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Coco Latex Exports (P) LTD.  
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Akkreditiert ISO/IEC 17025

 **AKS** Akkreditierung: AKS-PL-20708  
Verzeichnis: www.aks-hannover.de  
Staatliche Akkreditierungsstelle Hannover



## TEST REPORT No. 18345-1

<b>Description of sample:</b>	latex foam sheets
Kind of sample:	latex foam
Client:	Coco Latex Exports (P) LTD., Kerala, India
Sampling by:	Cocolatex Exports (P) LTD., Kerala, India
Date of arrival of sample:	7 February 2008
Date:	12 March 2008
Number of pages:	6
Page:	1
Test parameter:	<p>According to QUL e.V. <sup>1</sup>:</p> <ul style="list-style-type: none"> <li>• Filler, polymer content</li> <li>• Nitrosamines (test chamber) *</li> <li>• Pentachlorophenol (PCP), Tetrachlorophenol (TeCP)</li> <li>• VOC (Volatile organic compounds, test chamber)</li> <li>• Carbon disulfide (CS<sub>2</sub>, test chamber)</li> </ul>
Testing laboratories:	ECO-Umweltinstitut GmbH, Cologne except * * subcontracted
Commercial use of this test report:	1 year <sup>2</sup>

<sup>1</sup> QUL = Qualitätsverband umweltverträgliche Latexmatratzen e.V.

<sup>2</sup> For the interest of product safety we set a time limit of 1 year for commercial use of this report. Products with changing raw materials need a regular check for an effective quality control.

## Filler, polymer content

<i>Filler</i>	<i>[weight/%]</i>
Polymer content, with reference to the sample	91
Ash content (incl. zinc oxide), with reference to the sample	9
Filler content, with reference to the sample <sup>1)</sup>	< 5
<i>Polymer content</i>	<i>[weight/%]</i>
NR, with reference to the polymer content <sup>2)</sup>	100
SBR, with reference to the polymer content	0

Remark:

<sup>1)</sup> The amount of filler is calculated as difference between the amount of ash and zinc oxide, assuming that the maximum of zinc oxide is 5 % of the total latex foam.

<sup>2)</sup> If NR-content is below 5 %, the result will be 100 % SBR. Usually there will be no use of NR below 5 % in a mixture of NR and SBR.

Demands by QUL e.V.:

Filler:  $\leq 5 \% \pm 1 \%$

Polymer content: NR  $\geq 95 \%$

Test methods: filler/ash: thermogravimetry; polymer content: IR/ATR.

## Nitrosamines (test chamber)

<i>Substance</i>	<i>Concentration after 2 days [ng/m<sup>3</sup>]</i>	<i>QUL-Orientation Value [ng/m<sup>3</sup>]</i>
N-Nitrosodimethylamine	< 100	---
N-Nitrosomethylethylamine	< 100	---
N-Nitrosodiethylamine	< 100	---
N-Nitrosodiisopropylamine	< 100	---
N-Nitrosodipropylamine	< 100	---
N-Nitrosodibutylamine	< 100	---
N-Nitrosopiperidine	< 100	---
N-Nitrosopyrrolidine	< 100	---
N-Nitrosomorpholine	< 100	---
Total:	< 100	300

< = below assessment limit

Assessment limit: 100 ng/m<sup>3</sup>

Sample geometry and chamber conditions: see VOC (Volatile organic compounds) test chamber

Test method: BGI 505-23

## Pentachlorophenol (PCP), Tetrachlorophenol (TeCP)

<i>Substance</i>	<i>Content [mg/kg]</i>	<i>QUL-Orientation value [mg/kg]</i>
Pentachlorophenol (PCP)	< 0,1	0,1
Tetrachlorophenol (TeCP)	< 0,1	0,1

< = not detectable, below assessment limit

Assessment limit: 0,01 mg/kg

Test method: Extraction, esterification, clean up on silicagel in reference to DFG-method S19, analysis with GC/ECD.

**VOC (Volatile organic compounds, test chamber)**

No	Substance	CAS No.	Emission after 2 days [ $\mu\text{g}/\text{m}^3$ ]	$q_A$ [ $\mu\text{g}/\text{m}^2\text{h}$ ]
<b>2</b>	<b>Saturated aliphatic hydrocarbons (n-, iso- and cyclo-)</b>			
2-7.4	n-Decan	124-18-5	0,001	0,001
2-7.5	n-Undecan	1120-21-4	0,001	0,001
	<b>Others non-calibrated and / or non-identified VOC, quantified as toluene-equivalent</b>			
---	Diethylamine (VVOC)	---	0,011	0,008
---	Isoalkane with 8 or 9 carbon atoms	---	0,001	0,001
---	N,N-Diethylformamid	---	0,001	0,001
---	Anilin	---	0,001	0,001
---	Isoalkane with 11 or 12 carbon atoms	---	0,002	0,002
---	Isoalkane with 11 or 12 carbon atoms	---	0,001	0,001
---	Isoalkane with 11 or 12 carbon atoms	---	0,002	0,002
---	Sesquiterpen	---	0,002	0,002
	<b>Total VOC:</b>		<b>0,023</b>	<b>0,018</b>

	<b>QUL-orientation value without isoaliphates</b>		<b>0,3</b>	<b>0,23</b>
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< = below assessment limit

Assessment limit: 0,001 mg/m<sup>3</sup>

Orientation value for the single substance: 0,15 mg/m<sup>3</sup>

Isoaliphates	Cas-no.	Emission after 2 days [ $\text{mg}/\text{m}^3$ ]	$SE_{Ra}$ [ $\text{mg}/\text{m}^2\text{h}$ ]
2-Methylpentane	107-83-5	n.d.	n.d.
3-Methylpentane	96-14-0	n.d.	n.d.
<b>Total isoaliphates:</b>		<b>n.d.</b>	<b>n.d.</b>

<b>QUL-orientation value isoaliphates:</b>		<b>0,5</b>	<b>0,39</b>
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< = below assessment limit

Assessment limit: 0,001 mg/m<sup>3</sup>

Orientation value for the single substance: 0,15 mg/m<sup>3</sup>

Sample geometry: sealed edges: No  
Loading related to: area  
Sample volume: 17,5 cm x 17,5 cm x 14,5 cm  
Chamber conditions: following DIN ISO 16000-9 and DIN EN 717-1  
Volume: 0,125 m<sup>3</sup>  
Temperature: 23°C  
Rel. Humidity: 45 %  
Pressure: Normal  
Air: Clean  
Air change rate: 1,0 h<sup>-1</sup>  
Air velocity: 0,3 m/s  
Loading: 1,3 m<sup>2</sup>/m<sup>3</sup>  
Specific air flow rate: 0,77 m<sup>3</sup>/m<sup>2</sup>\*h  
Sampling after: 48 h after loading of test chamber  
Test method: DIN ISO 16000-6

### Carbon disulfide (CS<sub>2</sub>, test chamber)

<i>Substance</i>	<i>Concentration after 2 days [µg/m<sup>3</sup>]</i>	<i>QUL-orientation value [µg/m<sup>3</sup>]</i>
Carbon disulfide CS <sub>2</sub>	< 1	50

< = below assessment limit

Assessment limit: 1 µg/m<sup>3</sup>

Sample geometry: see VOC (Volatile organic compounds) test chamber

Chamber conditions: see VOC (Volatile organic compounds) test chamber

Test method: DIN ISO 16000-6

Cologne, 12 March 2008



Dr. H.-U. Krieg  
(Technical Manager)

## Assessment

The tested sample "latex foam sheets", manufactured by Coco Latex Exports (P) LTD., fulfils the criteria of the "Qualitätsverband umweltverträgliche Latexmatratzen e.V." (QUL) to the above-mentioned range.

Cologne, 12 March 2008

A handwritten signature in black ink, appearing to read 'Kuebart' with a stylized flourish at the end.

Dr. Frank Kuebart  
(Project Manager)