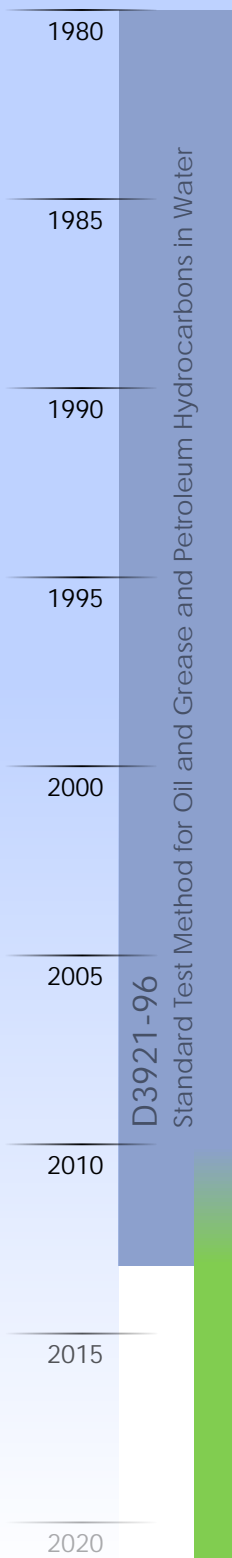


Revolution in Oil in Water measurement

Withdrawn ASTM D3921 gets replaced by CFC-free ASTM D7678



Withdrawal of ASTM D3921

In February 2013 the ASTM D3921 standard was withdrawn, marking the end of a long history using CFCs for infrared spectroscopy. Till the end the infrared test method ASTM D3921 still found use in spectroscopic applications at many industrial sites and remote places. Its unique advantages like accuracy, short measurement time and ease of use maintained its role as an important test method.

The Montreal Protocol and other methods

In 1989 the phase out of ozone-depleting substances (CFCs and HCFCs) was planned by the Montreal Protocol. The infrared test methods continuously started to become replaced by gravimetry (e.g. EPA 1664A) or gas chromatography (e.g. ISO 9377-2). However, the alternative methods require more laborious and careful operation in a laboratory environment.

Infrared absorption spectroscopy

Since 1980 the infrared based method ASTM D3921 was the standard method for measuring total petroleum hydrocarbon (TPH) concentrations in water. This method required the use of the extraction solvent 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113, Freon®). Already in 2001 the related Freon-based standard method DIN38409-H18 was withdrawn and finally in 2013 also ASTM D3921 found its end.

An alternative - ASTM D7678

In 2011 the new standard method ASTM D7678 was published by ASTM International. It uses environment-friendly cycloalkanes for the extraction rather than CFCs. This method and the availability of new infrared lasers allows the transition from old CFC-based methods while maintaining the advantages of infrared spectroscopy.

... and a new instrumentation - ERACHECK

By the invention of midinfrared quantum cascade lasers (QCL) a new form of liquid spectroscopy became possible. Eralytics uses this QCL technology within the portable and field-proven ERACHECK instrument. The ERACHECK enables fast, easy and reliable measurements in harsh environments. And moreover this instrument is complying with the new standard method ASTM D7678.



ERACHECK
TPH in water measurement
measuring range: 0.5 to 2000 ppm
repeatability precision <0.2 ppm
QCL technology by
QUANTARED
TECHNOLOGIES

Summary

- CFCs banned by Montreal protocol
→ ASTM D3921 withdrawn (02/2013)
- A new alternative: ASTM D7678
→ easy & environment-friendly
- QCL based infrared spectroscopy
→ improved sensitivity & selectivity
→ new instrument: ERACHECK

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