

DETERMINATION OF VOLATILE ORGANIC COMPOUNDS IN POLYURETHANE FOAMS

MOHD AZMIL, M N; NURUL 'AIN, H and RAZMAH, G



MPOB INFORMATION SERIES • ISSN 1511-7871 • JUNE 2014

MPOB TS No. 136

Volatile organic compounds (VOC) in consumer products are potential health and environmental hazards. Furthermore, an abundance of VOC were released from home and personal care products, building materials and transportation including car seat foams. Therefore, VOC need to be determined to ensure the products are safe for public use.

OBJECTIVE

To determine VOC in polyurethane (PU) foams.

METHODOLOGY

A summary of the methodology for the determination of VOC in PU foam is presented in *Figure 1*.

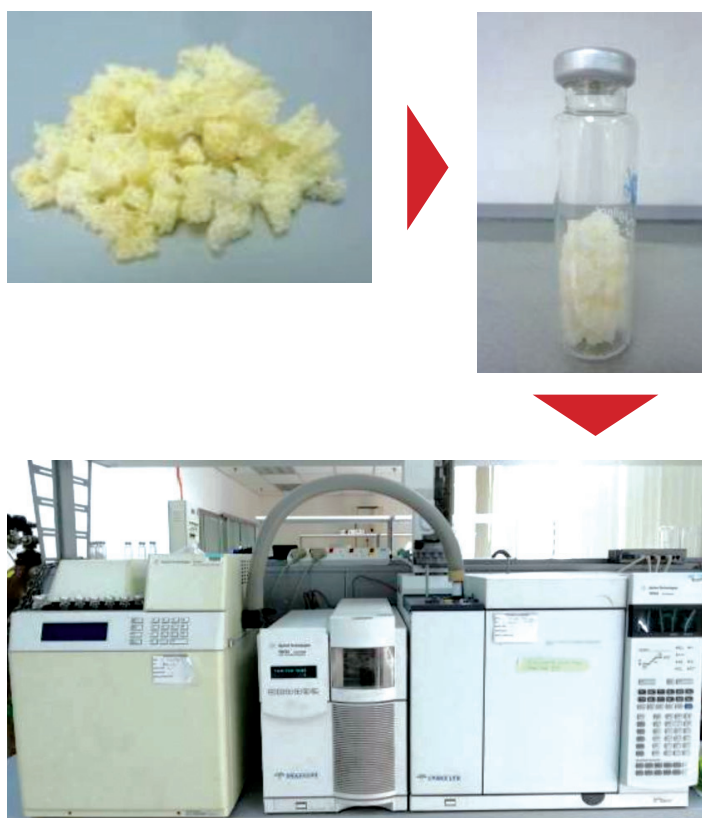
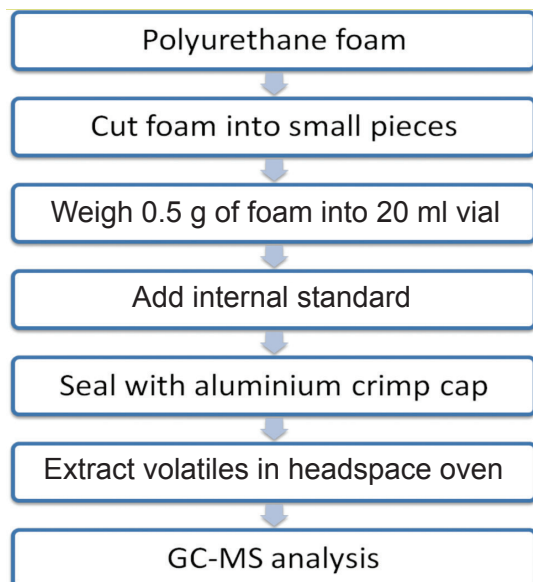
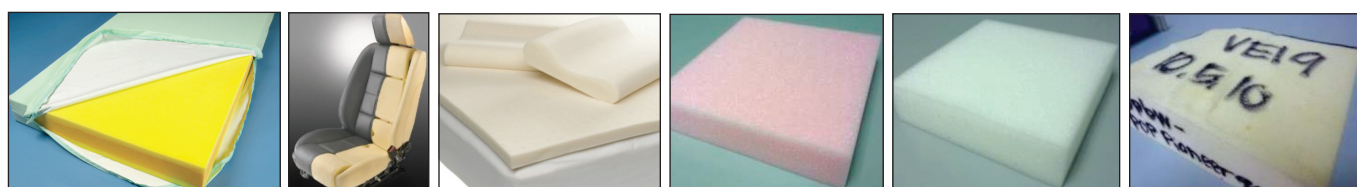


Figure 1. Methodology for the determination of volatile organic compounds in polyurethane foam.



REGULATIONS

Table 1 shows the method used and overall VOC limit set by different original equipment manufacturer.

METHOD VALIDATION

This method was validated based on ICH Harmonised Tripartite Guideline Validation of Analytical Procedures: Text and Methodology Q2(R1) with respect to:

- accuracy (recovery);
- precision (repeatability and interlab comparison);
- sensitivity (LOD and LOQ); and
- linearity and working range.

SERVICE OFFERED

A direct method employing a static headspace sampler (HS), a gas chromatography (GC) and a mass spectrometer detector (MS) was developed and validated for semi-quantitative analysis of VOC emitted from PU foams. Results are expressed as overall VOC emission in ppm.

BENEFIT

A precise and reliable method for detection and quantification of overall VOC in PU foams.

COST OF ANALYSIS

The cost for this analysis in 2014 is RM 250 per sample and is subject to change.

TABLE 1. OVERALL EMISSION LIMITS BY DIFFERENT ORIGINAL EQUIPMENT MANUFACTURER

OEM	Static headspace method	Overall emission limits (ppm)
Volkswagen	PV3341	< 50
Audi	VDA 277:1995	< 30
Volvo	STD 1027-2714	< 20
GM	W8081:2005	-

For more information, kindly contact:

Director-General
MPOB

6 Persiaran Institusi, Bandar Baru Bangi
43000 Kajang, Selangor, Malaysia.

Tel: 03-8769 4400

Fax: 03-8925 9446

www.mpob.gov.my