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For the attention of: Christofer Ingvarsson

Technical Services Report

Subject: **Characterisation and restricted substances testing on EVA
sheet material**

Firm: AB H Brunner
For the attention of: Christofer Ingvarsson
Your ref:
Our ref: CHM0156954/0741/MEH
Date: 08 November 2007

Conditions of Issue:

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Technical Services Report

CHARACTERISATION OF EVA SHEET MATERIAL

SAMPLES SUBMITTED

A Sample of one unreferenced EVA sheet material was received by SATRA on 12 October 2007 for assessment.

TESTS REQUIRED

FTIR Analysis to identify the Polymer Type
 SATRA TM345:1996 Solvent extractable matter (Acetone)
 GC-MS characterisation of extractable matter
 SATRA TM353:1999 Ash Content of Polymeric Materials
 FTIR (Fourier Transform Infra-red) Spectroscopy to characterise ash
 SATRA TM 277:2004 Determination of Organotin Compounds
 EN 71 Part 3: 1994 Safety of toys – Specification for the migration of certain elements.

RESULTS

Testing completed 31 October 2007

FTIR Analysis to identify the Polymer Type

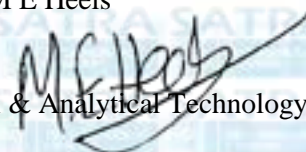
Sample	Polymer type (by pyrolysis)
EVA Sheet material	EVA

Characterisation of the material

Sample	SATRA TM 345:1996 Acetone Extractable matter (%)	GC-MS Characterisation of extractable matter (main constituents)	SATRA TM353:1999 Ash Content (%)	Characterisation of Ash by FTIR
Unreferenced EVA Sheet Material	1.8	Hexadecanoic Acid Octadecanoic Acid	11.8	Calcium Sulphate

SATRA TM 277:2004 Determination of Organotin Compounds

Sample	Organotin Species (ppb)							
	MBT	DBT	TBT	MOT	TeBT	DOT	TPhT	TcyT
Unreferenced EVA Sheet Material	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25



Technical Services Report

The following organotin species were analysed for:

- n-butyl tin (MBT)
- Dibutyltin (DBT)
- Tributyltin (TBT)
- n-octyltin (MOT)
- Tetrabutyltin (TeBT)
- Diocetyl tin (DOT)
- Triphenyltin (TPhT)
- Tricyclohexyltin (TcyT)

EN 71 Part 3: 1994 Migration of certain elements

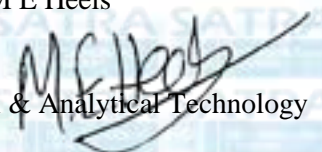
Table 1 – Requirements

Limits of element migration from toy materials									
Element		Sb	As	Ba	Cd	Cr	Pb	Hg	Se
Maximum migrated element in mg/kg toy material	Any toy material given in clause 1 except for:	60	25	1000	75	60	90	60	500
	- Modelling clay - Finger paint								
	Modelling clay and finger paint	60	25	250	50	25	90	25	500

- Sb – Antimony
- As – Arsenic
- Ba – Barium
- Cd – Cadmium
- Cr – Chromium
- Pb – Lead
- Hg – Mercury
- Se – Selenium

RESULTS

Component tested	Element								Pass/ Fail
	Sb	As	Ba	Cd	Cr	Pb	Hg	Se	
Unreferenced EVA Sheet Material	< 5	< 5	< 50	< 5	< 5	< 5	< 5	< 50	Pass



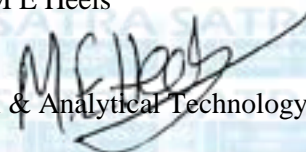
Technical Services Report

CONCLUSION

The submitted sample of unreferenced EVA sheet material has been characterised in terms of its extractable matter and ash content. The extractable matter has been characterised as a plasticiser and the FTIR spectra of the ash was identified as calcium sulphate.

Analysis according to SATRA TM 277 did not detect any of the organotin species listed above.

The material was also tested and found to meet with the requirements of EN 71 part 3: 1994 Safety of toys – specification for the migration of certain elements.

A handwritten signature in black ink, appearing to read "M E Heels", written over the printed name and title in the footer.