



TOYTEST

Toy Safety Analytes Proficiency Testing Scheme

Scheme Description

LGC Standards

Proficiency Testing

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TOYTEST Scheme Description

Record of issue status and modifications

ISSUE	ISSUE DATE	DETAILS	AUTHORISED BY
2	31/10/08	Removed reference to scheme year & updated test material details in section 3.	T.Noblett
3	03/07/09	Operational issues common to all schemes moved into General Protocol. List of abbreviations added. New PORTAL system added. New analytes added.	M.Whetton
4	08/01/10	Accreditation disclaimer removed.	M.Whetton
5	23/03/11	Change of address to Page 1	N.Stephenson
6	Sep 2011	Document updated to reflect changes for 2012	M.Whetton
7	Feb 2012	Amendments to appendices.	M.Whetton
8	Sept 2012	Reference to 'TRIAL' removed from sample 14	M.Whetton
9	Oct 2012	Addition of EN71-1/ASTM F963 assigned values determinations	M.Whetton
10	Sept 2013	Addition of trial electrical testing sample	W.Gaunt
11	Sept 2014	Updated details for EN71-7. Metal ranges updated. Inclusion of traceability information in Appendix A. Inclusion of subcontracting information in 'Test Materials' section.	W.Gaunt
12	April 2015	Amendment to size of the standard solution for sample 10, phthalates. SDPA values updated for various parameters.	W.Gaunt
13	Sept 2015	Removed Hard copy report information. Sample 4 (EN71-7) removed. Regulation references included	A.McCarthy W.Gaunt
14	Jan 2016	EN71-3 standard solution details amended	W.Gaunt
15	Sept 2016	Addition of statement for EN71-3 real test materials. Details added for electrical testing.	W.Gaunt

Notes:

Where this document has been translated, the English version shall remain the definitive version

Scheme Aims and Organisation

The primary aim of the toy safety proficiency testing scheme (TOYTEST) is to enable laboratories assessing toy products to the European and American toy standards to monitor their performance and compare it with that of their peers. TOYTEST also aims to provide information to participants on technical issues and methodologies relating to the examination of toys.

The TOYTEST scheme year operates from January to December. Further information about TOYTEST, including test material availability, round despatch dates and reporting deadlines, are available on the current TOYTEST application form.

Test Materials

Details of test materials available in TOYTEST are given in Appendix A. The test parameters are continually reviewed to ensure they meet the needs of current laboratory testing and regulatory requirements.

Test material batches are tested for homogeneity for at least one test parameter where deemed appropriate. Details of homogeneity tests performed and results are given in the TOYTEST Scheme Reports.

Some aspects of the scheme, such as test material production, homogeneity testing and stability assessment, can from time to time be subcontracted. When subcontracting occurs, it is placed with a competent subcontractor and LGC is responsible for this work. The planning of the scheme, the evaluation of performance and the authorisation of the final report will never be subcontracted.

Statistical Analysis

Information on the statistics used in TOYTEST can be found in the General Protocol and in the Scheme Report. Methods for determining assigned values and the values for SDPA used for individual samples are given in Appendix A

Methods

Methods are listed in PORTAL. Please select the most appropriate method from the list. If none of the methods are appropriate, then please report your method as 'Other' and record a brief description in the Comments Section in PORTAL.

Results and Reports

TOYTEST results are returned through our electronic reporting software, PORTAL, full instructions for which are provided by email. However, participants may request result submission forms on which to report and return results if they are unable to report through electronic means. This will incur an additional charge.

TOYTEST reports will be available on the website within 15 working days of round closure. Participants will be emailed a link to the report when it is available.

APPENDIX A - Description of abbreviations used

Assigned Value (AV)

The assigned value may be derived in the following ways:

- From the robust mean (median) of participant results (RMean). This is the median of participant results after the removal of test results that are inappropriate for statistical evaluation, e.g. miscalculations, transpositions and other gross errors. Generally, the assigned value will be set using results from all methods, unless the measurement is considered method-dependant, in which case the assigned value will be set by method as illustrated in the report tables. For some analytes, where there is a recognised reference method for that type of measurement, this may be used as the assigned value for a particular analyte i.e. it would be applied to results obtained by any method.

Traceability: Assigned values which are derived from the participant results, or a sub-set of the results are not traceable to an international measurement standard. The uncertainty of assigned values derived in this way is estimated from the participant results, according to ISO 13528.

- From a formulation value (Formulation). This denotes the use of an assigned value derived from sample preparation details, where known and exact quantities of analyte have been used to prepare the sample.

Traceability: Assigned values calculated from the formulation of the test sample are traceable, via an unbroken metrological traceability chain, to an international measurement standard. The measurement uncertainty of the assigned value is calculated using the contributions from each calibration in the traceability chain.

- From a qualitative formulation (Qual Form). This applies to qualitative tests where the assigned value is simply based on the presence/absence of the analyte in the test material.

Traceability: Assigned values calculated from the qualitative formulation of the test sample are traceable to a certified reference standard or a microbiological reference strain.

- From expert labs (Expert). The assigned value for the analyte is provided by an 'expert' laboratory.

Traceability: Assigned values provided by an 'expert' laboratory may be traceable to an international measurement standard, according to the laboratory and the method used. The uncertainty of measurement for an assigned value produced in this way will be provided by the laboratory undertaking the analysis. Details of traceability and the associated uncertainty will be provided in the report for the scheme/round.

Determination of the assigned values for both the EN71-1 and ASTM F963 paper exercises:

- The results returned are reviewed and the assigned value for each clause listed is based on the general consensus of participant results.
- If the consensus of the participants is below 75% the identified clauses are each reviewed by the TOYTEST advisory group to ascertain their overall opinion of the appropriate assigned value with regards to the toy provided. If the overall consensus of the TOYTEST advisory group disagrees with the general participant consensus then the assigned value is amended.

- Where applicable the reasoning behind the assigned values provided for such clauses will be provided in the main EN71-1 or ASTM F963 report.

Where both the 'relevant' and 'not relevant' options are both deemed to be valid options the assigned value(s) will be removed and instead the participant results and comments will be provided along with additional detailed comments on the applicability of the two reporting options

Range

This indicates the concentration range at which the analyte may be present in the test material.

SDPA

SDPA represents the 'standard deviation for proficiency assessment' which is used to assess participant performance for the measurement of each analyte. This may be a fixed value (as stated), a percentage (%) of the assigned value or based on the robust standard deviation of the participant measurement results, either across all methods or by method depending on whether the measurement made is method dependent (see assigned value).

Units

This indicates the units used for the assessment of data. These are the units in which participants should report their results. For some analytes in some schemes participants may have a choice of which units to report their results, however, the units stipulated in this scheme description are the default units to which any results reported using allowable alternative results will be converted to.

DP

This indicates the number of decimal places to which participants should report their measurement results.

TOYTEST Scheme Description

Sample 1 **EN71-1**

Participants will receive Toy product provided for paper exercise

Analyte	Method	Range	AV	SDPA	Units	DP
Assessment to EN71-1	N/A	N/A	Expert/ Consensus	N/A	N/A	N/A

Sample 7 **ASTM F963**

Participants will receive Toy product provided for paper exercise

Analyte	Method	Range	AV	SDPA	Units	DP
Assessment to ASTM F963	N/A	N/A	Expert/ Consensus	N/A	N/A	N/A

Samples 11, 12 & 13 **Additional testing**

Participants will receive Material provided for additional testing (various parameters)

Analyte (as applicable)	Standards	Range	AV	SDPA	Units	DP
Cord thickness	EN71-1 & ASTM F963	All	RMean	0.2	mm	2
Plastic sheeting thickness	EN71-1 & ASTM F963	All	RMean	0.003	mm / inches	3
Acoustic analysis	EN71-1	All	RMean	3	dB	1
Kinetic energy	EN71-1 & ASTM F963	All	RMean	Robust SD	Joules (J)	3
Other measurements	EN71-1 & ASTM F963*	All	RMean	Robust SD	mm	2

*Where applicable. Full details to be provided in the round instruction sheets.

Sample 2 **EN71-2**

Participants will receive Toy product provided for flammability testing

Analyte (as applicable)	Method	Range	AV	SDPA	Units	DP
Assessment to EN71-2	N/A	N/A	Expert	N/A	N/A	N/A
Duration of flaming	Section 4.2.2	All	RMean	Robust SD	seconds	0
Rate of spread of flame	Section 4 (EN71-1)	All	RMean	3	mm/s	1
Flaming debris	Various	N/A	Qual Form	N/A	N/A	N/A

TOYTEST Scheme Description

Sample 3

EN71-3 Standard solution (Bottle 1)

Participants will receive:

25ml aqueous solution

Analyte	Method	Range	AV	SDPA	Units	DP
Aluminium	All	0 to 2	Formulation	10% of AV	mg/L	2
Antimony	All	0 to 2	Formulation	10% of AV	mg/L	2
Arsenic	All	0 to 2	Formulation	10% of AV	mg/L	2
Barium	All	0 to 20	Formulation	10% of AV	mg/L	2
Boron	All	0 to 2	Formulation	10% of AV	mg/L	2
Cadmium	All	0 to 2	Formulation	10% of AV	mg/L	2
Chromium*	All	0 to 20	Formulation	10% of AV	mg/L	2
Chromium III	All	0 to 20	Formulation	10% of AV	mg/L	2
Cobalt	All	0 to 2	Formulation	10% of AV	mg/L	2
Copper	All	0 to 2	Formulation	10% of AV	mg/L	2
Lead	All	0 to 2	Formulation	10% of AV	mg/L	2
Manganese	All	0 to 2	Formulation	10% of AV	mg/L	2
Mercury	All	0 to 2	Formulation	10% of AV	mg/L	2
Nickel	All	0 to 5	Formulation	10% of AV	mg/L	2
Selenium	All	0 to 10	Formulation	10% of AV	mg/L	2
Strontium	All	0 to 2	Formulation	10% of AV	mg/L	2
Tin	All	0 to 2	Formulation	10% of AV	mg/L	2
Zinc	All	0 to 2	Formulation	10% of AV	mg/L	2

*Sum of all oxidation states

Sample 3

EN71-3 Standard solution (Bottle 2)

Participants will receive:

25ml aqueous solution

Analyte	Method	Range	AV	SDPA	Units	DP
Chromium VI	All	0 to 1000	Formulation	10% of AV	µg/L	2
Organic tin	All	0 to 1000	Formulation	10% of AV	µg/L	2

TOYTEST Scheme Description

Sample 3

EN71-3 Real material

Participants will receive:

Materials designed to replicate common metal analysis in toy products
(textiles, liquid paint, paint flakes, crayons)

Analyte*	Method	Range***	AV	SDPA	Units	DP
Aluminium	All	0 to 200	RMean	Robust SD	mg/L or mg/kg	2
Antimony	All	0 to 60	RMean	30% of AV	mg/L or mg/kg	2
Arsenic	All	0 to 200	RMean	30% of AV	mg/L or mg/kg	2
Barium	All	0 to 250	RMean	15% of AV	mg/L or mg/kg	2
Boron	All	0 to 200	RMean	Robust SD	mg/L or mg/kg	2
Cadmium	All	0 to 50	RMean	15% of AV	mg/L or mg/kg	2
Chromium**	All	0 to 100	RMean	15% of AV	mg/L or mg/kg	2
Chromium III	All	0 to 100	RMean	Robust SD	mg/L or mg/kg	2
Chromium VI	All	0 to 1000	RMean	Robust SD	µg/L or µg/kg	2
Cobalt	All	0 to 50	RMean	Robust SD	mg/L or mg/kg	2
Copper	All	0 to 60	RMean	Robust SD	mg/L or mg/kg	2
Lead	All	0 to 200	RMean	15% of AV	mg/L or mg/kg	2
Manganese	All	0 to 60	RMean	Robust SD	mg/L or mg/kg	2
Mercury	All	0 to 50	RMean	25% of AV	mg/L or mg/kg	2
Nickel	All	0 to 200	RMean	Robust SD	mg/L or mg/kg	2
Selenium	All	0 to 100	RMean	30% of AV	mg/L or mg/kg	2
Strontium	All	0 to 200	RMean	Robust SD	mg/L or mg/kg	2
Tin	All	0 to 100	RMean	Robust SD	mg/L or mg/kg	2
Organic tin	All	0 to 1000	RMean	Robust SD	µg/L or µg/kg	2
Zinc	All	0 to 200	RMean	Robust SD	mg/L or mg/kg	2

*One or more of the above elements to be included in each round.

**Sum of all oxidation states

***Please note that levels may periodically be outside of the approximate range given due to the natural levels that may be present in materials chosen for testing.

TOYTEST Scheme Description

Sample 5

EN71-8

Participants will receive

Information and/or actual toy product(s) provided for paper exercise

Analyte	Method	Range	AV	SDPA	Units	DP
Assessment to EN71-8	N/A	N/A	Expert	N/A	N/A	N/A

Sample 6

EN71-9

Participants will receive

Information and/or actual toy product(s) provided for paper

Analyte	Method	Range	AV	SDPA	Units	DP
Assessment to EN71-9	N/A	N/A	Expert	N/A	N/A	N/A

Sample 8

Analysis of azo dyes

Participants will receive:

Section of material

Analyte	Method	Range	AV	SDPA	Units	DP
Azo dyes	EN14362-1 & EN14362-3	All	Median	Robust SD	mg/kg	2

Sample 9

Analysis of total lead & total cadmium

Participants will receive:

Dried paint flakes

Analyte	Method	Range	AV	SDPA	Units	DP
Total cadmium	All	All	Median	10% of AV	mg/kg	2
Total lead	All	All	Median	10% of AV	mg/kg	2

Sample 10

Analysis of phthalates

Participants will receive:

Section of plastic material

Analyte	Method	Range	AV	SDPA	Units	DP
BBP	All	All	Median	Robust SD	% (w/w)	2
DBP	All	All	Median	Robust SD	% (w/w)	2

