



TEST REPORT

Reference No. : WTF19F10073104A1C
Applicant : Mid Ocean Brands B.V.
Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon,
Hong Kong
Manufacturer : 112451
Sample Name : Baseball cap
Model No. : KC1464
Test Method : Please refer to next page (s)
Test Conclusion : Please refer to next page (s)
Date of Receipt sample : 2019-10-23 & 2019-11-13
Date of Test : 2019-10-23 to 2019-11-15
Date of Issue : 2019-11-18
Test Result : Please refer to next page (s)

Remarks:

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- Test Requested**..... :
- 1) Determination of Cadmium content in the submitted sample in accordance with REACH regulation Annex XVII Entries 23 (EC) No. 1907/2006 and the amendment No. 552/2009, No. 494/2011, No. 835/2012 and (EU) 2016/217
 - 2) Determination of Lead content in the submitted sample in accordance with REACH regulation Annex XVII Entries 63 (EC) No. 1907/2006 and the amendment No. 836/2012 and (EU) 2015/628
 - 3) Determination of specified Phthalates content according to Annex XVII Items 51 & 52 of the REACH Regulation (EC) No. 1907/2006 & Amendment No. 552/2009 & No. 2018/2005
 - 4) Determine the specified AZO Colorants contents in the submitted sample in according to the Entries 43 in Annex XVII of the REACH Regulation (EC) No.1907/2006 and the Amendment Regulation (EC) No.552/ 2009 & No.126/ 2013 (previously restricted under Directive 2002/61/EC).
 - 5) As specified by client, determination of the free and hydrolysed formaldehyde content in submitted sample
 - 6) Nickel content requirement in Annex XVII Item 27 of the REACH Regulation (EC) No. 1907/2006 & amendment No.552/2009 (formerly known as Directive 94/27/EC and 2004/96/EC)
 - 7) As requested by the applicant, to test Colour Fastness to Rubbing in the submitted sample.



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**Test Result:****1) Cadmium (Cd)**

Test Method: With reference to IEC 62321-5:2013, the analysis was performed by ICP-OES.

| Test Item | MDL (mg/kg) | Results (mg/kg) | |
|-------------------|----------------|-----------------|--|
| | | No.2 | |
| Cadmium(Cd) | 2 | ND | |
| Conclusion | -- | Pass | |

Note:

- (1) mg/kg = milligram per kilogram
- (2) ND = Not Detected (lower than MDL)
- (3) MDL = Method Detection Limit
- (4) Limit of Cadmium according to REACH regulation Annex XVII Item 23 (EC) No. 1907/2006 and the amendment No. 552/2009, No. 494/2011 and No. 835/2012 and (EU) 2016/217.

| Category | Limit (mg/kg) |
|-----------------------------------------------|---------------|
| Wet paint | 100 |
| Surface coating | 1000 |
| Plastic | 100 |
| Metal parts of jewellery and hair accessories | 100 |

2) Lead (Pb)

Test Method: With reference to IEC 62321-5:2013, the analysis was performed by ICP-OES.

| Test Item | MDL (mg/kg) | Results (mg/kg) | | | Limit (mg/kg) |
|-------------------|----------------|-----------------|-------------|-------------|------------------|
| | | No.1 | No.2 | No.3 | |
| Lead(Pb) | 2 | ND | ND | ND | 500 |
| Conclusion | -- | Pass | Pass | Pass | -- |

| Test Item | MDL (mg/kg) | Results (mg/kg) | | | Limit (mg/kg) |
|-------------------|----------------|-----------------|-------------|-------------|------------------|
| | | No.4 | No.5 | No.6 | |
| Lead(Pb) | 2 | ND | ND | ND | 500 |
| Conclusion | -- | Pass | Pass | Pass | -- |

Note:

- (1) mg/kg = milligram per kilogram
- (2) ND = Not Detected (lower than MDL)
- (3) MDL = Method Detection Limit
- (4) Limit of Lead was quoted from REACH regulation Annex XVII Item 63 (EC) No. 1907/2006 and the amendment No. 836/2012 and (EU) 2015/628.



3) Phthalates

Test Method: With reference to EN14372:2004, by Gas Chromatographic-Mass Spectrometric (GC-MS) analysis.

| Test Items | MDL (%) | Results (%) | Limit (%) |
|--------------------------------------|---------|-------------|-------------------------------|
| | | No.2 | |
| Benzyl butyl phthalate (BBP) | 0.005 | ND | sum of four phthalates < 0.1 |
| Di (2-ethyl hexyl)- phthalate (DEHP) | 0.005 | ND | |
| Dibutyl phthalate (DBP) | 0.005 | ND | |
| Diisobutyl phthalate (DIBP) | 0.005 | ND | |
| Diisodecyl phthalate (DIDP) | 0.01 | ND | sum of three phthalates < 0.1 |
| Diisononyl phthalate (DINP) | 0.01 | ND | |
| Di-n-octyl phthalate (DNOP) | 0.005 | ND | |
| Conclusion | -- | Pass | -- |

Note:

DBP= Dibutyl phthalate

BBP= Benzyl butyl phthalate

DEHP= Bis-(2-ethylhexyl)- phthalate

DINP= Di-isononyl phthalate

DNOP= Di-n-octyl phthalate

DIDP= Di-isodecyl phthalate

DIBP= Diisobutyl phthalate

(1) % = percentage by weight

(2) ND = Not detected or Less than the method detection limit

(3) MDL=Method Detection Limit

(4) "<" = less than

(5) The above limit was quoted according to Annex XVII Items 51 & 52 of the REACH Regulation (EC) No. 1907/2006 & Amendment No. 552/2009 & No. 2018/2005 (formerly known as Directive 2005/84/EC) for phthalate content in toys and child care articles.



4) AZO

Test Method: With reference to BS EN ISO 14362-1: 2017 and BS EN ISO 14362-3: 2017, analysis was performed by Gas Chromatographic Mass Spectrometry (GC-MS)

| No. | Amines Substances | CAS No. | Limit (mg/kg) | Result (mg/kg) | |
|-------------------|-------------------------------------------|----------|---------------|----------------|-------------|
| | | | | No.1 | No.3 |
| 1 | 4-Aminobiphenyl | 92-67-1 | 30 | ND | ND |
| 2 | Benzidine | 92-87-5 | 30 | ND | ND |
| 3 | 4-chloro-o-Toluidine | 95-69-2 | 30 | ND | ND |
| 4 | 2-Naphthylamine | 91-59-8 | 30 | ND | ND |
| 5 | o-Aminoazotoluene | 97-56-3 | 30 | ND | ND |
| 6 | 2-Amino-4-nitrotoluene | 99-55-8 | 30 | ND | ND |
| 7 | p-Chloroaniline | 106-47-8 | 30 | ND | ND |
| 8 | 2,4-diaminoanisol | 615-05-4 | 30 | ND | ND |
| 9 | 4,4'-Diaminodiphenylmethane | 101-77-9 | 30 | ND | ND |
| 10 | 3,3'-Dichlorobenzidine | 91-94-1 | 30 | ND | ND |
| 11 | 3,3'-Dimethoxybenzidine | 119-90-4 | 30 | ND | ND |
| 12 | 3,3'-Dimethylbenzidine | 119-93-7 | 30 | ND | ND |
| 13 | 3,3'-Dimethyl-4,4'-diaminodiphenylmethane | 838-88-0 | 30 | ND | ND |
| 14 | p-cresinin | 120-71-8 | 30 | ND | ND |
| 15 | 4,4'-Methylen-bis-(2-chloroaniline) | 101-14-4 | 30 | ND | ND |
| 16 | 4,4'-Oxydianiline | 101-80-4 | 30 | ND | ND |
| 17 | 4,4'-Thiodianiline | 139-65-1 | 30 | ND | ND |
| 18 | o-Toluidine | 95-53-4 | 30 | ND | ND |
| 19 | 2,4-Toluylendiamine | 95-80-7 | 30 | ND | ND |
| 20 | 2,4,5 – Trimethylaniline | 137-17-7 | 30 | ND | ND |
| 21 | o-anisidine | 90-04-0 | 30 | ND | ND |
| 22 | 4-aminoazobenzene | 60-09-3 | 30 | ND | ND |
| 23 | 2,4-Xylidin | 95-68-1 | 30 | ND | ND |
| 24 | 2,6-Xylidin | 87-62-7 | 30 | ND | ND |
| Conclusion | | -- | -- | Pass | Pass |

Note:

- ND = Not detected or less than the method detection limit
- mg/kg=Milligram per kilogram
- Method Detection Limit (mg/kg): Each 5mg/kg
- The CAS-numbers 97-56-3 and 99-55-8 are further reduced to CAS-numbers 95-53-4 and 95-80-7.
- AZO colorants that are able to form 4-aminoazobenzene, generate under the condition of this method aniline and 1,4-phenylenediamine. The presence of these colorants cannot be reliably ascertained without additional information, e.g. the chemical structure of the colorant used.
- The CAS-numbers 95-68-1 and 87-62-7 are not proscribed under REACH Regulation (EC) No 1907/2006



5) Formaldehyde

Test Method: With reference to ISO 14184-1:2011, analysis was performed by UV-VIS

| Test Item | Unit | Result | | | MDL | Client's Limit |
|----------------------------------|-------|-------------|-------------|-------------|-----|----------------|
| | | No.1 | No.2 | No.3 | | |
| Formaldehyde (CH ₂ O) | mg/kg | 49 | ND | 26 | 16 | 75 |
| Conclusion | -- | Pass | Pass | Pass | -- | -- |

Note:

- ND = Not detected or less than the method detection limit
- mg/kg =milligram per kilogram=ppm
- MDL= Method Detection Limit

6) Nickel release

Test method: With reference BS EN1811: 2011+A1:2015, Nickel content was determined by Inductively Coupled Argon Plasma Spectrometry

| Item No. | Sample Area (cm ²) | Volume of Test Solution(ml) | Nickel release (µg/cm ² /week) | | | | Conclusion |
|-------------|--------------------------------|-----------------------------|-------------------------------------------|---------|---------|---------|-------------|
| | | | Trial 1 | Trial 2 | Trial 3 | Average | |
| No.4 | 14.45 | 10 | ND | ND | ND | ND | Pass |
| No.5 | 4.43 | 5 | ND | ND | ND | ND | Pass |
| No.6 | 3.34 | 5 | ND | ND | ND | ND | Pass |

Note:

- (1) µg/cm²/week = microgram per square centimetre per week
- (2) Method Detection limit = 0.05 µg/cm²/week
- (3) ND = Not detected or less than the value of Method Detection Limit
- (4) Interpretation of test results:

| Type of sample | Nickel Release(µg/cm ² /week) | |
|-----------------------------------------------------------------------------------------------------------------|------------------------------------------|-------|
| | Pass | Fail |
| Other components in direct and prolonged contact with the skin | <0.88 | ≥0.88 |
| Post assemblies and body piercings (Post assemblies which are inserted into pierced parts of the human body) | <0.35 | ≥0.35 |



7) Colour Fastness to Rubbing

| Colour Fastness to Rubbing | | | |
|----------------------------------------------------------------------|-------------|-------------|-----------------------|
| (ISO 105 X12: 2001/Cor 2002; Size of rubbing finger: 16mm diameter.) | | | |
| | No.7 | No.8 | Client's Limit |
| Dry staining | 4 | 4-5 | 2-3 |
| Wet staining | 3 | 4 | 2-3 |
| Conclusion | Pass | Pass | -- |

Note:

(1) Grey Scale Rating is based on the 5-step scale of 1 to 5, where 1 is bad and 5 is good.

Test Specimen Description:

- No.1: Black main fabric
- No.2: White plastic net
- No.3: Black fabric
- No.4: Coppery metal buckle
- No.5: Coppery metal ring
- No.6: Silvery metal rivet
- No.7: Navy main fabric
- No.8: Navy fabric



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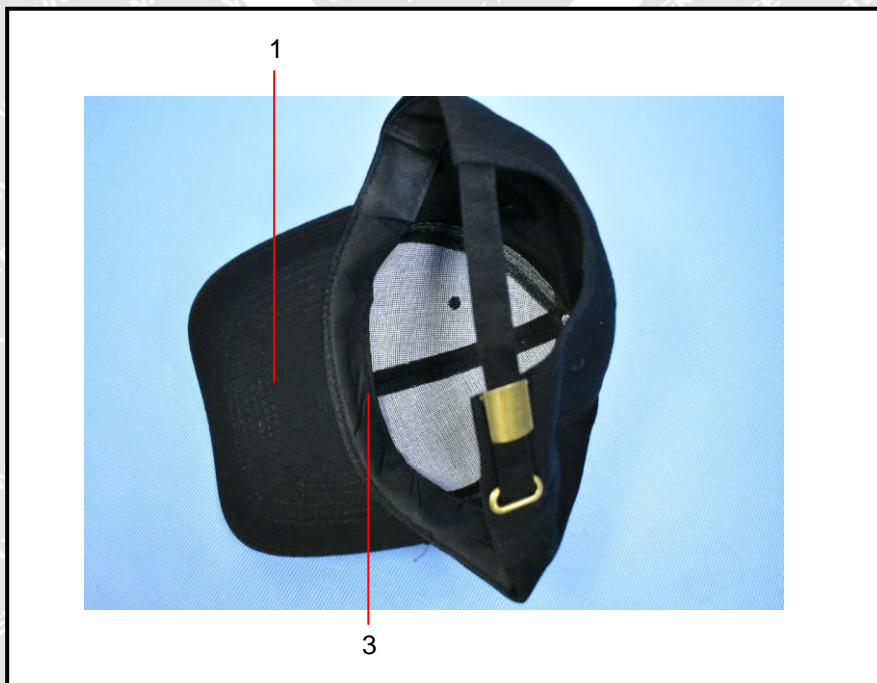


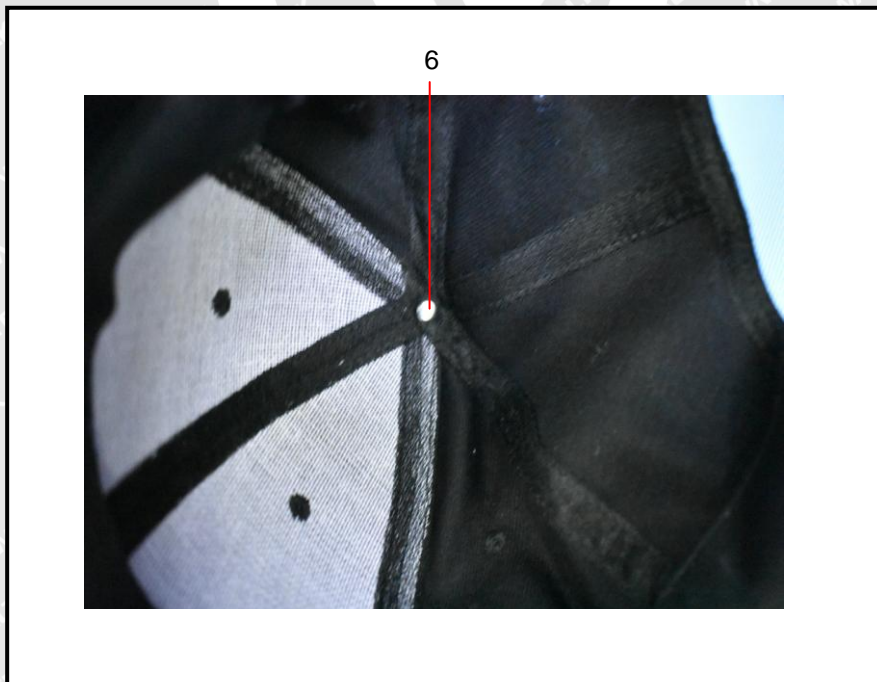
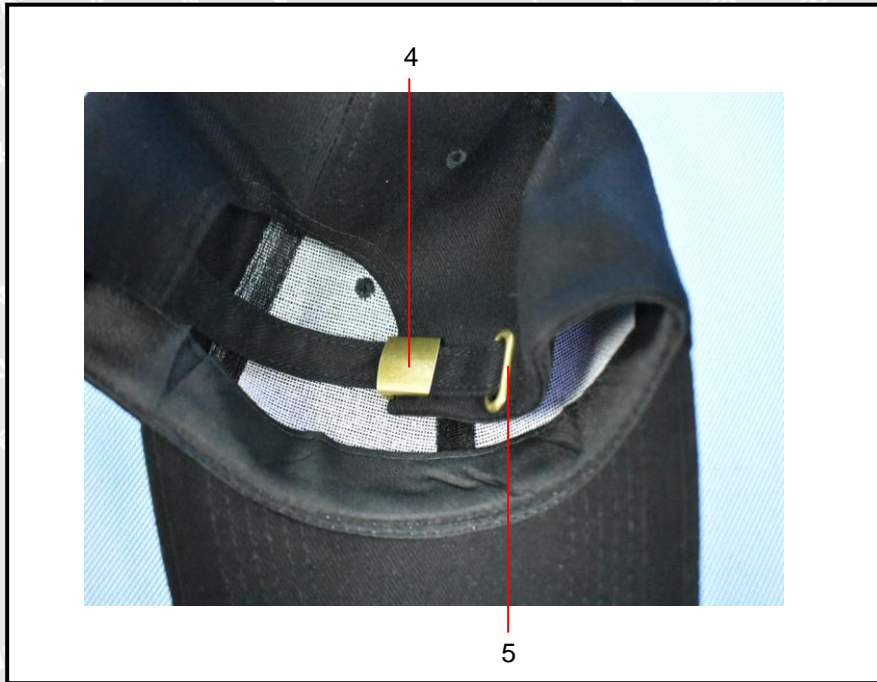
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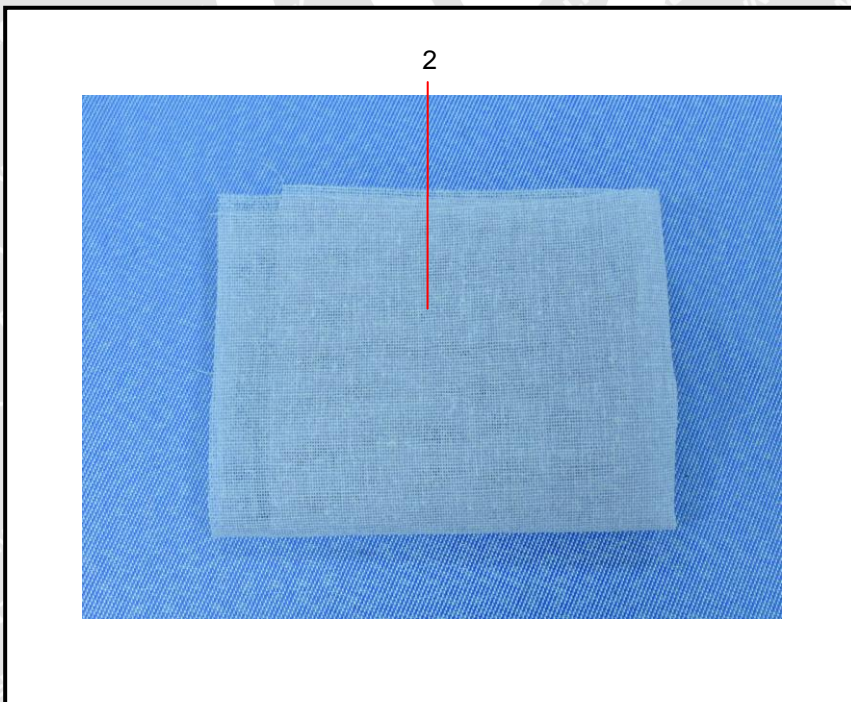




Photographs of parts tested:







===== End of Report =====