

Laboratory Test Report

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Prepared for: Reay Clarke
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Unit 9, Union Business park, Keighley Road
Skipton
BD23 2QR

Sample described as: ZIG ZAG 4PLY

Number of samples: 4 Reference number(s): 3408, 4813, 4812, 4814

Date received: 06/10/2022 Date(s) tested: 06/10/2022 - 24/10/2022

Packaging: Supplied with attached labelling Declared age: N/A

Tested age grade: N/A

Description: Christmas, Mayfly, Dragonfly and Grasshopper yarns

Photo of submitted sample



Reference is made in this report to chromium VI analyses carried out by a sub-contractor laboratory. This testing is outside the scope of UKAS accreditation.

I certify that the above mentioned sample has been tested in accordance with the standard / regulation(s) specified below and that it complies or otherwise as follows:

EN 71-3:2019 + A1:2021 Migration of certain elements	PASS
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Prepared by



Tracy Hughes, Analytical Lab Supervisor

For and on behalf of
Modern Testing Services



Mathew Boddy, Analytical Chemist
Date: 24/10/2022

The results herein relate only to the items tested. This report is issued in accordance with MTS (UK)'s terms and conditions which are available on request.

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Category III - Scraped off material**PASS**

The EN 71-3 screening test used by MTS (UK) tests for the migration of 16 of the 19 'elements' restricted by EN 71-3:2019+A1:2021;

It does not test for the presence of chromium III, chromium VI or organic tin specifically, it does however test for chromium and tin and compliance with the limits for chromium III, chromium VI or organic tin may be inferred from low results from these analyses (see below).

- A. Mayfly beige
- B. Mayfly grey
- C. Christmas red
- D. Christmas cream
- E. Christmas green
- F. Dragonfly navy
- G. Dragonfly grey
- H. Dragonfly purple
- I. Dragonfly pink
- J. Dragonfly orange
- K. Grasshopper blue
- L. Grasshopper green
- M. Grasshopper orange

The material(s) complied with the limits of the 16 elements specifically analysed for (see analysis table).

The migration of tin from the sample(s) was determined to be not greater than 4.9 mg/kg, which, when expressed in the form of tributyl tin, would not be greater than the organic tin limit of 12 mg/kg, the material(s) can therefore be inferred as complying with the organic tin limit.

The migration of chromium from samples C, F, G, H, J, L and M was greater than the chromium VI limit of 0.053 mg/kg, the material(s) required specific chromium VI migration analysis to determine compliance with the chromium VI limit, this was carried out by a sub-contractor and the following results were obtained:

C. Christmas red	< 0.053 mg/kg
F. Dragonfly navy	< 0.053 mg/kg
G. Dragonfly grey	< 0.053 mg/kg
H. Dragonfly purple	< 0.053 mg/kg
J. Dragonfly orange	< 0.053 mg/kg
L. Grasshopper green	< 0.053 mg/kg
M. Grasshopper orange	< 0.053 mg/kg

The migration of chromium from the remaining sample(s) was not greater

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Category III - Scraped off material (continued)**PASS**

than the chromium VI limit of 0.053 mg/kg, the material(s) can therefore be inferred as complying with the chromium VI limit.

~~~End of page~~~

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Method of test: EN 71-3:2019 + A1:2021 Migration of certain element

## ANALYSIS RESULTS

Category 3

Date of test: 11/10/2022

Samples marked \* were sieved, those marked # were centrifuged. Details of additional acid required to lower pH and solvent used for extraction appear in [ ] in sample description.  
 Deviations from standard method: pH of conventional polymers and textiles not checked; samples only filtered if required to prevent ICP blockages.  
 Solid to acid extractant ratio exceeded 1:50 with sample weights below 100 mg and when additional acid was used to lower pH.  
 Quantities of soluble metals determined by inductively coupled plasma spectroscopy.  
 Test results marked ^ are within the area to which uncertainty of measurement applies & compliance/non-compliance cannot be inferred.

| Metals         | Al    | Sb    | As    | Ba    | B     | Cd    | Cr      | Co      | Cu    | Pb    | Mn    | Hg    | Ni    | Se    | Sr    | Sn     | Zn    |    |
|----------------|-------|-------|-------|-------|-------|-------|---------|---------|-------|-------|-------|-------|-------|-------|-------|--------|-------|----|
| Limits         | 28130 | 560   | 47    | 18750 | 15000 | 17    | 460.053 | 130     | 7700  | 23    | 15000 | 94    | 930   | 460   | 56000 | 180000 | 46000 |    |
| Wt (Mg)        |       |       |       |       |       |       |         |         |       |       |       |       |       |       |       |        |       |    |
| A              | 208   | 5     | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | < 0.030 | 0.3   | 3     | < 0.3 | 1     | < 0.3 | < 1   | < 3   | 0.9    | < 2   | 54 |
| B              | 200   | 4     | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | < 0.030 | < 0.1 | 3     | < 0.3 | 1     | < 0.3 | < 1   | < 3   | 1.0    | < 2   | 47 |
| C              | 182   | < 3   | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | 0.313   | < 0.1 | 1     | < 0.3 | 2     | < 0.3 | < 1   | < 3   | < 0.5  | < 2   | 42 |
| D              | 208   | 3     | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | < 0.030 | < 0.1 | 2     | < 0.3 | 2     | < 0.3 | < 1   | < 3   | < 0.5  | < 2   | 49 |
| E              | 206   | 4     | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | < 0.030 | < 0.1 | 1     | < 0.3 | 2     | < 0.3 | < 1   | < 3   | < 0.5  | < 2   | 47 |
| F              | 210   | 5     | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | 3.349   | < 0.1 | 4     | < 0.3 | < 1   | < 0.3 | < 1   | < 3   | 1.7    | < 2   | 31 |
| G              | 184   | 6     | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | 0.437   | < 0.1 | 3     | < 0.3 | < 1   | < 0.3 | < 1   | < 3   | 1.1    | < 2   | 30 |
| H              | 188   | 5     | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | 0.391   | < 0.1 | 3     | < 0.3 | < 1   | < 0.3 | < 1   | < 3   | 1.3    | < 2   | 31 |
| I              | 202   | 16    | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | < 0.030 | < 0.1 | 4     | < 0.3 | < 1   | < 0.3 | < 1   | < 3   | 1.5    | < 2   | 37 |
| J              | 208   | 5     | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | 0.228   | < 0.1 | 3     | < 0.3 | < 1   | < 0.3 | < 1   | < 3   | 1.3    | < 2   | 31 |
| K              | 195   | 57    | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | < 0.030 | < 0.1 | 3     | < 0.3 | 2     | < 0.3 | < 1   | < 3   | 0.8    | < 2   | 48 |
| L              | 194   | 19    | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | 0.189   | < 0.1 | 3     | < 0.3 | 2     | < 0.3 | < 1   | < 3   | 1.0    | < 2   | 52 |
| M              | 210   | 4     | < 0.5 | < 0.3 | < 2   | < 4   | < 0.03  | 8.699   | < 0.1 | 3     | < 0.3 | 2     | < 0.3 | < 1   | < 3   | 0.9    | < 2   | 47 |
| END OF SAMPLES |       |       |       |       |       |       |         |         |       |       |       |       |       |       |       |        |       |    |
| Uncert%        | 20.62 | 33.17 | 24.50 | 33.17 | 20.62 | 24.50 | 24.50   | 24.50   | 20.62 | 33.17 | 20.62 | 33.17 | 24.50 | 24.50 | 20.62 | 33.17  | 20.62 |    |

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Signature:



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### ANNEX A: DECISION RULES

|        |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rule 1 | <p>Applicable to any requirement stated to be 'Minimum xxxx' or 'Maximum xxxx':</p> <p>The use of constrained simple acceptance based on the difference between the stated limit (requirement) and the reported test result being greater than the measurement uncertainty (U) for a conformity probability of 95%. The risk of false accept or false reject is <math>\leq 2.5\%</math></p>                                   |
| Rule 2 | <p>Applicable to any requirement stated to be a range (e.g. XXX to YYY or AAA <math>\pm</math> B):</p> <p>The use of constrained simple acceptance based on the difference between the stated upper or lower limit (requirement) and the reported test result being greater than the measurement uncertainty (U) for a conformity probability of 95%. The risk of false accept or false reject is <math>\leq 2.5\%</math></p> |
| Rule 3 | <p>For tests based on subjective grading of a result using a 9-point scale (e.g. colour fastness, pilling, etc):</p> <p>Simple acceptance based on the test uncertainty ratio (T.U.R.) being <math>\geq 4</math>. The risk of false accept or false reject is up to 50% but will be reduced the further the reported result is away from the stated requirement.</p>                                                          |
| Rule 4 | <p>For tests based on a subjective assessment of a property (e.g. whether a component detaches or not):</p> <p>Simple acceptance based upon the conditions of testing falling within the criteria for test set out in the test method within a conformance probability of 95%. The risk of false accept or false reject of the testing conditions not meeting the specified requirements is 2.5%.</p>                         |
| Rule 5 | <p>If a validated test method (e.g. BS EN ISO standard) indicates that the measurement uncertainty has already been taken into account when calculating the test result then results may be reported using simple acceptance without the need for the application of the relevant decision rule set out above.</p>                                                                                                            |

The above rules will be applied by default unless we have agreed a decision rule to the contrary. MTS reserves the right to refuse to apply decision rules that do not satisfy the requirements of ISO 17025:2017. Unless otherwise stated in the report text above, uncertainty of measurement values are available upon request.