

TES Bretby is the UK's premier environmental testing laboratory producing high quality analytical data for more than 20 years. As a Mowlem plc business, we provide a comprehensive range of environmental analytical services to consulting, industrial and government clients situated within the UK, Europe and across many countries world-wide. Our main business aim is to provide you with reliable data backed by strong technical support.

Hydrocarbon Analysis Update

Analysis of complex hydrocarbon mixtures by gas chromatography (GC) has traditionally required a run time in the region of 45 minutes to 1 hour. If you have attended our TPH workshop you will know that there is more to a TPH analysis than simply the quantum present in the sample. A wealth of forensic information lies within the chromatogram itself allowing the informed user to:

- identify the component source terms;
- estimate the age of spill(s);
- assess level and extent of biodegradation and;
- identify weathering processes, hence the potential for transport of toxic mobile fractions.

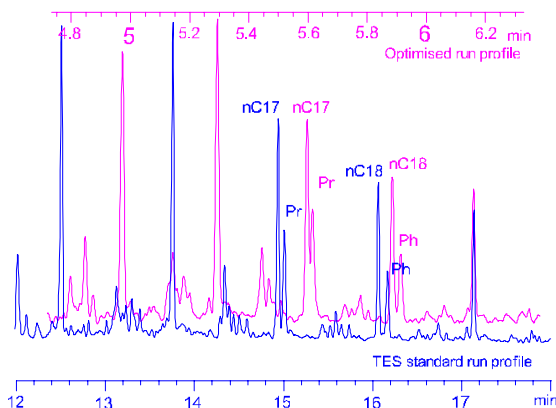
Accurate recognition or diagnosis requires not only good analytical preparation techniques but also sufficient resolution in the GC analysis. The weight of evidence supporting product identification by GCFID is significantly increased when assignment is based on the presence or absence of related peak clusters rather than single or isolated peaks. Many UK laboratories have gained commercial advantage from slashing analysis run times and in the process lost the critical forensic signatures.

Rather than introduce cheaper variants of tests, which complicate ordering and imply lower quality, TES has decided to optimise its existing methods within a set of constraints that do not lower the value of the analysis.

Using industry standard GC equipment, oven ramp rates, column length and film thickness amongst many other variables have been optimised with the emphasis being the separation of the key doublets:

- pristane from *n*-C17 (fig.1)
- phytane from *n*-C18 (fig.1)
- benzo [b] from benzo [k] fluoranthene
- benzo[a]anthracene from chrysene

Figure 1: Resolution of isoprenoids (IP's)



The result is a three-fold increase in throughput speed with negligible loss of resolution thus allowing forensic work to be carried out with the same high degree of certainty as before.

Running at faster speed actually improves instrument sensitivity as peak heights increase to compensate for the same area being generated in a shorter timeframe. Unfortunately this will not yet translate in to a lowering of detection limits yet, as sadly these are dependent on the cleanliness of the entire operating system (solvents, glassware etc).

With identical calibration and QC regimes, we anticipate that the combination of higher volume and faster throughput will contribute to an improvement in turnaround time and improved headroom.

mCERTs Update

TES Bretby already has MCERTS accreditation for:



- Acid and water soluble sulphate
- Elemental sulphur
- Thiocyanate
- VOCs – 19 from Annex A
- Easily liberated and complex cyanide

and has applied for accreditation for the following:

- Metals
- TPH
- BTEX by headspace GCFID
- SVOCs

Need more information?

Please e-mail sales@tes-bretby.co.uk



Meeting Point

Phil Ward Section Leader Gas and Liquid Chromatography



Phil, a chemistry graduate of Leeds University, has been with TES for over 7 years. He has developed methods in liquid, gas and ion chromatography and more recently been responsible for researching and developing the "fast GC" methods as described above.

CONTACT US

For further information about any of the issues raised in this bulletin or to discuss your analytical requirements you can contact us as follows:

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