hereafter referred to as "SATRA") make every effort to fulfil them, such estimates are subject to unforeseen events and if not maintained, cannot give rise to any claim. Offers "ex stock" are subject to prior sale.
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Cancellation of orders for goods, services, training or consultancy is only acceptable by prior agreement of SATRA and a charge will normally be made.
5. **CLAIMS**
Claims for errors, shortages etc should be notified within 10 days of date of receipt. In the event of goods damaged in transit, packing materials should be retained for examination; otherwise no liability can be accepted.
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Unless otherwise agreed in advance, test samples will be disposed of 6 weeks after the date of the final report. If required, samples can be returned at the Customer's expense.
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 - ii. Where SATRA has given consent to disclosure, the Customer shall draw the attention of the third party to these terms of business and the basis on which SATRA undertakes test, reporting and advising. The Customer shall indemnify SATRA for any failure to do so.
 - iii. The above items are submitted to the Customer as confidential documents. Confidentiality shall continue to apply after completion of the business, but shall cease to apply to information or knowledge which may come into the public domain.
13. **CONSTRUCTION AND ARBITRATION**
The laws of England shall govern all contracts and the parties submit to exclusive jurisdiction of the courts of England, unless otherwise agreed.

Issue Date: 1st October 2009

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Signed:


K. Tidball-Jones