

GC-FID Analysis method for 1-MCP.

Equipment used.

- PerkinElmer Arnel 590GC-FID.
- 2ml gas injection loop.
- Cylinder 10ppm Isobutylene.

Column used.

- Agilent J&W DB-624, 30M x 0.25mm x 1.40um (p/n 122-1334).

GC-FID method.

- Oven program – Temp1 40C, hold 0 mins
Temp2 ramp rate 25c/min to 165C, hold 0 mins
- Injection port – 75C
Injection mode – split injection
- Carrier – Argon @ 2ml/min
- Split flow – 10ml/min
- Detector – FID
Air – 450ml/min
H2 – 35ml/min

Retention times: Isobutylene - ~2.90mins

1-MCP - ~3.10mins

Analysis method.

- Switch instrument on and allow to equilibrate to starting conditions.
- Run blank injections as required to ensure the baseline is clean.

Standard measurement:-

- Over-fill the 2ml gas injection loop with 10ppm Isobutylene standard gas (i.e. ensure the loop is completely filled with standard gas).
- Inject standard/start run.
- Once run has finished integrate peak and record peak area.
- Repeat.
- Provided both peak areas are similar continue to measure samples. If peak areas are not similar repeat further until acceptable results are obtained.

Sample measurement:-

- Over-fill the 2ml gas injection loop with sample.
- Inject sample/start run.
- Once run has finished integrate peak and record peak area.
- For each sample repeat and look for similar peak areas. If peak areas are not similar repeat further until acceptable results are obtained.

Result calculation:-

- For standard average the peak areas for the two similar runs.
- For each sample average the peak areas for the two similar runs.
- Calculate 1-MCP in samples by ratio to 10ppm 1MCP standard

$$1\text{-MCP conc} = (10/\text{Av Std Area}) \times \text{Av Sample Area}$$