

**● Method of determining diffused volatile organic compounds (VOC) generated from interior parts and materials in vehicles**

TNE0008

**Overview**

The method of measuring emissions of diffused volatile organic compounds emitted interior parts and materials in motor vehicles was specified in an automotive specification as JASO M 902 by the Society of Automotive Engineers of Japan, Inc., on March 22, 2007. The specification regulates the use of a sampling bag to measure VOCs, formaldehyde and other carbonyl compounds emitted into the air from the interior parts and materials of motor vehicles.

**Sampling method and examples of measurements**

Figure 1 outlines the sampling method. The sample for testing is sealed inside a 10l capacity sampling bag which is then charged with 5l of nitrogen gas and is heated at 65°C for 2 hours in a constant-temperature oven. The gases emitted into the bag are collected in a Tenax tube (VOCs) and DNPH cartridge (aldehydes). The VOCs collected in the Tenax tube and DNPH cartridge are then measured by thermal decomposition GC/MS and HPLC. Figure 2 shows a VOC measurement chromatogram by GC/MS as an example.

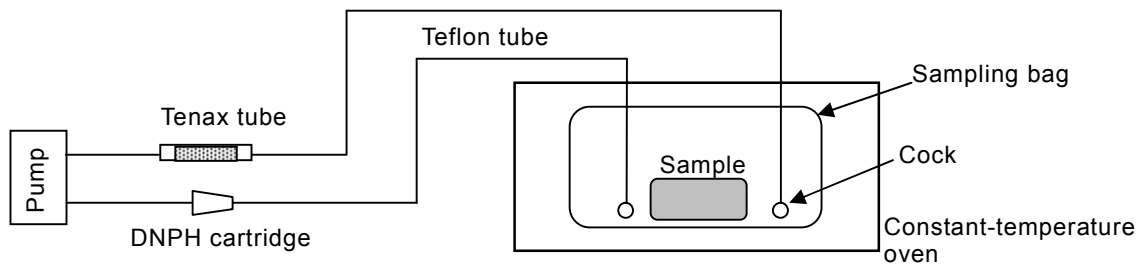


Fig.1 Outline of method of sampling.

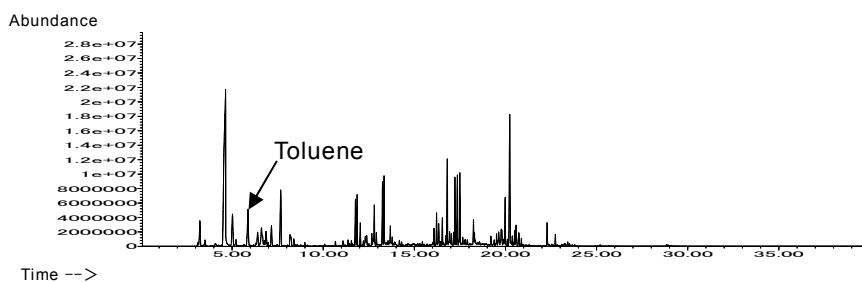


Fig.2 TIC chromatogram for VOCs.

## Additive recovery rate

Known amounts of formaldehyde and toluene are added to the sampling bag and additive recovery tests are performed. The results are listed in Table I. Good results were achieved, with a mean recovery rate of at least 80% in the additive recovery tests.

Table I. Results of additive recovery tests

Test item/Sample No.	No.1	No.2	No.3	No.4	No.5	Mean
Formaldehyde	91	93	90	93	91	92
Toluene	83	77	94	96	92	88

We also have established measurement methods corresponding to the specification tests set by the individual automakers.

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