

TFI Report 431223-04

EuroLatex ECO-Standard

Customer

VYROLAT s.r.o.
Prumyslova 2220
288 02 NYMBURK
CZECH REPUBLIC

Product

Latex foam
LN 20

Responsible at TFI

Dipl.-Ing. Gerd Bittner
Tel: +49 241 9679 213
g.bittner@tfi-online.de

This report includes 2 pages and 5 annex(es)

Aachen, 23 August 2013

Dr. Ernst Schröder



The present document is provided with a qualified electronic signature and is valid without autograph signature.

This report only applies to the tested specimens and has been established to the best of our knowledge. Only the entire report shall be reproduced. Under no circumstances, extracts shall be used. Furthermore, we apply the "General Terms and Conditions for the Execution of Contracts" of the Textiles & Flooring Institute GmbH, also with regard to the order execution.

1 Transaction

| | |
|-------------------------|--|
| Test order | Chemical testing according to EuroLatex ECO Standard test specification for latex foam cores, 14.02.2002 |
| Order date | 23 July 2013 |
| Your reference | Koen Everaerts |
| Material producer | VYROLAT s.r.o. |
| Product designation | LN 20 |
| Type of material | LATEX FOAM |
| compounding formulation | 20 % NL 80 % SBR LATES |
| process | DUNLOP |
| colour | WHITE |
| TFI sample number | 13-07-0209 |
| Date of sample receipt | 24 July 2013 |
| Sampling performed by | Customer |

2 Product Specification

| | |
|----------------------------------|----------------------|
| Material batch no. or equivalent | -- |
| Date of production | 9 July 2013 |
| Date of packaging | 9 July 2013 |
| Date of dispatch | 23 July 2013 |
| Size of samples | 25 cm x 20 cm x 3 cm |
| Amount of samples | 11 |

3 Results

| | |
|-------------------|--|
| Tested parameters | Chemical requirements fulfilled |
|-------------------|--|

4 Annexes

| | |
|-------------------------------|---------------|
| Pentachlorophenol | PCP 431223-04 |
| Pesticides | PES 431223-04 |
| Butadiene | BUT 431223-04 |
| Extractable heavy metals | MET 431223-04 |
| Emission testing ^a | E 431223-04 |

The annexes marked ^a are based on tests accredited in accordance with EN ISO/IEC 17025

Annex PCP – Pentachlorophenol

1 Transaction

Product designation LN 20
 TFI sample number 13-07-0209
 Testing period 31 July 2013 – 1 August 2013

2 Test Method / Requirements

Pentachlorophenol Internal method
 extraction method with several steps
 derivatisation
 gas chromatography – mass spectrometry

Determination threshold 0.1 mg/kg
 Deviation - no -

3 Results

| Parameter | Result [mg/kg] | Contamination limit value [mg/kg] | Fulfilled |
|--|----------------|-----------------------------------|-----------|
| Pentachlorophenol (PCP) including salts and esters | < 0.1 | 0.1 | Yes |

Annex PES - Pesticides

1 Transaction

| | |
|---------------------|--------------------------------|
| Product designation | LN 20 |
| TFI sample number | 13-07-0209 |
| Testing period | 9 August 2013 – 21 August 2013 |

2 Test Method / Requirements

| | |
|--------------------------------|---|
| Pesticides/ Internal method | Determination of pesticides after extraction hexane/dichloromethane extraction method clean-up by adsorption chromatography gas chromatography – mass spectrometry |
| Determination threshold | 40 µg/kg |
| Deviation | - no - |

3 Results

| Parameter | CAS-No | Result [µg/kg] | Contamination limit value [µg/kg] | Fulfilled |
|-----------------------------------|-----------|-------------------|---|-----------|
| α Hexachlorocyclohexane | 319-84-6 | < 40 | < 40 | Yes |
| β Hexachlorocyclohexane | 319-85-7 | < 40 | < 40 | Yes |
| γ Hexachlorocyclohexane (Lindane) | 58-89-9 | < 40 | < 40 | Yes |
| δ Hexachlorocyclohexane | 319-86-8 | < 40 | < 40 | Yes |
| ε Hexachlorocyclohexane | 6108-10-7 | < 40 | < 40 | Yes |
| Hexachlorobenzene | 118-74-1 | < 40 | < 40 | Yes |
| Aldrin | 309-00-2 | < 40 | < 40 | Yes |
| Endrin | 72-20-8 | < 40 | < 40 | Yes |
| Dieldrin | 60-57-1 | < 40 | < 40 | Yes |
| Heptachlor | 76-44-8 | < 40 | < 40 | Yes |
| Heptachlorepoxyde | 1024-57-3 | < 40 | < 40 | Yes |
| Methoxichlor | 72-43-5 | < 40 | < 40 | Yes |
| Mirex | 2385-85-5 | < 40 | < 40 | Yes |
| Diazinon | 333-41-5 | < 40 | < 40 | Yes |
| Dichlorvos | 62-73-7 | < 40 | < 40 | Yes |
| Malathion | 121-75-5 | < 40 | < 40 | Yes |
| Dichlorofention | 97-17-6 | < 40 | < 40 | Yes |
| Parathion-methyl | 298-00-0 | < 40 | < 40 | Yes |
| Parathion-ethyl | 56-38-2 | < 40 | < 40 | Yes |
| o, p'-DDD | 3424-82-6 | < 40 | < 40 | Yes |
| p, p'-DDD | 72-55-9 | < 40 | < 40 | Yes |
| o, p'-DDE | 53-19-0 | < 40 | < 40 | Yes |
| p, p'-DDE | 72-54-8 | < 40 | < 40 | Yes |
| o, p'-DDT | 789-02-6 | < 40 | < 40 | Yes |
| p, p'-DDT | 50-29-3 | < 40 | < 40 | Yes |

Annex BUT - Butadiene

1 Transaction

Product designation LN 20
 TFI sample number 13-07-0209
 Testing period 29 July 2013 – 5 August 2013

2 Test Method / Requirements

Butadiene Internal method
 Headspace sampling
 gas chromatography - mass spectrometry

determination threshold 1 mg/kg
 Deviation - no -

3 Results

| Parameter | Result [mg/kg] | Limit value [mg/kg] | Fulfilled |
|---------------|----------------|---------------------|-----------|
| 1.3-Butadiene | < 1 | 1 | Yes |

Annex MET - Extractable Heavy Metals

1 Transaction

Product designation LN 20
 TFI sample number 13-07-0209
 Testing period 30 July 2013 – 8 August 2013

2 Test Method / Requirements

Extractable heavy metals DIN 38414-4:1984 (S4)
 EuroLatex ECO-Standard Version 14.02.02
 water extraction method
 element dependant analytical method, ICP respectively AAS

Determination threshold see result table
 Deviation - no -

3 Results¹

| Parameter | Result [mg/kg] | Determination threshold [mg/kg] | Threshold value [mg/kg] | Fulfilled |
|---------------------|----------------|---------------------------------|-------------------------|-----------|
| Antimony (Sb) | < 0.2 | 0.2 | 0.5 | Yes |
| Arsenic (As) | < 0.04 | 0.04 | 0.5 | Yes |
| Lead (Pb) | < 0.14 | 0.14 | 0.5 | Yes |
| Cadmium (Cd) | < 0.05 | 0.05 | 0.1 | Yes |
| Chromium (Cr total) | < 0.5 | 0.5 | 1 | Yes |
| Cobalt (Co) | < 0.3 | 0.3 | 0.5 | Yes |
| Copper (Cu) | < 0.6 | 0.6 | 2 | Yes |
| Nickel (Ni) | < 0.45 | 0.45 | 1 | Yes |
| Mercury (Hg) | < 0.01 | 0.01 | 0.02 | Yes |

¹The determination was carried out by an accredited laboratory as sub-contractor.

Annex E - Emission Testing

1 Transaction

| | |
|---------------------|-------------------------------|
| Product designation | LN 20 |
| TFI sample number | 13-07-0209 |
| Testing period | 29 July 2013 – 22 August 2013 |

2 Test Method / Requirements

| | |
|-------------------------------------|--|
| Emission chamber | EN ISO 16000-11:2006 EN ISO 16000-9:2006 Volume of stainless steel chamber 0.25 m ³ Chamber load 0.2 m ² /m ³ Air exchange rate 0.5/h Temperature 23 °C ± 2 °C Relative air humidity 50 % RH ± 5 % RH Air velocity above the sample 0.1 m/s to 0.3 m/s |
| VOC | ISO 16000-6:2004 EN ISO 16017-1:2000 Sampling on Tenax, approx. 5 l, 80 ml/min Thermal desorption / gas chromatography / mass spectrometry (TD/GC/MS) Gerstel thermal desorber/ cooled injection system, Agilent GC/MS non-polar capillary column |
| Nitrosamine | BGI 505.23, Eurolatex method ZH 1/120.23 Sampling on Thermo sorb cartridges, approx. 200 l, 1000 ml/min Solvent desorption / gas chromatography / thermal energy analyzer (GC/TEA) |
| Determination threshold VOC | 2 µg/m ³ |
| Determination threshold Nitrosamine | 0.03 µg/m ³ |
| Deviation | Required area specific ventilation rate of 1 m ³ /m ² h was considered by a conversion factor. |

3 Results

| Testing after 24 hours | | | | |
|---|-----------|----------------|---------------------|-----------|
| Group parameter | | Result [mg/m³] | Limit value [mg/m³] | Fulfilled |
| Total volatile organic compounds (TVOC) | | 0.127 | 0.5 | Yes |
| Volatile aromatic compounds | | 0.007 | 0.3 | Yes |
| Individual substance | CAS-No | Result [mg/m³] | Limit value [mg/m³] | Fulfilled |
| Toluene | 108-88-3 | < 0.002 | 0.1 | Yes |
| Vinylcyclohexene | 100-40-3 | < 0.002 | 0.002 | Yes |
| Styrene | 100-42-5 | < 0.002 | 0.01 | Yes |
| 4-Phenylcyclohexene | 4994-16-5 | 0.002 | 0.02 | Yes |
| 1,1,1-Trichloroethane | 71-55-6 | < 0.002 | 0.2 | Yes |
| Tetrachloroethylene | 127-18-4 | < 0.002 | 0.15 | Yes |
| Trichloroethylene | 79-01-6 | < 0.002 | 0.05 | Yes |
| Vinyl chloride | 75-01-4 | < 0.001 | 0.001 | Yes |
| Formaldehyd | 50-00-0 | < 0.002 | 0.01 | Yes |
| Volatile Nitrosamine ¹ | | Result [mg/m³] | Limit value [mg/m³] | Fulfilled |
| N-nitrosodimethylamine | (NDMA) | < 0.00003 | - | - |
| N-nitrosodiethylamine | (NDEA) | < 0.0001 | - | - |
| N-nitrosomethylethylamine | (NMEA) | < 0.00003 | - | - |
| N-nitrosodi-i-propylamine | (NDIPA) | < 0.00003 | - | - |
| N-nitrosodi-n-propylamine | (NDPA) | < 0.00003 | - | - |
| N-nitrosodi-n-butylamine | (NDBA) | < 0.00003 | - | - |
| N-nitrosopyrrolidinone | (NPYR) | < 0.00003 | - | - |
| N-nitrosopiperidine | (NPIP) | < 0.00003 | - | - |
| N-nitrosomorpholine | (NMOR) | < 0.00003 | - | - |
| Sum of Nitrosamines | | 0.0001 | 0.001 | Yes |

¹Determination was carried out by an accredited laboratory as sub-contractor.