

Hohenstein Textile Testing Institute • Schlosssteige 1 • 74357 Bönnigheim

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ITALY

## Hohenstein Textile Testing Institute GmbH & Co. KG

Schlosssteige 1  
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### Textilprüfung / Textile Testing

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Business process	Contact person	Our ref.	Date
	Albayrak-Hindel, Lale	DP/Alb/MWE	10. March 2020

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## Report no. 20.0.07550

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<b>Client:</b>	Bruno Chiaruttini Srl.
<b>Contact person:</b>	Mr Toni Guerra Phone +39 3025 91208
<b>Date of order:</b>	2/26/2020
<b>Receipt of order:</b>	2/27/2020
<b>Receipt of material:</b>	2/27/2020
<b>Test sample:</b>	One section of knitted fabric, colour black
<b>Period of testing:</b>	3/4/2020 to 3/10/2020
<b>Aim of test(s):</b>	Determination of the pH-value, of banned azo colourants, of allergenic and carcinogenic colourants as well as of the content of free and partially releasable formaldehyde.
<b>Sampling:</b>	The test sample has been delivered to us by the client.

*The report comprises 8 pages.*

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## RESULT

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### Determination of the pH-value<sup>A</sup>

The test was carried out according to DIN EN ISO 3071 (May 2006); extraction solution B (potassium chloride solution, 0,1 molar).

#### Test result:

Sample	pH-Value
1 knitted fabric, colour black	5,7

Limit values recommended:

For babies or for textiles near to skin: 4,0 - 7,5

For textiles without contact to skin: 4,0 - 9,0

### Determination of banned azo colourants<sup>A</sup>

Corresponding to the Ordinance on Commodities (Bedarfsgegenständeverordnung) be in force the directive 2002/61/EEC respectively the ordinance (EC) no 1907/2006 of 18 December 2006 (REACH) the use of certain azo colourants is banned, which can release by reductive cleavage of their azo group(s) one or more of certain listed aromatic and cancerogenic amines.

No.	CAS number	Index number	EC number	Chemical name
1	92-67-1	612-072-00-6	202-177-1	Biphenyl-4-ylamine 4-Aminodiphenyl 4-Aminobiphenyl Xenylamine
2	92-87-5	612-042-00-2	202-199-1	Benzidine
3	95-69-2		202-441-6	4-chloro-o-toluidine
4	91-59-8	612-022-00-3	202-080-4	2-naphthylamine
5 <sup>x</sup>	97-56-3	611-006-00-3	202-591-2	o-aminoazotoluene 4-Amino-2',3-dimethylazobenzene 4-o-Tolylazo-o-toluidine
6 <sup>x</sup>	99-55-8		202-765-8	2-Amino-4-nitrotoluene 5-Nitro-o-toluidine
7	106-47-8	612-137-00-9	203-401-0	4-Chloroaniline p-Chloroaniline
8	615-05-4		210-406-1	2,4-Diaminoanisole 4-Methoxy-m-phenylenediamine
9	101-77-9	612-051-00-1	202-974-4	4,4'-Methylenedianiline 4,4'-Diaminodiphenylmethane 4,4'-Diaminobiphenylmethane
10	91-94-1	612-068-00-4	202-109-0	3,3'-Dichlorobenzidine 3,3'-Dichlorobiphenyl-4,4'-ylene-diamine
11	119-90-4	612-036-00-X	204-355-4	3,3'-Dimethoxybenzidine o-Dianisidine
12	119-93-7	612-041-00-7	204-358-0	3,3'-Dimethylbenzidine 4,4'-Bi-o-toluidine

No.	CAS number	Index number	EC number	Chemical name
13	838-88-0	612-085-00-7	212-658-8	3,3'-Dimethyl-4,4'-diaminodiphenyl-methane 4,4'-Methylenedi-o-toluidine
14	120-71-8		204-419-1	6-Methoxy-m-toluidine p-Cresidine
15	101-14-4	612-078-00-9	202-918-9	4,4'-Methylene-bis-(2-chloro-aniline) 2,2'-Dichloro-4,4'-methylene-di-aniline
16	101-80-4		202-977-0	4,4'-Oxydianiline
17	139-65-1		205-370-9	4,4'-Thiodianiline
18	95-53-4	612-091-00-X	202-429-0	o-Toluidine 2-Aminotoluene
19	95-80-7	612-099-00-3	202-453-1	2,4-Toluylenediamine 4-Methyl-m-phenylenediamine
20	137-17-7		205-282-0	2,4,5-Trimethylaniline
21	90-04-0	612-035-00-4	201-963-1	o-Anisidine 2-Methoxyaniline
22 <sup>xx</sup>	60-09-3	611-008-00-4	200-453-6	4-Aminoazobenzene
23	95-68-1			2,4-Xylidine
24	87-62-7			2,6-Xylidine

x The CAS-numbers 97-56-3 (No. 5) and 99-55-8 (No. 6) are detected further reduced to CAS-numbers 95-53-4 (No. 18) and 95-80-7 (No. 19).

xx Azo colourants that are able to form 4-aminoazobenzene, generate under the condition of some below mentioned methods aniline and 1,4-phenylenediamine. For the detection of 4-aminoazobenzene therefore additional testing methods are carried out if necessary.

The tests were carried out

- according to the official method § 64 LFGB B 82.02-2:2013-01 (DIN EN 14362-1:2017-05)<sup>A</sup>
- according to the official method § 64 LFGB B 82.02-15:2013-01 (DIN EN 14362-3:2017-05)<sup>A</sup>; if necessary
- at coloured leather according to the official method § 64 LFGB B 82.02-3:2014-02 (DIN EN ISO 17234-1:2015-07)<sup>A</sup> and § 64 LFGB B 82.02-9:2014-02 (DIN EN ISO 17234-2:2011-06)<sup>A</sup>
- regarding 4-aminoazobenzene: According to the official method (§ 64 LFGB B 82.02-9, edition September 2006) under consideration of the amendment § 64 LFGB B 82.02-9, amendment April 2008<sup>A</sup>

Listed amines released by the reductive cleavage were detected and quantified by means of high performance liquid chromatography using a diode array detector (LC/DAD). Positive results were verified by means of gas chromatography with a mass specific detector (GC/MS).

Note: If necessary several test methods were carried out.

**Test result:**

Sample	Detected cancerogenic aryl amine(s) in mg/kg (ppm)
1 knitted fabric, colour black	n.d.

Abbreviations used:

n.d. = According to the analysis as carried out, azo colourants, which can release one or more of certain listed amines (see table) by cleavage of their azo group(s) were not detected in the commodity submitted.

**Determination of allergenic and carcinogenic colourants<sup>A</sup>**

The test was performed according to DIN 54 231 and after a suitable handling of the sample on colorant extracts in comparison with reference substances. The analyses was carried out by means of high performance liquid chromatography using a diode array detector (LC/DAD) as well as a mass detector (LC/MS).

The following colourants were included in the test:

Allergenic Disperse Colourants			
Colourant	C.I.-no.	Colourant	C.I.-no.
C.I. Disperse Blue 1	1) C.I. 64500	C.I. Disperse Yellow 9	C.I. 10375
C.I. Disperse Blue 3	C.I. 61505	C.I. Disperse Yellow 39	
C.I. Disperse Blue 7	C.I. 62500	C.I. Disperse Yellow 49	
C.I. Disperse Blue 26	C.I. 63305	C.I. Disperse Orange 1	C.I. 11080
C.I. Disperse Blue 35		C.I. Disperse Orange 3	C.I. 11005
C.I. Disperse Blue 102		C.I. Disperse Orange 37	
C.I. Disperse Blue 106		C.I. Disperse Orange 76 = 37	
C.I. Disperse Blue 124		C.I. Disperse Red 1	C.I. 11110
C.I. Disperse Brown 1		C.I. Disperse Red 11	C.I. 62015
C.I. Disperse Yellow 1	C.I. 10345	C.I. Disperse Red 17	C.I. 11210
C.I. Disperse Yellow 3	C.I. 11855		

1) also classified as carcinogenic

Carcinogenic Colourants			
Colourant	C.I.-no.	Colourant	C.I.-no.
C.I. Acid Red 26	C.I. 16150	C.I. Direct Red 28	C.I. 22120
C.I. Basic Red 9	C.I. 42500	C.I. Disperse Blue 1	C.I. 64500
C.I. Basic Violet 14	C.I. 42510	C.I. Disperse Orange 11	C.I. 60700
C.I. Direct Black 38	C.I. 30235	C.I. Disperse Yellow 3	C.I. 11855
C.I. Direct Blue 6	C.I. 22610	C.I. Solvent Yellow 1	C.I. 11000
C.I. Solvent Yellow 2	C.I. 11020	C.I. Solvent Yellow 3	C.I. 11160
C.I. Solvent Yellow 14	C.I. 12055	C.I. Basic Violet 1	C.I. 42535
C.I. Direct Brown 95	C.I. 30145	C.I. Direct Blue 15	C.I. 24400
C.I. Direct Blue 218	C.I. 24401	C.I. Acid Red 114	C.I. 23635
C.I. Acid Violet 49	C.I. 42640	C.I. Basic Blue 26	
		C.I. Basic Violet 3	

In the test were included **additional** the following reglemented colourants:

Regulated Colourants			
Colourant	C.I.-no.	Colourant	C.I.-no.
C.I. Disperse Orange 149		C.I. Disperse Yellow 23	C.I. 26070
C.I. Basic Green 4			

**Test result:**

Sample	Detected Colourants in mg/l
1 knitted fabric, colour black	n.d.

**Limit value:** 5 mg/l in extract

**Note:**

n.d. = None of the colourants in question were detected.

**Determination of the content of free and partially releasable formaldehyde<sup>A</sup>**

The test was carried out according to DIN EN ISO 14184-1:2011-12.

**Test result:**

Sample	Free and partially releasable formaldehyde
1 knitted fabric, colour black	n.d.

**Note:**

n.d. = not detectable (< 16 mg/kg)

**Limit values recommended:**

75 mg/kg (ppm)

< 16 mg/kg (ppm); For baby and articles for infants

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## CONCLUSION

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The material passes all tested requirements.

Schloss Hohenstein, 10. March 2020

Division Manager Textile Testing

Dipl.-Ing. (FH) Elisabeth Panian



Team Leader of Textile Testing

B.Eng. Lale Albayrak-Hindel

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