

# **AUDIT REPORT MANGO - DETOX PROJECT**

**Facility name:**

**ZHANGJIAGANG**

**Audit Data: 1 March, 2013**

**Auditor Equip:**

**Beatriz Bayo (MANGO)  
Carla Coloma (MANGO)  
Alice Cheng (AITEK)  
Inma Montes (AITEK)**

**Report by Inma Montes (AITEK)**

# INDEX

## 1. PURPOSE OF THE REPORT

### 1.1. Relationship with MANGO

## 2. AUDIT PROCESS

### 2.1. Audit protocol

### 2.2. Measuring protocol

### 2.3. Audit and laboratory results

#### 2.3.1. Supporting documents

#### 2.3.2. Recommendations

#### 2.3.3. Facility sign-off

## 3. DECLARATION OF THIRD PARTY

### Annex 1:

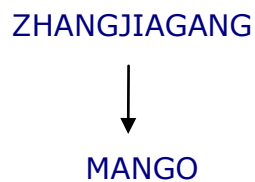
**List of analytes (as per IPE Corporate Disclosure Data Form ENG FINAL Q1 0320)**

**Original Testing Report**

## 1. PURPOSE OF THE REPORT

The purpose of this report is auditing, based on the Standard Oeko-tex® Standard 1000, by checking the use of chemicals products within the production process in the related factory and the release of any harmful chemicals after the wet processes performed.

### 1.1. Relationship with MANGO



Zhangjiagang is the raw material supplier of dyeing woven fabric for MANGO (complete process in the same facility). MANGO directly buys the raw material and send to other countries for manufacturing the finished garments.

## 2. AUDIT PROCESS

### 2.1. Audit protocol

The system used in the quality control audit is based on the audit procedure of the Oeko-Tex® Standard 1000, specific certification for textile companies that want to differentiate their good environmental performance and was carried out by the independent third party auditor Aitex (see section 3) accompanied by Mango staff, including the following steps:.

- ✓ **Opening meeting:** explaining reason of the audit, explanation of the program, steps for future follow-up, affirmation of the confidentiality.
- ✓ **Documentary review and questionnaire** to be completed by Aitex as per the comments from the responsible staff of the facility and the main responsible person in charge of chemicals/environment area of the company. The questionnaire helps to determine the kind of production process carried out in the company, environment impact points as well as other general information about consumptions, list of chemicals, external certifications (ISO 14001, Oeko-Tex® Standard 100), third party inspections reports, internal reports of waste water, etc.
- ✓ **Inspection to the facility:** The different areas of production of the company are freely and properly checked to ensure all discharge pathways. Points of greater risk environment impact are identified

(chemical room, drainage discharges, pipes, etc). After identifying the points of discharge, the sample is taken *in situ* from all points considering necessary (upstream and if possible, from any further treatment): one sample making up 2000 ml and not in alternative times. Pictures were taken for my records.

- ✓ **Closing meeting:** some remarks and comments after the visit are given and shared with the managing representatives of the company.

**Notes:** During the whole process, a Chinese interpreter joined us for the correct communication. Samples were properly sealed and identified and sent to the laboratory for the testing.

## 2.2. Measuring protocol

Zhangjiagang dedicates to dyeing and finishing cotton fabrics. The main environmental concern in this textile industry is the amount of water discharged and the chemical load it carries.

To evaluate the environmental impact of waste water a representative sample of the pollutant concentration level was taken at the end of the wet production process which was assessed as the main discharge upstream of any treatment (ie before waste water treatment whether facility own treatment or collective/ publicly owned treatment) exclusive to this facility (ie not from collective pipes shared with other facilities).

Zhangjiagang			
Name of sample	Day (Day/month/year)/ Time	Sampling point	Volum
300313AR1	30/03/2013 12:00	Discharge pipe coming out of the washing area and after all production process	2000 ml

The samples were always collected by the auditor during the on-site audit. As they were always taken at the same time, there are no alternative results.

The location of the facility where the sample 300313AR1 was taken is as follows:

Deiji Industry Development Area  
Zhangjiagang (Jiangsu)  
China

This company uses its sludge as raw material in their boilers and generate power for their own use. They have a permit from the Government to use them.

### **2.3. Audit and laboratory results**

The laboratory performing the testing of samples is:

#### **Intertek Testing Services Ltd., Shanghai**

[www.intertek.com](http://www.intertek.com)

For more than 100 years, Intertek has guided clients through the challenging certification process. Offering the broadest range of certification and accreditation marks accepted in markets around the world, Intertek can help clients to succeed in new and existing markets, meet evolving regulatory requirements and win new customers.

Intertek is a leading provider of independent analytical laboratory testing services, from advanced R&D research projects to routine quality tests. The analytical services laboratories are staffed by trained chemists, material scientists, technicians and laboratory management with years of industry knowledge and expertise.

#### **Chemical Analysis - GLP Laboratories**

- Structure elucidation, chemical identification, deformulation, reverse engineering
- Determination of impurities and contaminants: By-product profiling and identification, identification of unknown compounds
- Preparation and qualification of reference material
- Analytics in regulated areas: REACH, GLP/GMP, CoAs for registration
- Molecular weight distribution, In-situ reaction monitoring, reaction kinetics, color and white metrics
- Special library services: MS, IR, Raman, NMR
- Open access and express services: NMR, LC-MS, FTIR, GC-MS
- Failure analysis: Foreign particles, deposits, blooming, discoloration

#### **Microscopy and Surface Analysis**

- Surface sensitive analysis: Thin film analysis, depth profiling, penetration studies, cleanliness studies
- Surface properties: Topography, roughness, morphology, elasticity
- Particle properties: Size, shape, morphology
- Failure analysis: Elemental microanalysis, cross-section analysis
- Analytical imaging applications: EDX-mapping, STEM, SIMS-mapping, FTIR, Raman, polymorphism, uniformity, distribution, chemometry
- Open access and express services: SEM and AFM

#### **Trace Analysis - GLP/GMP-Laboratories**

- Extractables and leachables studies for all types of pharmaceutical container closure systems and in-process materials

- Impurity profiling: APIs and finished drug systems, screenings and failure investigations
- Method development & validation (GMP): QC methods and process validation methods
- Reference material qualification
- Classical trace analysis: PCDD/Fs, PCBs, PAHs, N-Nitrosamines, fluoro-organics, aromatic amines organo tin compounds
- VOCs: Volatile organic compounds, residual solvents & odor problems
- OECD-methods (GLP): Water solubility, Kow- and Koc-value, hydrolysis studies, soil sorption, etc.
- Migration studies according to EU and/or FDA guidelines

### 2.3.1. Supporting documents

In the audit, the audit team verified that Zhangjiagang has the following certificates:

Document	Number	Comments
Certificate Oeko-Tex® Standard 100	Confidential	Product Class I (100% total production certificate) Expiry date: 15/02/2014
Environment licence	Yes	Expiry date: indefinite
Quality Management System - ISO 9001:2008	Confidential	Expiry date: 31/12/2014

In this facility, the places where there is a greater risk of environmental impact are:

- Chemicals warehouse, which is equipped for this purpose and in accordance with standards ISO quality and environment certified externally and inventory of MSDS with environment criteria.
- Hazardous waste, which is properly paved and store under cover, with the appropriate retention basins and respecting the incompatibilities between chemicals.
- Wastewater discharge point: this company has a biological and physical-chemical treatment and then, the water is treated in a government plant for final treatment.
- The company has Oeko-Tex® Standard 100. The OEKO-TEX® Standard 100 is an independent testing and certification system for textile raw materials, intermediate and end products at all stages of production. Examples for items eligible for certification: Raw and dyed/finished yarns, raw and dyed/finished fabrics and knits, ready-made articles (all types of

clothing, domestic and household textiles, bed linen, terry cloth items, textile toys and more).

The substances intended for analysis is listed in Annex 1 (List of Analytes) according to the IPE disclosure data form (v 0320). The original test report is also provided in Annex 1.

The results obtained for sample 300313AR1 are as follows:

<b>300313AR1</b>	<b>Concentration of pollutant release (mg/L)</b>	<b>Total pollutant discharge estimation (kg/year)</b>
<b>Total Copper (Cu)</b>	0,028	5,012

<b>Measurement method used for calculating total Pollutant Discharge:</b>	Self-monitored data
<b>Source of Pollutant concentration data:</b>	Self-monitored data

Total volume of discharged water during 2012: 179.009 m<sup>3</sup>/year

The total pollutant discharge estimation has been calculated with the total waste water discharged during 2012 (one complete year) as per documentation collected during the audit.

It is worth to remind the variability in the process discharges along the year and that this sample was taken at an specific moment. For better interpretation of results, it would be advisable periodical follow-up into the sample flow.

## **EVALUATION OF RESULTS**

Heavy metals are present mainly in the dyes and pigments chemicals and solvents to be characteristic of certain colors.

Metals can be present in dyes for two reasons. First, metals are used as catalysts during the manufacture of some dyes and can be present as impurities. Second, in some dyes the metal is chelated with the dye molecule, forming an integral structural element.

Dye manufacturers are now putting more effort into reducing the amount of metals present as impurities. This can be done by selection of starting products, removal of heavy metal and substitution of the solvent where the reaction takes place.

Examples of dyes containing bound metals are copper and nickel in phthalocyanine groups, copper in blue copper-azo-complex reactive dyes and

chromium in metal-complex dyes used for wool silk and polyamide. The total amount of metallised dye used is decreasing, but there remain domains (certain shades such as greens, certain levels of fastness to light) where phthalocyanine dyes, for example, cannot be easily substituted.

The presence of the metal in these metallised dyes can be regarded as a less relevant problem compared to the presence of free metal impurities. Provided that high exhaustion and fixation levels are achieved and that measures are taken to minimise losses from handling, weighing, drum cleaning, etc., only a little unconsumed dye should end up in the waste water. Moreover, since the metal is an integral part of the dye molecule, which is itself non-biodegradable, there is very little potential for it to become bio-available.

It is also important to take into account that treatment methods such as filtration and adsorption on activated sludge, which remove the dye from the waste water, also reduce nearly proportionally the amount of bound metal in the final effluent. Conversely, other methods such as advanced oxidation, may free the metal.

## **ADDITIONAL COMMENTS**

The main effects on the environment of this compound are:

### **Copper: Environmental Effects**

Deposited copper in soils is toxic to certain soil micro-organisms and can disrupt processes such as nutrient cycling or inhibit other processes such as the mineralisation of nitrogen and phosphorous. Accumulation in species varies significantly as does their ability to cope with a range of copper levels in their bodies. Toxic effects have been observed in some species of fish and in other aquatic organisms.

By comparing the results obtained and the regulations in force in China according to standard GB3838-2002, they do not exceed in any parameter, so the results comply with the legal standard of the region.

AITEX, as the laboratory in charge of monitoring the control of harmful substances on all MANGO goods, can confirm that these substances that may appear during the production process and waste water, are tested on the final product before selling to avoid any danger to human health following the most restrictive standards of all countries where their products are marketed.

## **2.3.2. RECOMMENDATIONS**

To avoid the detection of these compounds in the wastewater is recommended to replace the pigments and dyes on metal base by others more correct environmentally.



### 2.3.3. FACILITY SIGN-OFF

The responsibility for the discharges data included in this report has been fully recognised and agreed for disclosure by the CEO/ General Manager of the facility with the accompanying additional information (see scan of original declaration below):



## Corporate Disclosure Data Form

**Enterprise Name (Chinese) :**

**Enterprise Name (English) :** Zhangjiagang

**Facility Name / identity (if enterprise has several facilities):** Cone Dye Machine  
37sets, Sizing Machine 2set, Singeing Machine 1set, Desizing Machine 1  
set, Mercerizing Machine 1set, Preshrunk machine 2set, Stenting Machine 2set

**Facility Address:**

Town, Zhangjiagang City, China

**Type of industrial activity (sector, subsector<sup>1</sup>):** Weaving, printing and dyeing

**Reporting Year:**

**Trimester period data applies to<sup>2</sup>:** 2013-03

**Responsible person<sup>3</sup>**

**Name (please print):**

**Title:**

**Phone number:**

**Date submitted:**

**Signature:**

2013.4.3.  
**Signature of CEO or General Manager:**



<sup>1</sup> Eg textile/apparel, dyeing

<sup>2</sup> Eg. 1 Jan 2013- 31 Mar 2013

<sup>3</sup> Eg the person responsible for environmental management

### 3. DECLARATION OF THIRD PARTY



Alcoy, March 2013

To whom it may concern,

Vicente Blanes Julià, as General Manager of the Institution AITEX (Textile Research Institute) declares that:

AITEX is a private non-profit association that encompasses textile and textile-related companies. Its ultimate aim is to make this sector more competitive. To achieve this, the Institute promotes modernisation and the introduction of new and emerging technologies by developing R&D projects and, in general, any initiatives that will contribute to the industrial progress of the sector.

It is registered with the Register of Innovation and Technology Centres, registration number 36, as well as the Research Results Transfer Office (OTRI), registration number 115. It is also a member of the Spanish Federation of Innovation and Technology Centres (FEDIT) and the Region of Valencia's Network of Technology Institutes (REDIT) as well as a number of other national and international organisations.

AITEX has accredited the following standards for their organisation:

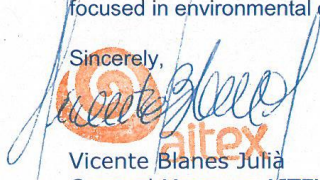
- It is a recognized testing laboratory that works according to a standardized and organized management system to ensure the uniformity of their work to their customers. AITEX laboratory services are accredited by ENAC according to the norm UNE - EN ISO IEC 17025:2005 ERRATUM:2006 "General requirements for the competence of laboratories testing and calibration" and document CGA - ENAC - LEC "general criteria for the accreditation of laboratories for testing and calibration according to standard UNE EN ISO IEC 17025".
- Also during 2012 the certification of the quality system of AITEX according to the reference standard UNE - EN - ISO 9001:2008 "quality management systems, requirements by AENOR has been remained.

In Spain, only AITEX is the institute authorized for auditing and certificate Oeko-Tex® Standard 100 (for product) and Oeko-Tex® Standard 1000 (for companies), under the supervision of the Secretariat, International Association for Research and Testing in the Field of Textile Ecology (OEKO-TEX®) in Zürich.

The auditors involved in the project MANGO - DETOX work with complete impartial criteria with audited companies.

The staffs involved have the appropriate training to be an evaluation body focused in environmental objectives.

Sincerely,



Vicente Blanes Julià  
General Manager AITEX

Central: Plaza Emilio Sala, 1 - E-03801 ALCOY (Alicante) SPAIN - Tel.: +34 96 554 22 00 - Fax: +34 96 554 34 94  
Unidad Técnica: Valencia: Tel.: 96 131 81 93 - Fax: 96 131 81 83

www.aitex.es  
www.madeingreen.com  
www.observatoriortextil.com  
www.textil.org  
info@aitex.es



Los ensayos acreditados por ENAC se encuentran disponibles en el departamento de calidad del Instituto  
Asociación de Investigación de la Industria Textil - C.I.F.: G03182870

## Annex 1

### List of analytes

SUBSTANCE GROUP/COMMON NAME	CAS number	COMMENTS
<b>Heavy Metals</b>		
Total Hexavalent chromium	NA	SEE LAB REPORT ATTACHED
Mercury and its Compounds or Total Mercury	NA	SEE LAB REPORT ATTACHED
Lead and its Compounds or Total Lead	NA	SEE LAB REPORT ATTACHED
Cadmium and its Compounds or Total Cadmium	NA	SEE LAB REPORT ATTACHED
Total Chromium	NA	SEE LAB REPORT ATTACHED
Total Zinc	NA	SEE LAB REPORT ATTACHED
Total Manganese	NA	*NOT TESTED (Missing substance as it is not regulated in China for textile wastewater.)
Total Cyanide	NA	*NOT TESTED (Missing substance as it is not regulated in China for textile wastewater.)
Nickel	NA	SEE LAB REPORT ATTACHED
Total Copper	NA	SEE LAB REPORT ATTACHED
Other heavy metals <sup>1</sup>	NA	TOTAL ARSENIC (SEE ORIGINAL LAB REPORT)
<b>Alkylphenols</b>		
NP / 4-NP (branched)	25154-52-3 <sup>2</sup> ALTERNATIVE 11066-49-3 <sup>3</sup> Or 90481-04-2 <sup>4</sup>	SEE LAB REPORT ATTACHED
NPE	commonly used CAS number is 9016-45-9 <sup>5</sup>	NPEO <sup>(1+2)</sup> , NPEO <sup>(3-18)</sup> (SEE ORIGINAL LAB REPORT)
4-t-OP	140-66-9	SEE LAB REPORT ATTACHED (4-t-OP = OP)
4-t-OPE	<b>26636-32-8</b>	*NOT TESTED. MISSED

<sup>1</sup> to be filled in by facility for any other relevant heavy metals that are listed

<sup>2</sup> Commonly used, cite from OSPAR

<sup>3</sup> From Information from the Existing Substances Regulation: <http://echa.europa.eu/web/guest/information-on-chemicals/information-from-existing-substances-regulation>

<sup>4</sup> From EU risk assessment: <http://echa.europa.eu/web/guest/information-on-chemicals/information-from-existing-substances-regulation>

<sup>5</sup> From OSPAR

Other alkylphenols <sup>6</sup>	NA	OPEO <sub>(3-16)</sub> (SEE ORIGINAL LAB REPORT)
<b><u>Phthalates</u></b>		
DEHP,	117-81-7	SEE LAB REPORT ATTACHED
DBP,	84-74-2	SEE LAB REPORT ATTACHED
BBP	85-68-7	SEE LAB REPORT ATTACHED
DIBP,	84-69-5	SEE LAB REPORT ATTACHED
DNOP	117-84-0	SEE LAB REPORT ATTACHED
DIDP	26761-40-0 and 68515-49-1	SEE LAB REPORT ATTACHED
DINP	28553-12-0 and 68515-48-0	SEE LAB REPORT ATTACHED
Other phthalates <sup>7</sup>		DnHP (SEE LAB REPORT ATTACHED)
<b><u>Brominated and Chlorinated flame retardants</u></b>		
HBCDD ,	25637-99-4, 3194-55-6 (134237-50-6) (134237-51-7) (134237-52-8)	SEE LAB REPORT ATTACHED
Tris (2,3-dibromopropyl) phosphate	126-72-7	*NOT TESTED. MISSED
Tris(2-chloroethyl)phosphate (TCEP)	115-96-8	*NOT TESTED. MISSED
Tetra BDE	40088-47-9	SEE LAB REPORT ATTACHED
PentaBDE	32534-81-9	SEE LAB REPORT ATTACHED
HexaBDE,	36483-60-0	SEE LAB REPORT ATTACHED
HeptaBDE,	68928-80-3	*NOT TESTED. MISSED
octaBDE,	32536-52-0	SEE LAB REPORT ATTACHED
NonaBDE	63936-56-1	*NOT TESTED. MISSED
decaBDE,	1163-19-5	SEE LAB REPORT ATTACHED

<sup>6</sup> to be filled in by facility for any other relevant alkylphenols that are identified eg on Material safety data sheets

<sup>7</sup> to be filled in by facility for any other relevant phthalates that are identified eg on Material safety data sheets

Other brominated or chlorinated Flame retardants <sup>8</sup>	59536-65-1 / 79-94-7	PBBs and TBBPA (SEE LAB REPORT ATTACHED)
<b>Azodyes<sup>9</sup></b>		TESTED: 22 AMINES as per REACH Regulation.
		*NOT TESTED: 2,4-Xylidine / 2,6-Xylidine. From now on, Chinese GB18041 standard will be follow to include all 24 amines.
<b>Organotin Compounds<sup>10</sup></b>		
Tributyltin compounds(TBT)	56573-85-4	SEE LAB REPORT ATTACHED
Dibutyl tin compounds(DBT)	1002-53-5	SEE LAB REPORT ATTACHED
Mono butyltin compounds	78763-54-9	MBT (SEE LAB REPORT ATTACHED)
Octyl tin compounds (DOT)	15231-44-4	SEE LAB REPORT ATTACHED
Phenyltin compounds	668-34-8	TPT (SEE LAB REPORT ATTACHED)
Other organo tins <sup>11</sup>		TPhT (Triphenyltin), MOT (Monooctyltin), TphT (Diphenyltin), TeBT (Tetrabutyltin), TcYT (Tricyclohexyltin), TeET (Tetraethyltin) (SEE ORIGINAL LAB REPORT)
<b>Perfluorinated Chemicals</b>		
PFOS	307-35-7; ALTERNATIVE 1763-23-1.	SEE LAB REPORT ATTACHED
PFOA	335-67-1	SEE LAB REPORT ATTACHED
Other C8 PFCs <sup>12</sup>	NA	NA
PFHXS	432-50-7	*NOT TESTED
PFHXA	307-24-4	*NOT TESTED
Other C6 PFCs <sup>13</sup>	NA	NA
PFBS	375-73-5	*NOT TESTED. MISSED
PFBA	375-22-4	*NOT TESTED. MISSED
Other C4 PFCs <sup>14</sup>	NA	NA

<sup>8</sup> to be filled in by facility for any other relevant brominated or chlorinated flame retardants in this group that are identified eg on Material safety data sheets

<sup>9</sup> Azodyes mentioned here refer to the 24 compounds banned by the National General Safety technical Code for textile products. (GB 18401-2010)

<sup>10</sup> Part of the CAS code of Organotin Compounds are quoted from American Apparel& Footware Association – Restriction Substance List (AAFA RSL, Oct, 2012).

<sup>11</sup> to be filled in by facility for any other relevant organotins in this group that are identified eg on Material safety data sheets

<sup>12</sup> to be filled in by facility for any other C8 PFCs in this group that are identified eg on Material safety data sheets

<sup>13</sup> to be filled in by facility for any other C6 PFCs in this group that are identified eg on Material safety data sheets

<sup>14</sup> to be filled in by facility for any other C4 PFCs in this group that are identified eg on Material safety data sheets

Other PFCs <sup>15</sup>		N-Methyl-Perfluorooctanesulfonamide(N-ME-FOSA), N-Ethyl-Perfluorooctanesulfonamide(N-Et-FOSA), N-Methyl-Perfluorooctanesulfonamidoethanol(N-Et-FOSE alcohol), N-Ethyl-Perfluorooctanesulfonamidoethanol(N-Me-FOSE alcohol), Perfluorooctane Sulfonamide(PFOSA) (SEE ORIGINAL LAB REPORT)
<b>Chlorinated Chemicals:</b>		
<b>Chlorobenzenes, chlorinated solvents, chlorophenols and Short chained chlorinated parafins</b>		
<b>Chlorobenzenes</b>		
monochlorobenzene	108-90-7	*NOT TESTED. MISSED
dichlorobenzene	1,2-Dichlorobenzene 95-50-1 1,3-Dichlorobenzene 541-73-1 1,4-Dichlorobenzene 106-46-7	SEE LAB REPORT ATTACHED
trichlorobenzene	1,2,3-trichlorobenzene 87-61-6 1,2,4-trichlorobenzene 120-82-1 1,3,5-trichlorobenzene 108-70-3	SEE LAB REPORT ATTACHED
tetrachlorobenzene	1,2,3,4-Tetrachlorobenzene 634-66-2  1,2,3,5-Tetrachlorobenzene 634-90-2;  1,2,4,5-Tetrachlorobenzene : 95-94-3	*NOT TESTED. MISSED
pentachlorobenzene	608-93-5	*NOT TESTED. MISSED.
hexachlorobenzene	118-74-1	*NOT TESTED. MISSED.
<b>Chlorinated solvents (chlorinated alkanes and alkenes)</b>		
Dichloromethane	75-09-2	*NOT TESTED. MISSED
Trichloromethane (chloroform)	67-66-3	SEE LAB REPORT ATTACHED
Tetrachloromethane	56-23-5	*NOT TESTED. MISSED
1,1,2-Trichloroethane	79-00-5	SEE LAB REPORT ATTACHED
1,1-dichloroethane	75-35-4	*NOT TESTED. MISSED
1,2-dichloroethane (EDC)	107-06-2	*NOT TESTED. MISSED
Trichloroethylene (TCE)	79-01-6.	SEE LAB REPORT ATTACHED
Perchloroethylene (PERC); also known as tetrachloroethylene	127-18-4	SEE LAB REPORT ATTACHED

<sup>15</sup> to be filled in by facility for any other PFCs in this group that are identified eg on Material safety data sheets

<b>Chlorophenols</b>		
Penta chlorophenols (PCP)	87-86-5	SEE LAB REPORT ATTACHED
Tetrachlorophenols (PCP)	25167-83-3	*NOT TESTED. MISSED
Tri chlorophenols (PCP)	2,4,6-Trichlorophenol; 88-06-2	SEE LAB REPORT ATTACHED
	2,4,5-Trichlorophenol; 95-95-4	*NOT TESTED. MISSED
	2,3,4-Trichlorophenol; 15950-66-0	*NOT TESTED. MISSED
	2,3,5-Trichlorophenol; 933-78-8	*NOT TESTED. MISSED
	3,4,5-Trichlorophenol; 609-19-8	*NOT TESTED. MISSED
Di chlorophenol (PCP)	2,4- dichlorophenol 120-83-2	SEE LAB REPORT ATTACHED
	2,6-Dichlorophenol 87-65-0	*NOT TESTED. MISSED
	3,5- dichlorophenol. 591-35-5	*NOT TESTED. MISSED
	2,3-Dichlorophenol; 576-24-9	*NOT TESTED. MISSED
	3,4-Dichlorophenol; 95-77-2	*NOT TESTED. MISSED
Mono chlorophenol (PCP)	2,5-Dichlorophenol; 583-78-8	SEE LAB REPORT ATTACHED
	95-57-8 2-chlorophenol;	*NOT TESTED. MISSED
	108-43-0 3-chlorophenol;	*NOT TESTED. MISSED
	106-48-9 4-chlorophenol	*NOT TESTED. MISSED
Other chlorobenzenes, Chlorinated solvents and chlorophenols <sup>16</sup>		1,1,1,2-Tetrachloroethane, 1,1,1-trichloroethane, Carbon Tetrachloride, Pentachloroethane, 1,1-Dichloroethylene (SEE ORIGINAL LAB REPORT)
<b>Short chained chlorinated parafins</b>		
SCCP chloro alkanes, C10-13	85535-84-8	SEE LAB REPORT ATTACHED
<b>Other hazardous chemicals</b> <sup>17</sup>		

(\* ) All the substances indicated as \*NOT TESTED/MISSED, Mango will progressively require testing in subsequent sampling.

**REMARK:** All detection limits of all analytes and in particular the APEOs, will be revised in line with best technically available detection levels.

## Original Testing Report(s) (PDF(s) attached)

<sup>16</sup> to be filled in by facility for any other relevant substances in this group that are identified eg on Material safety data sheets

<sup>17</sup> to be filled in by facility for any other relevant chemical groups that are identified eg on Material safety data sheets





**Test Report**

Number: SHAH0036878901

Applicant: MANGO PUNTO FA, S.L.  
C/ MERCADERS 9-11 P. I. RIERA DE CALDES PALAU-SOLITA  
I PLEGAMANS, 08184 BARCELONA SPAIN  
Attn: ALICE

Date: APR 08, 2013

Sample Description:  
**One(1)Submitted Sample Said To Be :  
Black Liquid(30032013AR1, Before Treatment ).**

Tests Conducted:  
As Requested By The Applicant, For Details Refer To Attached Page(S).

To be continued

Prepared And Checked By:

Kent  
Technical Manager  
For Intertek Testing Services Ltd., Shanghai

Authorized By:

Jasmine  
Deputy General Manager  
For Intertek Testing Services Ltd., Shanghai



Tests Conducted

1 Nonylphenol (NP), Octylphenol (OP), Nonylphenol Ethoxylates(NPEO) And Octylphenol Ethoxylates(OPEO)

Direct Injection And By Liquid Chromatography – Mass Spectrometry (LC-MS/MS) Analysis.

<u>Compound</u>	<u>Result (µg/L)</u>
OP	<100
NP	<100
NPEO (1+2)	<100
NPEO (3-18)	<100
NPEO (1+2)	<100
OPEO (3-16)	<100

Remark: Detection Limit = 100µg/L

2 Chlorinated Solvents

By Headspace-Gas Chromatography-Mass Spectrometry (HS-GC/MS) Analysis.

<u>Compound</u>	<u>Result (mg/L)</u>
Trichloroethylene	<5
Tetrachloroethylene	<5
1,1,1-trichloroethane	<5
Carbon Tetrachloride	<5
1,1,1,2-Tetrachloroethane	<5
1,1,2,2-Tetrachloroethane	<5
1,1,2-Trichloroethane	<5
Pentachloroethane	<5
Trichloromethane	<5
1,1-Dichloroethylene	<5

Remark: Detection Limit = 5mg/L

\*\*\*\*\*

To be continued

Tests Conducted

3 Detection Of Amines Derived From Azocolourants And Azodyes

With Reference To EN 14362, Buffered With Citric Acid And By Gas Chromatography-Mass Spectrometry (GC/MS) And High Performance Liquid Chromatography (HPLC) Analysis.

	<u>Forbidden</u>	<u>Cas No.</u>	<u>Result(mg/L)</u>
1.	4-Aminodiphenyl	92-67-1	<0.1
2.	Benzidine	92-87-5	<0.1
3.	4-Chloro-o-Toluidine	95-69-2	<0.1
4.	2-Naphthylamine	91-59-8	<0.1
5.	o-Aminoazotoluene	97-56-3	<0.1
6.	2-Amino-4-Nitrotoluene	99-55-8	<0.1
7.	p-Chloroaniline	106-47-8	<0.1
8.	2,4-Diaminoanisole	615-05-4	<0.1
9.	4,4'-Diaminodiphenylmethane	101-77-9	<0.1
10.	3,3'-Dichlorobenzidine	91-94-1	<0.1
11.	3,3'-Dimethoxybenzidine	119-90-4	<0.1
12.	3,3'-Dimethylbenzidine	119-93-7	<0.1
13.	3,3'-Dimethyl-4,4'diaminodiphenylmethane	838-88-0	<0.1
14.	p-Cresidine	120-71-8	<0.1
15.	4,4'-Methylene-Bis(2-Chloroaniline)	101-14-4	<0.1
16.	4,4'-Oxydianiline	101-80-4	<0.1
17.	4,4'-Thiodianiline	139-65-1	<0.1
18.	o-Toluidine	95-53-4	<0.1
19.	2,4-Toluylenediamine	95-80-7	<0.1
20.	2,4,5-Trimethylaniline	137-17-7	<0.1
21.	o-Anisidine	90-04-0	<0.1
22.	p-Aminoazobenzene	60-09-3	<0.1

Remark : Detection limit = 0.1mg/L

To be continued



**Test Report**

Number: SHAH0036878901

Tests Conducted

4 Total (Heavy Metals) Content

Acidified With Nitric Acid And By Inductively Coupled Argon Plasma-Mass Spectrometry(ICP-MS) Analysis.Direct Injection And By Ion Chromatography- Inductively Coupled Argon Plasma-Mass Spectrometry(IC-ICP-MS) Analysis .

<u>Tested Element(S)</u>	<u>Result (mg/L)</u>	<u>MDL (mg/L)</u>
Total Cadmium(Cd)	ND	0.005
Total Arsenic(As)	ND	0.025
Total Lead(Pb)	ND	0.025
Total Chromium(Cr)	ND	0.025
Total Mercury(Hg)	ND	0.0002
Total Copper(Cu)	0.028	0.025
Total Nickel(Ni)	ND	0.005
Total Zinc(Zn)	ND	0.050
Total Hexavalent Chromium(Cr-VI)	ND	0.005

Remark: ND = Not detected

5 Phthalate Content Test

Toluene Extraction And By Gas Chromatography-Mass Spectrometry (GC-MS) Analysis.

<u>Tested Compound</u>	<u>Result (µg/L)</u>
Di-Butyl Phthalate (DBP)	<50
Di(2-Ethyl Hexyl) Phthalate(DEHP)	<50
Benzyl Butyl Phthalate (BBP)	<50
Di-Iso-Nonyl Phthalate (DINP)	<50
Di-N-Octyl Phthalate (DNOP)	<50
Di-Iso-Decyl Phthalate (DIDP)	<50
Di-Iso-Butyl Phthalate (DIBP)	<50

Remark: Detection Limit = 50µg/L

\*\*\*\*\*

To be continued

Tests Conducted

6 Chlorophenols Content Test

With Reference To ISO 17070, After Hexane Extraction And Acetylated By Acetic Anhydride, Analyzed By Gas Chromatography-Mass Spectrometry (GC-MS).

<u>Tested Compound</u>	<u>Result (µg/L)</u>
2,4- & 2,5-Dichlorophenol	<10
2,4,6-Trichlorophenol	<10
Pentachlorophenol	<10

Remark: Detection Limit = 10µg/L

7 Organic Tin Compounds Content

With Reference To DIN EN 17353, After Alkylated By Sodium Tetraethylborate And Extracted With Hexane, Analyzed By Gas Chromatography-Mass Spectrometry (GC-MS).

<u>Tested Compound</u>	<u>Result (µg/L)</u>
MBT(Monobutyltin)	<5
DBT(Dibutyltin)	<5
TBT(Tributyltin)	<5
TPhT(Triphenyltin)	<5
DOT(Dioctyltin)	<5
MOT(Monooctyltin)	<5
DPhT(Diphenyltin)	<5
TeBT(Tetrabutyltin)	<5
TCyT(TricyclohexylTin)	<5
TPT(Tripopyltin)	<5
TeET(Tetraethyltin)	<5

Remark: Detection Limit = 5µg/L

\*\*\*\*\*  
To be continued

Tests Conducted

8 Flame Retardants

Toluene Extraction And By Liquid Chromatography - Mass Spectrometry (LC-MS) And Gas Chromatography - Mass Spectrometry (GC-MS) Analysis.

<u>Compound</u>	<u>Result (µg/L)</u>
Polybromobiphenyls(PBBs)	<100
Tetrabromodiphenylether(Tetra BDE)	<100
Pentabromodiphenylether(Penta BDE)	<100
Hexabromodiphenylether(Hexa BDE)	<100
Octabromodiphenylether(OctaBDE)	<100
Decabromodiphenylether(DecaBDE)	<100
Hexabromocyclododecane(HBCDD)	<100
TBBPA: TETRABROMOBISPHENOL A(TBBPA)	<100

Remarks: Detection Limit = 100µg/L

9 Perfluorinated Chemicals Content

Direct Injection And By Liquid Chromatography – Mass Spectrometry (LC-MS/MS) Analysis.

<u>Compound</u>	<u>Result (µg/L)</u>
Perfluorooctane Sulfonates(PFOS)	<0.5
Perfluorooctanoic Acid(PFOA)	<0.5
N-Methyl-Perfluorooctanesulfonamide(N-ME-FOSA)	<0.5
N-Ethyl-Perfluorooctanesulfonamide(N-Et-FOSA)	<0.5
N-Methyl-Perfluorooctanesulfonamidoethanol(N-Et-FOSE alcohol)	<0.5
N-Ethyl-Perfluorooctanesulfonamidoethanol(N-Me-FOSE alcohol)	<0.5
Perfluorooctane Sulfonamide(PFOSA)	<0.5

Remark: Detection Limit = 0.5µg/L

\*\*\*\*\*  
To be continued



**Test Report**

Number: SHAH0036878901

Tests Conducted

10 Chlorinated Paraffin (C10 -C13)

Hexane Extraction And By Gas Chromatography -Electron Capture Detector(GC-ECD) Analysis.

Result (µg/L) : <1000

Remarks: Detection Limit = 1000 µg/L

11 Chlorinated Benzenes

Dichloromethane Extraction And By Gas Chromatography-Mass Spectrometry (GC-MS) Analysis.

<u>Compound</u>	<u>Result(µg/L)</u>
1,4-Dichlorobenzene	<10
Dichlorobenzene	<10
Trichlorobenzenes	<10

Remark: Detection Limit = 10 µg/L

Date Sample Received: Apr. 01, 2013

Testing Period: Apr. 01, 2013 To Apr. 07, 2013

\*\*\*\*\*

End of report

*This report is made solely on the basis of your instructions and/or information and materials supplied by you. It is not intended to be a recommendation for any particular course of action. Intertek does not accept a duty of care or any other responsibility to any person other than the Client in respect of this report and only accepts liability to the Client insofar as is expressly contained in the terms and conditions governing Intertek's provision of services to you. Intertek makes no warranties or representations either express or implied with respect to this report save as provided for in those terms and conditions. We have aimed to conduct the Review on a diligent and careful basis and we do not accept any liability to you for any loss arising out of or in connection with this report, in contract, tort, by statute or otherwise, except in the event of our gross negligence or wilful misconduct.*