

Diesel fuel marker

Analysis of ACCUTRACE™ Plus Fuel Marker
PF700

- Fiscal fuel marker analysis in diesel
- 2D-GC/MS method
- Robust analyser



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Analysis of ACCUTRACE™ Plus Diesel Fuel Marker

Fiscal markers and fuel dyes are added to fuels in order to distinguish between tax-reduced fuels and normal fuels. The European Commission has selected Dow ACCUTRACE™ Plus Fuel Marker as the new common fiscal marker for tax rebated fuels in the European Union (EU). The decision to adopt a new fiscal marker, also known as Euromarker, aims to provide member states a safer, more resilient marker to

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ACCUTRACE™ Plus or butyl phenyl ether (BPE) or butoxybenzene is added in the nominal concentration range of 9,5-14,25 mg/L. For tracing tax fraud, the limit of quantification (LOQ) is set to 2% of the nominal value, meaning 190 ppb. To analyse this low concentration level in a diesel matrix, 2-dimensional gas chromatography and mass spectrometer detection (2D-GC/MS) is used.

The diesel sample is analysed by direct injection into the GC/MS without sample preparation. A deans heartcut/backflush column switching option is applied to avoid contamination of the ion source, which can lead to a drop in sensitivity and would require frequent ion source cleaning. With the configuration shown in figure 1, the majority of the sample is directed to FID, while only a small fraction containing the marker is directed to the MS. This diagram also facilitates backflush of higher boiling components from the first capillary column after BPE (butyl phenyl ether) has entered the second analysis column. FID is used to determine the correct column switching times, and shows a profile of the diesel fuel as well, to indicate possible addition of higher boiling oils.

Specification

- Thermo Trace GC1600 with ISQ 7610 MS and FID
- Deans heartcut column switching option
- Two capillary columns
- Chromeleon chromatography data system

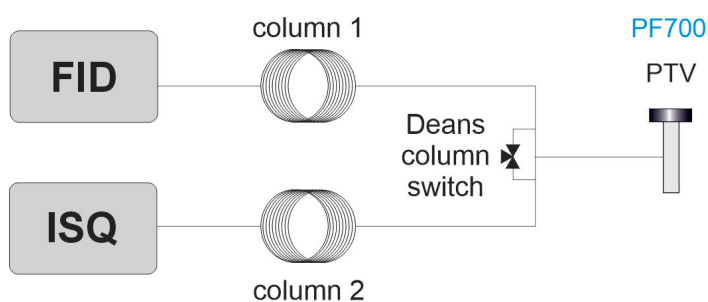


Figure 1 Diagram 2D-GC/MS system for diesel Euromarker analysis with heartcut and back-flush option.

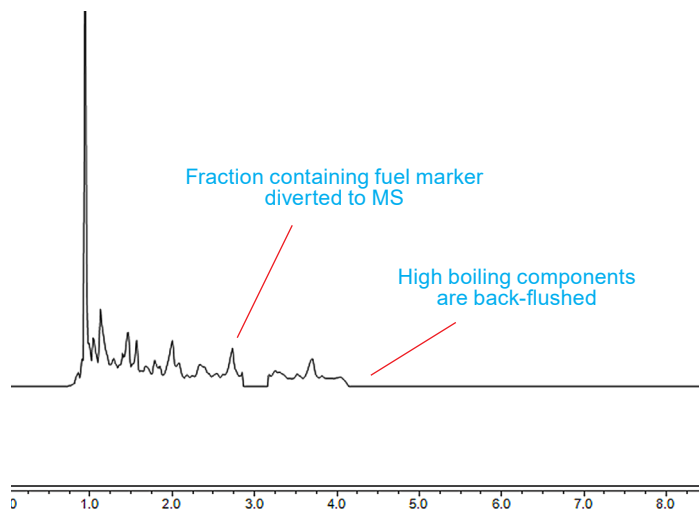


Figure 2 FID chromatogram with heartcut and backflush option enabled

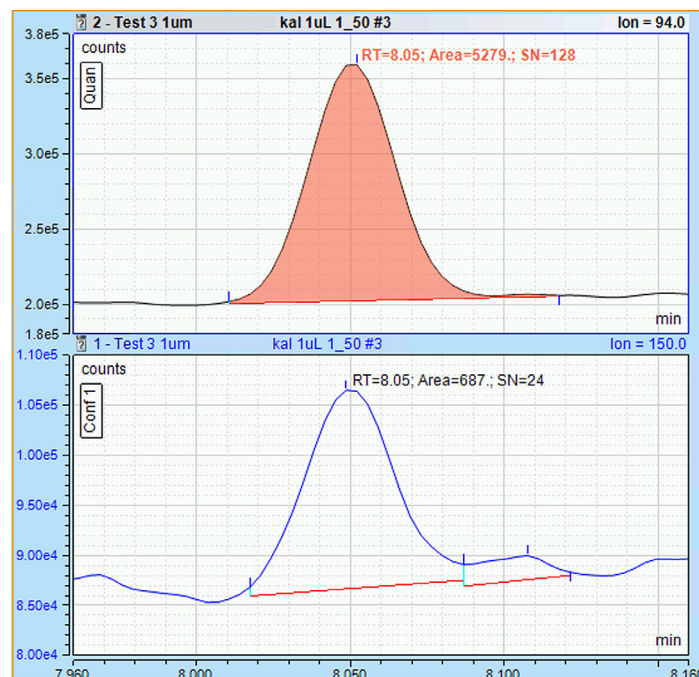


Figure 3 Mass chromatogram diesel sample spiked with 50 ppb butyl phenyl ether

Ordering information PF70X - ABCDE				
code X	0	1	2	3
GC model, power	1600, 230V	1610, 230V	1600, 115V	1610, 115V

For the selection of options (e.g. GC oven cryo valves, Power plug type and more), see the options table in the order guide.

About GAS

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