



## Report 50187 Test Report

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### Application

Testing according harmful substances of nightclothing with contact to skin.

### Test Material

Nightclothes

Material used in testing was anonymized for laboratory purposes. A detailed sample list is contained in the report.

### Issuing and Signatures

Number of pages contained: 18

Original Issue / Vienna 2005-12-14 / Me/KK20001676  
Duplicate 2006-01-24

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# 1 Order

## 1.1 Chronology

<i>Date</i>	<i>Received</i>	<i>Order</i>
2005-09-19	2005-09-21	Testing according harmful substances of nightclothing with contact to skin .

## 1.2 Samples

<i>No.</i>	<i>Received</i>	<i>Sample Identification</i>	<i>Sample Material</i>
1	2005-10-11 <sup>(1)</sup>	"Princess Seersucker Bedding, colour printed"	Bedding, 1 piece
2	2005-10-11 <sup>(1)</sup>	"Satinette with Actiguard Bedding, from Fussenegger, darkblue printed"	Bedding, 1 piece
3	2005-10-11 <sup>(1)</sup>	"La Casa Jersey bed sheet, red"	Bedding, 1 piece
4	2005-10-11 <sup>(1)</sup>	"ALVINE RAND, Bedding blue/white stripes"	Bedding, 1 piece
5	2005-10-11 <sup>(1)</sup>	"Identic Romantic, "Fein-Biber"-bedsheet, turquoise"	Bedding, 1 piece
6	2005-10-11 <sup>(1)</sup>	"Bedding FM Hämmerle, Jacquard"	Bedding, 1 piece
7	2005-10-11 <sup>(1)</sup>	"fleuresse, Bedding Fashion 1887, yellow/black"	Bedding, 1 piece
8	2005-10-11 <sup>(1)</sup>	"Collection Vivre Classic, frottee bedsheet, blue"	Bedding, 1 piece
9	2005-10-11 <sup>(1)</sup>	" bedsheet elasta <sup>®</sup> , black"	Bedding, 1 piece
10	2005-10-11 <sup>(1)</sup>	"Royal Jersey bedsheet, orange"	Bedding, 1 piece
11	2005-10-11 <sup>(1)</sup>	"Woman pyjama, bordeaux, "Gazelle", XL"	Garment 1 piece
12	2005-10-11 <sup>(1)</sup>	"Woman nightshirt, "ELEGANTE-ROSE", colour granat, "Palmers", L"	Garment 1 piece
13	2005-10-11 <sup>(1)</sup>	"Woman pyjama Identic, lightblue with bear print, M"	Garment 1 piece
14	2005-10-11 <sup>(1)</sup>	"Woman nightshirt, orange/green printed, M"	Garment 1 piece
15	2005-10-11 <sup>(1)</sup>	"Woman nightshirt Luchs, turquoise with flower print, XXL"	Garment 1 piece
16	2005-10-11 <sup>(1)</sup>	"Woman nightshirt, pink, flowerprint with embroidery, L"	Garment 1 piece
17	2005-10-11 <sup>(1)</sup>	"Man frottee pyjama, Article 017270, colour 7295, orange/bordeaux, L"	Garment 1 piece
18	2005-10-11 <sup>(1)</sup>	"Woman pyjama Hiaokaitai, white with blue printed, XL"	Garment 1 piece
19	2005-10-11 <sup>(1)</sup>	"Woman pyjama Peanuts, lightblue printed, S"	Garment 1 piece
20	2005-10-11 <sup>(1)</sup>	"Woman pyjama, lightblue with flower print, XL"	Garment 1 piece

(1) Samples provided by the customer. (2) Sample drawn by OTI.



### 1.3 Titel of the order

Testing of night clothing with direct contact to skin (bedsheets, bedding, pyjamas, nightshirts) according to residues from the production especially pH-value, formaldehyde, forbidden azo colorants, forbidden allergens colorants, heavy metals, colour fastness to sweat and rubbing dry, chlorinated phenoles, optical brightener and GC/MS- screening test.

## 2 Findings

The samples have been bought on the Viennes market in 15 different shops all over Vienna.

The sample represent low and high price articles.

The samples have according to the labels the following material composition:

Sample	Material
1	Cotton
2	Cotton
3	Cotton
4	Cotton
5	Cotton
6	Cotton
7	Cotton
8	Cotton/Polyester
9	Cotton
10	Cotton
11	Cotton/Polyester
12	Cotton/Modal
13	Polyester/ Cotton
14	Polyester
15	Cotton
16	Cotton
17	Cotton/Polyester
18	Cotton
19	Polyester/Cotton
20	Silk

## 3 Tests performed and results

According to the order all tests, except the optical brightener and GC/MS Overview analysis test, have been made according to Oeko-Tex Standard 100 and the testing procedures laid down in Oeko-Tex standard 200. The limit values mentioned in the list of results are for productclass II, articles with direct contact to skin.



### 3.1 Determination of the pH-value

The pH value is determined according to EN 1413.

#### 3.1.1 Results

Sample	pH-value
1	6.3
2	<b>8.6</b>
3	6.8
4	<b>7.8</b>
5	7.2
6	5.7
7	7.5
8	4,7
9	<b>3,6</b>
10	6,8
11	<b>8,1</b>
12	5,4
13	7,5
14	5,1
15	7,3
16	4,3
17	4,2
18	6,0
19	7,5
20	7,2
Limit value	<b>4,0 – 7,5</b>



## 3.2 Determination of Formaldehyde

The test is performed as given by the Japanese law "Harmful Substance - Containing Household Products Control Law No. 112". According to this method the content of free and partially releasable formaldehyde is integrally determined in aqueous extract using the acetyl-acetone method by means of a spectrophotometer.

### 3.2.1 Results

Sample	Formaldehyde [ppm]
1	not detected
2	< 20
3	53
4	< 20
5	<b>121</b>
6	not detected
7	not detected
8	not detected
9	not detected
10	not detected
11	not detected
12	not detected
13	not detected
14	not detected
15	not detected
16	not detected
17	not detected
18	not detected
19	not detected
20	not detected
<b>Limit value</b>	<b>75 ppm</b>



### 3.3 Test for Azo-dyes, which may be cleaved into arylamines of MAK-group III, categories 1 and 2 under reductive conditions

The tests are carried out following the official test methods of EU-Directive 76/769/EWG:

EN 14362-1

EN 14362-2(PES)

Following azo-dyes are listed in the Oeko-Tex Standard 100:

<u>Name</u>	<u>CAS-No.</u>
<b>MAK III, Category 1</b>	
4-Aminobiphenyl	92-67-1
Benzidin	92-87-5
4-Chlor-o-toluidin	95-69-2
2-Naphthylamin	91-59-8
<b>MAK III, Category 2</b>	
o-Aminoazotoluol	97-56-3
2-Amino-4-nitrotoluol	99-55-8
4-Chloranilin	106-47-8
2,4-Diaminoanisol	615-05-4
4,4'-Diaminobiphenylmethan	101-77-9
3,3'-Dichlorbenzidin	91-94-1
o-Dianisidin	119-90-4
3,3'-Dimethylbenzidin	119-93-7
4,4' -Diamino-3,3'dimethylbiphenylmethan	838-88-0
p-Kresidin	120-71-8
4,4'-Diamino-3,3'-dichlorbiphenylmethan	101-14-4
4,4'-Diaminobiphnylether	101-80-4
4,4'-Diaminobiphenylsulfide	139-65-1
o-Toluidine	95-53-4
2,4-Diaminotoluol	95-80-7
2,4,5-Trimethylanilin	137-17-7
o-Anisidin	90-04-0
2,4-Xylidin	95-68-1
2,6-Xylidin	87-62-7



<b>Substances which are known to be able to cause cancer in human beings</b>		
<b><u>C.I. Generic Name</u></b>	<b><u>C.I. Structure number</u></b>	<b><u>CAS-Nr.</u></b>
C.I. Acid Red 26	C.I. 16 150	3761-53-3
C.I. Basic Red 9	C.I. 42 500	25620-78-4
C.I. Basic Violet 14	C.I. 42 510	632-99-5
C.I. Direct Black 38	C.I. 30 235	1937-37-7
C.I. Direct Blue 6	C.I. 22 610	2602-46-2
C.I. Direct Red 28	C.I. 22 120	573-58-0
C.I. Disperse Blue 1	C.I. 64 500	2475-45-8
C.I. Disperse Orange 11	C.I. 60 700	82-28-0
C.I. Disperse Yellow 3	C.I. 11 855	2832-40-8

### 3.3.1 Results

<b>Sample</b>	<b>Azo colorants</b>
1	not used
2	not used
3	not used
4	not used
5	not used
6	not used
7	not used
8	not used
9	not used
10	not used
11	not used
12	not used
13	not used
14	not used
15	not used
16	not used
17	not used
18	not used
19	not used
20	not used
<b>Limit value</b>	<b>not used</b>



### 3.4 Test for dyestuffs, classified as allergenic

The identification of extracted dyes is made by means of chromatographic methods (HPLC – High pressure liquid chromatography)) in comparison to reference substance.

Accordinging Oeko-Tex Standard 100 the listed substances are not allowed to be detected.

The following substances are listed in the Oeko-Tex Standard 100:

<u>C.I. Generic Name</u>	<u>C.I. Structure number</u>	<u>CAS-Nr.</u>
C.I. Disperse Blue 1	C.I. 64 500	2475-45-8
C.I. Disperse Blue 3	C.I. 61 505	2475-46-9
C.I. Disperse Blue 7	C.I. 62 500	3179-90-6
C.I. Disperse Blue 26	C.I. 63 305	
C.I. Disperse Blue 35		12222-75-2
C.I. Disperse Blue 102		12222-97-8
C.I. Disperse Blue 106		12223-01-7
C.I. Disperse Blue 124		61951-51-7
C.I. Disperse Brown 1		23355-64-8
C.I. Disperse Orange 1	C.I. 11 080	2581-69-3
C.I. Disperse Orange 3	C.I. 11 005	730-40-5
C.I. Disperse Orange 37	C.I.11 132	
C.I. Disperse Orange 76	C.I.11 132	
C.I. Disperse Red 1	C.I. 11 110	2872-52-8
C.I. Disperse Red 11	C.I. 62 015	2872-48-2
C.I. Disperse Red 17	C.I. 11 210	3179-89-3
C.I. Disperse Yellow 1	C.I. 10 345	
C.I. Disperse Yellow 3	C.I. 11 855	2832-40-8
C.I. Disperse Yellow 9	C.I. 10 375	6373-73-5
C.I. Disperse Yellow 39		
C.I. Disperse Yellow 49		



### 3.4.1 Results

Sample	Allergen dyes
1	not detected
2	not detected
3 (sewing yarn)	<b>Disperse Orange 3, Disperse Red 1; Disperse Yellow 3</b>
4	not detected
5	not detected
6	not detected
7	not detected
8	not detected
9	not detected
10	not detected
11	<b>Disperse Brown 1</b>
12	not detected
13	not detected
14	not detected
15	not detected
16	not detected
17	not detected
18	not detected
19	not detected
20	not detected
<b>Limit value</b>	<b>not detected</b>



### 3.5 Determination of extractable heavy metals

The quantitative determination of the heavy metal components is performed by ICP after extraction with acidic sweat solution.

#### 3.5.1 Results

Sample	Metal in ppm				
	Mercury	Arsenic	Lead	Cadmium	Chromium
1	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
2	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
3	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
4	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
5	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
6	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
7	< 0,01	< 0,1	< 0,1	< 0,05	1,0
8	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
9	< 0,01	< 0,1	< 0,1	< 0,05	0,3
10	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
11	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
12	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
13	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
14	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
15	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
16	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
17	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
18	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
19	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
20	< 0,01	< 0,1	< 0,1	< 0,05	< 0,1
<b>Limit value</b>	<b>0,02</b>	<b>1,0</b>	<b>1,0</b>	<b>0,1</b>	<b>2,0</b>



Sample	Metal in ppm			
	Cobalt	Copper	Nickel	Antimony
1	< 0,1	< 4	< 0,1	< 0,5
2	< 0,1	< 4	< 0,1	< 0,5
3	< 0,1	< 4	< 0,1	< 0,5
4	< 0,1	< 4	< 0,1	< 0,5
5	< 0,1	< 4	< 0,1	< 0,5
6	< 0,1	< 4	< 0,1	< 0,5
7	< 0,1	< 4	< 0,1	< 0,5
8	< 0,1	< 4	< 0,1	< 0,5
9	< 0,1	< 4	< 0,1	< 0,5
10	< 0,1	< 4	< 0,1	< 0,5
11	< 0,1	< 4	< 0,1	< 0,5
12	< 0,1	< 4	< 0,1	< 0,5
13	< 0,1	< 4	< 0,1	< 0,5
14	< 0,1	< 4	< 0,1	< 0,5
15	< 0,1	< 4	< 0,1	< 0,5
16	< 0,1	< 4	< 0,1	< 0,5
17	< 0,1	< 4	< 0,1	< 0,5
18	< 0,1	< 4	< 0,1	< 0,5
19	< 0,1	< 4	< 0,1	< 0,5
20	< 0,1	< 4	< 0,1	< 0,5
<b>Limit value</b>	<b>4,0</b>	<b>50,0</b>	<b>4,0</b>	<b>30,0</b>



### 3.6 Testing of colour fastness

The colour fastness to acidic and alkaline perspiration is tested according to ISO 105-E04.

The colour fastness to rubbing dry is tested according ISO105-X12.

Sample	Acidic perspiration note	Alkaline perspiration note	Rubbing dry note
1	CO4- 5/WO 4-5	CO 4-5/WO 4-5	5
2	CO 4/WO 4-5	CO 4/WO 4-5	5
3	CO 3-4/WO 4-5	CO 4/WO 4-5	4-5
4	CO 5/WO 4-5	CO 5/WO 4-5	4-5
5	CO 5/WO 4-5	CO 5/WO 4-5	4
6	CO 4-5/WO 5	CO 4-5/WO 5	5
7	CO 4-5/WO 4-5	CO 4-5/WO 4-5	5
8	CO3-4/PES 4	CO3-4/PES 4	4-5
9	CO 4-5/WO 5	CO 4-5/WO 5	2-3
10	CO 1-2/WO 3	CO 1-2/WO 4	5
11	PES 3-4/CO 3-4	PES 3-4/CO 3-4	4-5
12	CO 5/CV 4-5	CO 5/CV 4-5	4-5
13	PES 4/CO 4-5	PES 4/CO 4-5	5
14	PES 5/WO 5	PES 5/WO 5	3-4
15	CO 5/WO 5	CO 5/WO 5	4-5
16	CO 4/WO 4	CO 4-5/WO 4-5	4-5
17	CO 3-4/PES 4-5	CO 3-4/PES 4-5	4-5
18	CO 5/WO 5	CO 5/WO 5	4
19	PES 5/CO 5	PES 5/CO 5	5
20	SE 4-5/CO 5	SE 4-5/CO 5	4-5
Limit value	3-4	3-4	4



### 3.7 Determination of the content of phenols (chlorinated and OPP)

The pentachlorophenol (PCP), 2,3,5,6-tetrachlorophenol (TeCP) or ortho-phenylphenol (OPP) content is determined. For analysis gas chromatography is used with mass spectrometric detection (MSD).

#### 3.7.1 Results

Sample	PCP [ppm]	TeCP [ppm]	OPP [ppm]
1	< 0,1	< 0,1	< 0.5
2	< 0,1	< 0,1	0,8
3	< 0,1	< 0,1	< 0.5
4	< 0,1	< 0,1	< 0.5
5	< 0,1	< 0,1	< 0.5
6	< 0,1	< 0,1	< 0.5
7	< 0,1	< 0,1	< 0.5
8	0,06	< 0,1	< 0.5
9	0,06	< 0,1	< 0.5
10	< 0,1	< 0,1	< 0.5
11	< 0,1	< 0,1	< 0.5
12	< 0,1	< 0,1	< 0.5
13	< 0,1	< 0,1	< 0.5
14	0,01	< 0,1	< 0.5
15	< 0,1	< 0,1	< 0.5
16	< 0,1	< 0,1	< 0.5
17	< 0,1	< 0,1	< 0.5
18	< 0,1	< 0,1	< 0.5
19	< 0,1	< 0,1	< 0.5
20	< 0,1	< 0,1	< 0.5
<b>Limit value</b>	<b>0,5</b>	<b>0,5</b>	<b>100</b>



### 3.8 Determination of optical brightener

The test is done visually under uv-light. If an optical brightener is present the article shines blue under uv-light. The test is done from three sperat testers.

#### 3.8.1 Results

Sample	Optical brightener
1	Sewing yarn, label
2	Fabric, zipper, sewing yarn
3	Sewing yarn
4	Label, sewing yarn
5	Sewing yarn
6	Zipper, sewing yarn, label, fabric
7	Label, sewing yarn, teeth of the zipper
8	Label, sewing yarn
9	Label
10	Label
11	Label, buttons, interlining
12	Label
13	Label
14	Lace, knitted fabric, label
15	Label, sewing yarn
16	Knitted fabric, label, strap
17	Label
18	Knitted fabric, label
19	Knitted fabric, buttons
20	Buttons, Label



### 3.9 Qualitative screening test with GC/MS

The analysis is used for screening of harmful organic substances which could be in some of the testing material.

The test is done by extracting the samples with an organic solvent followed by gas chromatography with a mass selective detector (GC/MS). The identification of the components is done by comparison with spectrometers using a MS-library.

The detection limit of the method is about 10 µg/ml.

#### 3.9.1 Results

In sample 2 permethrin was found. This sample is finished, as said on the label, with Actiguard®, which contains permethrin.

In the rest of the samples no substances which are not typical for the material composition could be found. These substances are phthalates and esters of organic.

## 4 Evaluation

The 20 samples have been bought on the Viennese market in different shops and represent low and high price articles. The samples are mostly cotton or cotton mixtures, dyed and/or printed.

According to the order the tests have been made according to the requirements of Oeko-Tex 100, productclass II. The Oeko-Tex Standard 100 was founded 1992 by the International Association for Research and Testing in the Field of Textile Ecology (Oeko-Tex). The limit values are divided in four productclasses. Productclass I for baby articles, productclass II for articles with direct contact to skin, productclass III for articles without direct contact to skin and productclass IV for decoration material.

The results of the test show that four samples do not fulfill the requirements of the pH-value, which are 20% of the samples. One sample has a too high concentration of formaldehyde.

The sewing yarn of sample 3 and the fabric of sample 11 contain allergen dyes.

Sample 9, 10 and 11 have colour fastnesses which do not fulfill the requirements of the Oeko-Tex Standard 100 productclass II.

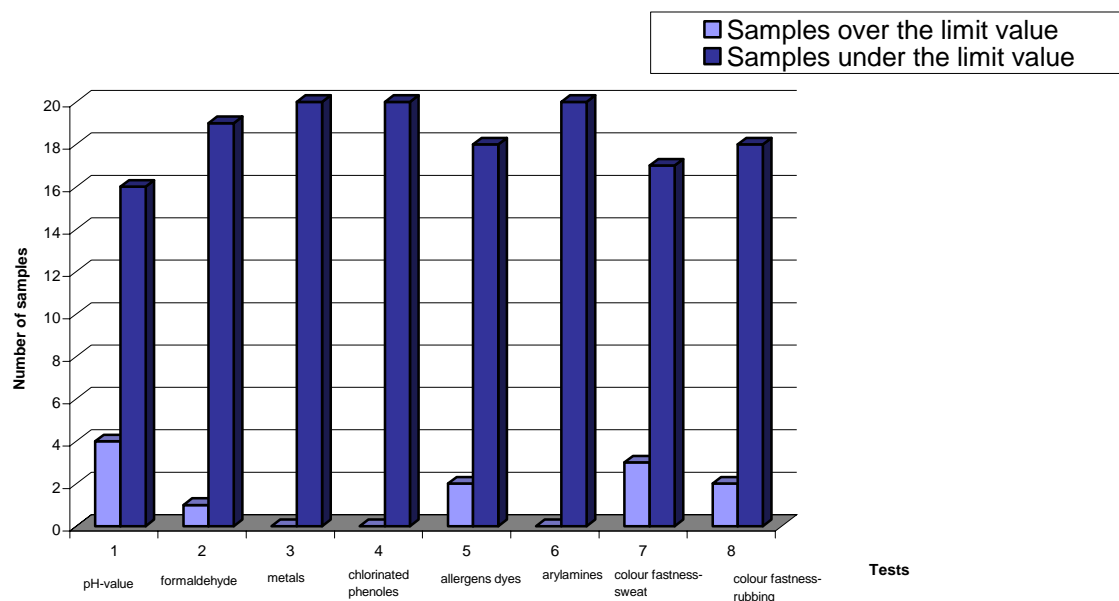
In no sample forbidden cleavable azo colorants have been found, heavy metals and chlorinated phenoles are all under the limit value.

In all samples optical brighteners are present. Mostly the sewing yarn or the labels contain optical brightener, not the fabrics itself.

The GC/MS screening test shows that no substances have been found which are unusual for the material.

Recapitulating can be said that 40% of the tested samples would not get an Oeko-Tex 100 certification.

Summary-Oeko-Tex Parameters





## 5 Remarks

### Sample Material

The Type examination report is valid for the provided type sample in conjunction with the provided technical documentation and the test reports. The validity and appropriateness of the test reports for the used materials is the sole responsibility of the applicant.

Results of performed tests only refer to the sample material provided.

Without explicit written other agreement testing is destructive and the sample material is transferred to the property of ÖTI, which is entitled to freely decide on storage and disposal.

### Quality management and accreditations

This issue replace The identification of extracted dyes is made by means of chromatographic methods in comparison to reference substance.s report #####, dated ###.

All tests and services are performed under a quality management system according to EN ISO 17025.

ÖTI is accredited by several organisations for various tests offered. It also is a Notified Body with the registration number 0534. The accreditation by the Federal Ministry as testing laboratory was repeated under AK 92714/263-I/12/04 (Individual accredited test procedures are marked with the federal laboratory logo), the accreditation for testing and surveillance of building products was given by the OIB (Österreichisches Institut für Bautechnik). Details and other accreditations are given on request and can be found on [www.oeti.at](http://www.oeti.at).

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# Photodocumentation



Sample 1 – back



Sample 1 – front



Sample 2 – back



Sample 2 – front



Sample 3 – front



Sample 3 – back



Sample 4 – front



Sample 4 – back



Sample 5 – front



Sample 5 – back



Sample 6 – front



Sample 6 – back



Sample 7 - front



Sample 7 - back



Sample 8 - front



Sample 8 - back



Sample 9 - front



Sample 9 - back







Sample 17



Sample 18



Sample 19



Sample 20