# HS

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# Quantitative analysis of the aromatics in hydrocarbons

烃类中芳烃含量的测定

(UOP 744-06, MOD)

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# Quantitative analysis of the aromatics in hydrocarbons

## 1 Scope

This standard specifies the instruments and equipment for testing the aromatic content in hydrocarbons, determination procedures and processing of analysis results.

This standard is applicable to the determination of aromatic hydrocarbon content in hydrocarbons whose final boiling point is not higher than 285 °C. The quantification limit of a single aromatic component is 0.01% (mass percentage).

## 2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

UOP 744-06 Gas Chromatographic Determination of Aromatics in Hydrocarbons

## 3 Principles

The samples are injected into a gas chromatograph-mass spectrometer and a gas chromatograph which is equipped with an FID detector. Each composition is qualitatively determined by the GC-Mass total ion chromatogram, then quantified by the GC-FID chromatogram. This standard follows the principles, measurement conditions and precision measurement of UOP 744-06. This standard mainly modifies the scope of application, measurement methods, processing of analysis results.

## 4 Equipment

**4.1** Gas chromatograph: It is equipped with hydrogen flame ionization detector (FID), split/splitless sample inlet, autosampler, dynamic linear range to meet quantitative requirements; equipped with a chromatographic data processor for acquiring and processing data or chromatography workstation.

**4.2** Gas chromatography-mass spectrometer: It is equipped with mass spectrometer with E1 source, split/splitless sample inlet, autosampler; equipped with a data processor or chemistry workstation for acquiring and processing data.

**4.3** Chromatographic column: INNOWAX, 60 m x 0.32 mm x 0.5 μm (2 columns), or columns of other specifications that can achieve the same separation effect.

**4.4** Autosampler.

**4.5** Carrier gas: helium ≥ 99.99%, V/V.

**4.6** Fuel gas: hydrogen ≥ 99.9%, V/V.

**4.7** Combustion gas: air.

# 5 Measurement steps

## 5.1 Measurement conditions

The measurement conditions recommended by this standard are as follows:

a) Common chromatographic determination conditions: The column temperature adopts programmed temperature increase: The initial temperature is 50 °C, which is kept for 5 min; increase to 100 °C at 8 °C/min, which is kept for 0 min; increase to 120 °C at 2 °C/min, which is kept for 0 min; increase to 220 °C at 20 °C/min, which is kept for 40 minutes; sample inlet temperature: 250 °C; column head pressure: 68 kPa, constant pressure mode (it may also use constant flow mode, to confirm the separation effect and retention time);

b) Determination conditions of gas chromatograph (with FID detector): Sampling method: split injection, split ratio 120:1; FID detector temperature: 250 °C; injection volume: 1 μL;

c) Determination conditions of gas chromatography-mass spectrometer: Sampling method: split injection, split ratio is 200: 1; injection volume: 0.2 μL; ion source: EI source; ionization energy 70 eV; ion source temperature: 230 °C; GC-MS interface temperature: 280 °C; quadrupole temperature 150 °C; mass scanning mode: Scan; scanning range m/z: 40 ~ 400.

Note: Other measurement conditions can also be used, as long as the sensitivity and chromatographic separation effect equivalent to the requirements of a typical chromatogram can be achieved. For typical chromatograms, see Figure A.1 ~ Figure A.3 in Appendix A.

## 5.2 Determination of specimen

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