

# SmartNotes

## What are the advantages of using Magnetic Sector GC-HRMS technology for Dioxin and POPs analysis?

Being the recognized method for Dioxin analysis in worldwide regulations, Magnetic Sector technology offers a series of advantages when it comes to routine quantitative analysis of Dioxins and other POPs.

Thermo Fisher Scientific GC-MS portfolio encompasses solutions also based on Magnetic Sector technology. For over a decade, the global scientific community has chosen Thermo Scientific™ DFS™ Magnetic Sector GC-HRMS for routine quantitative analysis of Dioxins and POPs. Thanks to its robustness, for its large-volume ion source, the DFS Magnetic Sector GC-HRMS delivers consistent performance for routine analysis of complex matrices. For research applications, the DFS Magnetic Sector GC-HRMS offers sensitivity and an integrated software solution, featuring flexibility and real-time analysis traceability.

No matter what the application is, the DFS Magnetic Sector GC-HRMS performs compliant Dioxins and POPs analysis, making you confident of your results.



### Compliance with official methods

- Worldwide compliance with official Dioxin & POPs methods method or regulations (e.g. EPA 1613).

### Confidence of analytical results

- Best Dioxin installation specification (based on 2378-TCDD with 4 sigma noise definition), shown during each DFS Magnetic Sector GC-HRMS installation.
- LOD/LOQ calculation using S/N real time detection limits calculated on each sample analysis.
- High linearity detection system and matrix independent calibrations.
- Automated mass calibration during each analysis run.

### Unique Magnetic Sector features

- Ion separation in space.
- Mass-independent resolution: homogeneous analytical selectivity across the entire mass range.
- Consistent sensitivity: good transmission for high masses (e.g. BDE-209).
- Consistent spectra.

### Sensitivity combined with robustness for routine analysis

- Large-volume ion source for high sensitivity in combination with maximum robustness.
- High capacity turbo pump dedicated to ion source, for additional analytical robustness.

### Real time analysis traceability

- Lock mass trace for constant monitoring of instrument stability and of sample matrix effect, in compliance with official methods (e.g. EPA 1613).
- Proof for stable selectivity: mass resolution documented in log file with each analysis.

### Flexibility and productivity

- Unique dual GC configuration and optional multi-column installation (up to 4).
- Flexibility for reference gases, e.g. PFK (according to EPA 1613) or FC43, etc.
- DualData XL Option for almost doubled sample throughput.

### Ease of use and maintenance

- Exchangeable ion volume (inner ion source) without vacuum breaking for quick ion source maintenance.
- Separation valve for individual venting of ion source housing.

Table 1. Official Methods recognizing Magnetic Sector technology.

Application	Regulation/Norm	DFS Magnetic Sector GC-HRMS
Food safety	EU Regulatory Feed Control (at ML)	Approved
Food safety	EN 16215	Approved
Food safety	Background food studies (<1/5 <sup>th</sup> EU ML)	Recommended by EURL
Clinical research	Human studies at trace levels	Recommended by EURL
Environmental	EN 1948	Approved
Environmental: Dioxins and Furans	US EPA 1613 B for strict EPA compliance	Approved
Environmental: PBDEs	US EPA 1614	Approved
Environmental	US EPA Method 23	Approved
Environmental	US EPA Method 8290	Approved
Environmental: PCBs	US EPA Method 1668	Approved
Environmental: Pesticides	US EPA Method 1699	Approved
Environmental: Hormones and steroids	US EPA 1698	Approved
Environmental	JIS K0311	Approved
Environmental	JIS K0312	Approved

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