

Customer details: Kebe A/S
Sortevej 8
DK-8543 Hornslet
Denmark

SATRA reference: FUR0251480 /1645

Your reference:

Date of report: 21 November 2016

Samples received: 9 November 2016

For the attention of: Remigiusz Wodzinski

Date(s) work carried out: 14 November 2016 –
16 November 2016

TECHNICAL REPORT

Subject:

Testing of a PU foam, described as "KEBE-UK- FOAM",
to BS EN ISO 2439:2008 method A (hardness), before and after pounding to
BS EN ISO 3385:2014, with classification according to BS 3379:2005

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Report signed by: Andrew Munns
Position: Furniture Technologist
Department: Furniture and Floor Coverings



Hardness testing of polyurethane foam

Sample Submitted

Sample reference: KEBE-UK- FOAM
Date received: 9 November 2016
Testing completed: 16 November 2016
Testing conducted by: Tom Notley
Reported by: Andrew Munns

Test methods and standards used:

BS EN ISO 3385:2014 (Flexible cellular polymeric materials – Determination of fatigue by constant-load pounding) – The load is applied for 10% of the cycle time

BS EN ISO 2439:2008 (Flexible cellular polymeric materials – Determination of hardness (indentation technique) (ISO 2439: 2008))

BS 3379: 2005 (Combustion modified flexible polyurethane cellular materials for loadbearing applications – Specification)

(note that BS 3379:2005 provides a classification scheme for grading foams on the basis of testing according to BS EN ISO 3385 and BS EN ISO 2439 Method A)

Description of items submitted for test

Three samples were supplied. The colour of the foam was green.

Conditioning

The foam samples were placed into a conditioned atmosphere of $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and $50\% \text{ rh} \pm 5\% \text{ rh}$, for 1 day (minimum of 16 hours required) before testing.

Test Results for "KEBE-UK- FOAM"

Post-pounding readings were taken after 10 minutes recovery time as instructed in BS EN ISO 3385:2014.

Sample Reference	Test	Pre Pounding Reading	Post Pounding Reading	Thickness Loss	Hardness Loss
A	Original Thickness	53.4 mm	52.3 mm	1.1 mm or 2.1 %	44 N or 20 %
	70 % Indentation	37.38 mm			
	70 % Indentation (3rd Time)	786 N			
	40 % Indentation	21.36 mm			
	40 % Indentation (after 30 seconds)	219 N	175 N		

Sample Reference	Test	Pre Pounding Reading	Post Pounding Reading	Thickness Loss	Hardness Loss
B	Original Thickness	47.4 mm	46.4 mm	1.0 mm or 2.1 %	52 N or 23 %
	70 % Indentation	33.18 mm			
	70 % Indentation (3rd Time)	844 N			
	40 % Indentation	18.96 mm			
	40 % Indentation (after 30 seconds)	231 N	179 N		

Sample Reference	Test	Pre Pounding Reading	Post Pounding Reading	Thickness Loss	Hardness Loss
C	Original Thickness	53.7 mm	52.5 mm	1.2 mm or 2.2 %	53 N or 25 %
	70 % Indentation	37.59 mm			
	70 % Indentation (3rd Time)	730 N			
	40 % Indentation	21.48 mm			
	40 % Indentation (after 30 seconds)	214 N	161 N		

Classification of “KEBE-UK- FOAM” according to BS 3379:2005

For Sample A:

The measured initial indentation hardness is 219 N.

This hardness value lies in the range 195 to 235 N.

So the hardness grade of this sample is “210”.

The measured hardness loss is 44 N.

So on the basis of the graphs provided in BS 3379: 2005, the fatigue classification of the foam is “V”, which corresponds to “very severe” service type.

For Sample B:

The measured initial indentation hardness is 231 N.

This hardness value lies in the range 195 to 235 N.

So the hardness grade of this sample is “210”.

The measured hardness loss is 52 N.

So on the basis of the graphs provided in BS 3379: 2005, the fatigue classification of the foam is “S”, which corresponds to “severe” service type.

For Sample C:

The measured initial indentation hardness is 214 N.

This hardness value lies in the range 195 to 235 N.

So the hardness grade of this sample is “210”.

The measured hardness loss is 53 N.

So on the basis of the graphs provided in BS 3379: 2005, the fatigue classification of the foam is “S”, which corresponds to “severe” service type.

(Note that service types based on fatigue classification may be light/average/severe/very severe/extremely severe)

Overall classification of the “KEBE-UK- FOAM” based on the median performance of the 3 samples

Median Hardness Grade (BS 3379:2005)	210
Median Fatigue Classification (BS 3379:2005)	S
Median Initial Hardness	219 N
Median Hardness Loss After Pounding	52 N
Median Percentage Thickness Loss After Pounding	2.1 %

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Issue Date: 1st October 2009