



TESTEX®

**REGISTERED**

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**TEST REPORT NO. TPYO 089584.1**

Page 1 of 8

Test material: 2 PES, 4 Recycled PES textured and filament yarns in raw white and black for testing.

**SUBJECT OF ANALYSIS**

According to your order dated 29.03.2013 analysis should be carried out on the samples received on 08.04.2013. This order and the tests carried out are related to the application for renewal of your certificate HKE 23200 according to the Oeko-Tex® Standard 100, product class I (products for babies and small children).

**RESULTS OF ANALYSIS**

The results of the analysis we have carried out are summarized in the following tables.

**SUMMARY**

According to the results of the analyses the tested parameters meet all requirements of Oeko-Tex® Standard 100, product class I. Also the regulations on harmful substances under the European REACH legislation, including the textile-relevant candidates for SVHC (Substances of Very High Concern) as per 18.06.2012 are considered. Therefore your Oeko-Tex® certificate HKE 23200 can be issued. The period of validity has been extended by another year. Please find the said certificate enclosed with this test report.

In addition, we refer to the declaration of conformity, point 2, quality assurance, and ask you to ensure and verify that your *recycled* products from different processing or dyeing batches (in case applicable) are randomly checked every 3 months for compliance with the Oeko-Tex® Standard 100. Tests can be carried out at your facility or at Testex and have to be documented. On request documentation has to be shown to Testex.

Swiss Textile Testing Institute  
TESTEX AG

Dr. Elke Lorenzen  
Manager Analytical Testing

Enclosures mentioned

cc: Testex Taipei

Mary Rose Egloff  
Team Leader Analytical Reporting

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STS 228

proven since 1846

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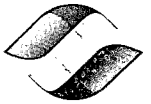
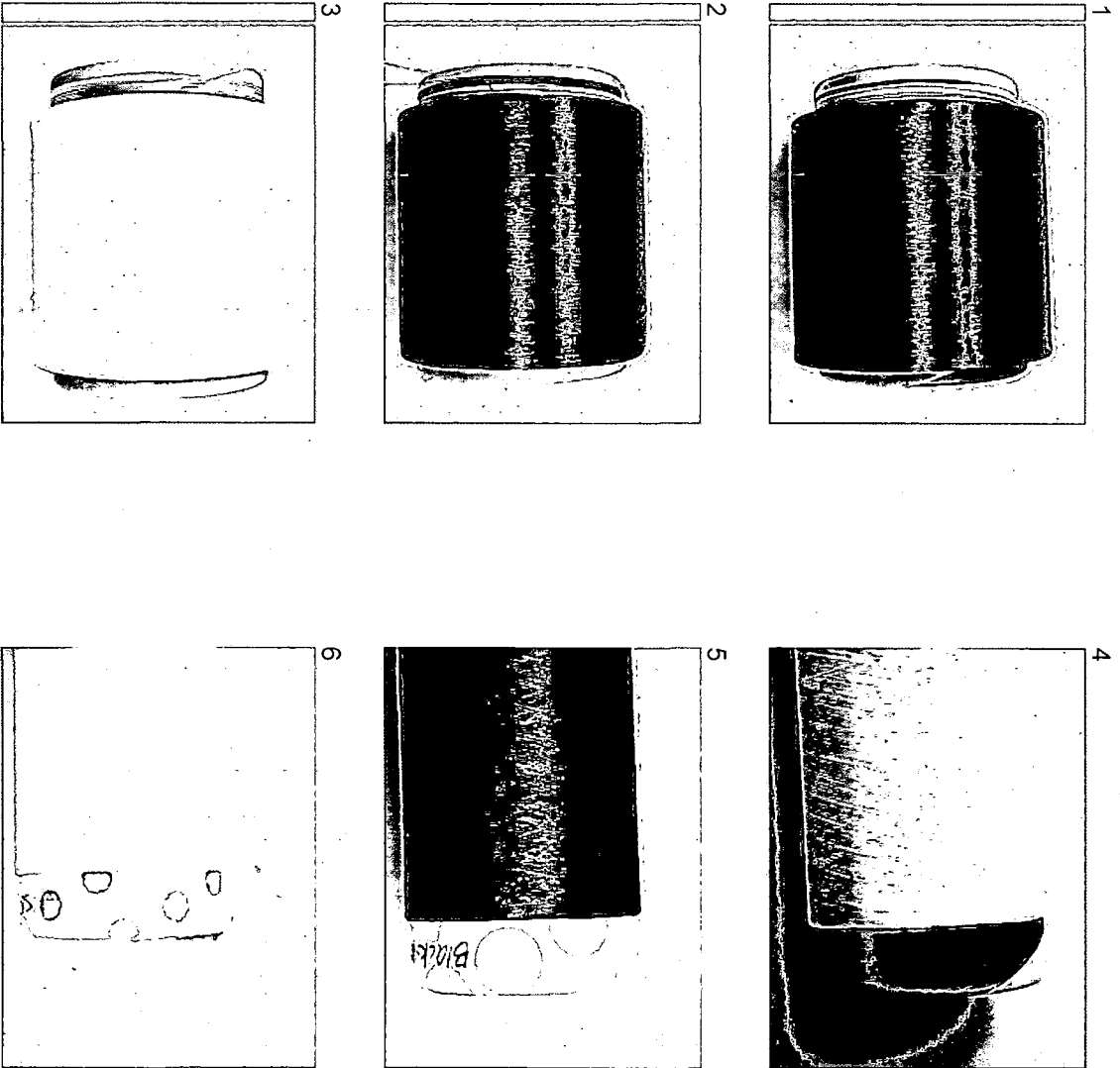
OVERVIEW

Please refer to overview table and table of result for failed samples.

p: tested and passed; X: tested and failed; d: done; ' ': not tested

	Sample No.									
	1	2	3	4	5	6				
pH VALUE ISO 3071 (KCl)	p	p	p	p	p					
FORMALDEHYDE-ANALYSIS JIS L-1041		p	p		p	p				
HEAVY METALS Oeko-Tex® Method 3.1 (extr.)	p	p		p		p				
PHENOLS (Chlorinated and OPP) Oeko-Tex® Method 5	p				p					
ORGANIC TIN COMPOUNDS Oeko-Tex® Method 7	p		p	p	p					
CHLORINATED BENZENES&TOLUENES Oeko-Tex® Method 11	p	p		p	p					
SURFACTANTS (ALKYLPHENOLETHOXYLATES) Oeko-Tex® Method 14	p	p			p	p				
POLYCYCLIC AROMATIC HC (PAH) Oeko-Tex® Method 12		p	p		p	p				
DIMETHYLFUMARATE (DMFu) TESTEX method		p		p						
FASTNESS TO WATER ISO 105/E01	p	p			p					
FASTNESS TO PERSPIRATION ISO 105/E04	p	p			p					
FASTNESS TO RUBBING ISO 105/X12 (Öko-Tex)	p	p			p					
FASTNESS TO SALIVA AND PERSPIRATION LMBG 82.10-1 (modified)	p	p			p					

- No.1: Sample 1 PES filament Black  
 No.2: Sample 2 PES recycl filament Black  
 No.3: Sample 3 PES recycl filament raw white  
 No.4: Sample 4 PES textured raw white  
 No.5: Sample 5 PES recycl textured Black  
 No.6: Sample 6 PES recycl textured raw white



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**TABLE OF RESULTS**

	OEKO-TEX® 100 Product Class I	Sample 1 PES filament Black	Sample 2 PES recycl filament Black	Sample 3 PES recycl filament raw white	Sample 4 PES textured raw white
pH VALUE ISO 3071 (KCl)					
No. of tests		2	2	2	2
Aqueous extract [pH]	4.0 - 7.5	5.8	5.0	5.1	5.3

	OEKO-TEX® 100 Product Class I	Sample 5 PES recycl textured Black			
pH VALUE ISO 3071 (KCl)					
No. of tests		2			
Aqueous extract [pH]	4.0 - 7.5	4.8			

	OEKO-TEX® 100 Product Class I	Sample 2 PES recycl filament Black	Sample 3 PES recycl filament raw white	Sample 5 PES recycl textured Black	Sample 6 PES recycl textured raw white
FORMALDEHYDE-ANALYSIS JIS L-1041					
No. of tests		1	1	1	1
Avg. free formaldehyde [mg/kg]	n/d	n/d	n/d	n/d	n/d

	OEKO-TEX® 100 Product Class I	Sample 1 PES filament Black	Sample 2 PES recycl filament Black	Sample 4 PES textured raw white	Sample 6 PES recycl textured raw white
HEAVY METALS Oeko-Tex® Method 3.1 (extr.)					
No. of tests		1	1	1	1
Antimony [mg/kg]	< 30.0	2.62	2.51	1.70	3.46
Arsenic [mg/kg]	< 0.2	0.02	0.02	0.04	< 0.01
Lead [mg/kg]	< 0.2	< 0.01	0.01	0.01	< 0.01
Cadmium [mg/kg]	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01
Chromium total [mg/kg]	< 1.0	0.05	0.05	0.11	0.07
Cobalt [mg/kg]	< 1.0	0.04	0.14	0.05	0.21
Copper [mg/kg]	< 25.0	0.32	0.29	0.86	1.87
Nickel [mg/kg]	< 1.0	< 0.01	< 0.01	< 0.01	< 0.01
Mercury [mg/kg]	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01
Selen [mg/kg]		0.09	0.03	0.11	0.15
Zinc [mg/kg]		9.99	11.00	23.80	23.00
Tin [mg/kg]		< 0.01	0.02	0.01	0.02

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**TABLE OF RESULTS**

	OEKO-TEX® 100 Product Class I	Sample 1 PES filament Black	Sample 5 PES recycl textured Black		
<b>PHENOLS (Chlorinated and OPP)</b> Oeko-Tex® Method 5					
No. of tests		1	1		
Orthophenylphenol (OPP) [mg/kg]	< 50.0	< 0.01	< 0.01		
Pentachlorophenol (PCP) [mg/kg]	< 0.05	< 0.01	< 0.01		
2,3,5,6-TeCP [mg/kg]		< 0.01	< 0.01		
2,3,4,6-TeCP [mg/kg]		< 0.01	< 0.01		
2,3,4,5-TeCP [mg/kg]		< 0.01	< 0.01		
Tetrachlorophenol (TeCP, Sum) [mg/kg]	< 0.05	< 0.01	< 0.01		

	OEKO-TEX® 100 Product Class I	Sample 1 PES filament Black	Sample 3 PES recycl filament raw white	Sample 4 PES textured raw white	Sample 5 PES recycl textured Black
<b>ORGANIC TIN COMPOUNDS</b> Oeko-Tex® Method 7					
No. of tests		1	1	1	1
TBT [mg/kg]	< 0.5	n/d	n/d	n/d	n/d
DBT [mg/kg]	< 1.0	n/d	n/d	n/d	n/d
MBT [mg/kg]		n/d	n/d	n/d	n/d
TPhT [mg/kg]	< 0.5	n/d	n/d	n/d	n/d
DOT [mg/kg]	< 1.0	n/d	n/d	n/d	n/d

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	OEKO-TEX® 100 Product Class I	Sample 1 PES filament Black	Sample 2 PES recycl filament Black	Sample 4 PES textured raw white	Sample 5 PES recycl textured Black
<b>CHLORINATED BENZENES&amp;TOLUENES Oeko-Tex® Method 11</b>					
No. of tests		1	1	1	1
2-Chlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
3-Chlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
4-Chlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
1,2-Dichlorobenzene [mg/kg]		0.01	0.01	0.01	0.01
1,3-Dichlorobenzene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
1,4-Dichlorobenzene [mg/kg]		0.02	0.01	0.02	0.01
2,4-Dichlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
2,5-Dichlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
2,6-Dichlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
2,3-/3,4-Dichlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-Trichlorobenzene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-Trichlorobenzene [mg/kg]		< 0.01	< 0.01	0.01	< 0.01
1,2,4,5-Tetrachlorobenzene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
1,2,3,4-Tetrachlorobenzene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Pentachlorobenzene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene [mg/kg]		< 0.01	< 0.01	< 0.01	0.01
Benzylchloride [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
a,a-Dichlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
a,a,a-Trichlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
2,3,6-Trichlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
a,2,4-/a,2,6-Trichlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
a,3,4-Trichlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
a,a,a,2-Tetrachlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
2,3,4,5,6-Pentachlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
2,4,5-Trichlorotoluene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-Trichlorobenzene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
1,2,3,5-Tetrachlorobenzene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Sum [mg/kg]	< 1.0	0.03	0.02	0.04	0.03

	OEKO-TEX® 100 Product Class I	Sample 1 PES filament Black	Sample 2 PES recycl filament Black	Sample 5 PES recycl textured Black	Sample 6 PES recycl textured raw white
<b>SURFACTANTS (ALKYLPHENOLETHOXYLATES) Oeko-Tex® Method 14</b>					
Number of tests		1	1	1	1
AP [mg/kg]	< 50	n/d	n/d	n/d	n/d
APEO & AP [mg/kg]	< 500	n/d	n/d	n/d	n/d



**TABLE OF RESULTS**

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	OEKO-TEX® 100 Product Class I	Sample 2 PES recycl filament Black	Sample 3 PES recycl filament raw white	Sample 5 PES recycl textured Black	Sample 6 PES recycl textured raw white
<b>POLYCYCLIC AROMATIC HC (PAH) Oeko-Tex® Method 12</b>					
No. of tests		1	1	1	1
Acenaphthylene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Fluorene [mg/kg]		0.01	0.01	0.02	0.02
Phenanthrene [mg/kg]		0.05	0.05	0.07	0.07
Anthracene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Pyrene [mg/kg]		0.01	0.01	0.01	0.01
Benzo(a)anthracene, Cyclopenta(cd)pyrene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Chrysene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene, Benzo(e)pyrene, Benzo(k)fluoranthene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Benzo(j)fluoranthene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene [mg/kg]	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene [mg/kg]		0.01	0.01	0.01	0.01
Naphthalene [mg/kg]		0.19	0.19	0.21	0.21
1-Methylpyrene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(ae)pyrene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(ah)pyrene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(ai)pyrene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(al)pyrene [mg/kg]		< 0.01	< 0.01	< 0.01	< 0.01
SUM [mg/kg]	< 5	0.27	0.27	0.32	0.32

	OEKO-TEX® 100 Product Class I	Sample 2 PES recycl filament Black	Sample 4 PES textured raw white
<b>DIMETHYLFUMARATE (DMFu) TESTEX method DMFu</b>			
No. of tests		1	1
Dimethylfumarate [mg/kg]	< 0.1	< 0.01	< 0.01

	OEKO-TEX® 100 Product Class I	Sample 1 PES filament Black	Sample 2 PES recycl filament Black	Sample 5 PES recycl textured Black
<b>FASTNESS TO WATER ISO 105/E01</b>				
No. of tests		1	1	1
- Change in color [grade]		5	5	5
- Staining [grade]	3	4-5	4-5	4-5



**TABLE OF RESULTS**

	OEKO-TEX® 100 Product Class I	Sample 1 PES filament Black	Sample 2 PES recycl filament Black	Sample 5 PES recycl textured Black
<b>FASTNESS TO PERSPIRATION ISO 105/E04</b>				
No. of tests		1	1	1
Fastness to acid solution				
- Change in color [grade]		5	5	5
- Staining [grade]	3-4	4-5	4-5	4-5
Fastness to alkaline solution				
- Change in color [grade]		5	5	5
- Staining [grade]	3-4	4-5	4-5	4-5

	OEKO-TEX® 100 Product Class I	Sample 1 PES filament Black	Sample 2 PES recycl filament Black	Sample 5 PES recycl textured Black
<b>FASTNESS TO RUBBING ISO 105/X12 (Öko-Tex)</b>				
No. of tests		1	1	1
- Dry crocking test [grade]	4	4-5	4-5	4-5

	OEKO-TEX® 100 Product Class I	Sample 1 PES filament Black	Sample 2 PES recycl filament Black	Sample 5 PES recycl textured Black
<b>FASTNESS TO SALIVA AND PERSPIRATION LMBG 82.10-1 (modified)</b>				
No. of tests		1	1	1
- Fast to saliva [yes/no]	yes	yes	yes	yes
- Fast to perspiration [yes/no]	yes	yes	yes	yes

TESTEX Zurich, 30.04.2013

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