

FIJI - FAME tests on all fuel types

IP 583; ASTM D7797; ASTM D7963

Where FAME levels are specified

Aviation Turbine Fuels: ASTM D1655; DEF STAN 91-91 = maximum permitted level 50mg/kg

Marine Fuel Oil: ISO 8217 = specified level 0.5% for non-FAME grades, 7% for FAME grades

Where FAME levels are tested

- Refinery to refinery transfers - where there is incomplete knowledge of the cargo
- Terminal receipt tank - where fuel has unknown FAME content
- Fuel distribution - especially for multiproduct delivery systems
- Tank farms - when receiving fuel via non-dedicated transportation mode

FAME - Aviation Fuel

ASTM D1655; DEFSTAN 91-91 Standard Specifications for Aviation Turbine Fuel

IP 585 GC-MS test method

IP 585 is regarded as the referee test however it has limitations;

- It is a costly, complex and time consuming analytical method
- It is unable to detect low carbon methyl esters (ie: some FAME types)
- It has poor precision and potential to under measure FAME content

IP 583; ASTM D7797 - FTIR (FIJI) test methods

- Specified for use in D1655 and DEFSTAN 91-91
- FIJI methods have better precision
- Infra-red spectroscopy is easy to operate, fast and low cost
- Detects all FAME types



JIG Standard 1530 - 4.5.8 testing for presence of FAME in jet fuel

- FAME can be present due to carry-over or cross-contamination
- Where the risk of FAME exists, testing prior to release shall be instigated

JIG Standard 1530 - 8.3.5 - Transfer of fuel from ocean tanker or coastal/inland waterway vessel

- Vessels greater than 20000 tonnes shall not be considered dedicated under any circumstances
- FAME testing therefore mandated

FAME - Marine Fuel

ISO 8217 Standard Specifications for Marine Distillate and Residual Fuels

The accepted FAME limit in diesel is different from aviation fuels

- ASTM D7963 is a specified test for FAME in ISO 8217
- ASTM D7963 is the only test method which can measure DMB (distillate marine grade) and RMG (residual marine grade) fuels



A typical laboratory issue

"We want to rapidly screen for FAME levels in both Aviation and Marine Diesel fuels without the need to invest in different instrumentation or high technical skills"

Why the question?

Various FAME screening tests exist for Aviation Fuel, these include GC-MS and HPLC, but both require considerable technical skill and take time to perform; they only test for some types of FAME and are not suitable for screening diesel fuels.

The laboratory solution

FIJI is the only bench top analyser that offers the ability to rapidly screen for FAME in all fuel types. FIJI methods are called up in primary fuel specifications including: DEFSTAN 91-91; ASTM D1655 and ISO 8217.

FIJI - typical cost saving comparison

Analysis Type	FIJI - FTIR	GC-MS	HPLC	GC Heart-cut
IP test method	IP 583	IP 585	IP 590	IP 599
ASTM test method	ASTM D7797 ASTM D7963	None	None	None
Test capability	Avtur and Diesel	Avtur only	Avtur only	Avtur only
Referee test	No	Yes	No	No
Skill level 1-10	2	10	10	10
Average test time	20 minutes	200 minutes (inc calibration)	40 minutes	110 minutes (inc calibration)
Equipment capital cost	USD 60k/44k	USD 125k	USD 65k	USD 100k
Estimated cost/test (hourly rate + consumables)	USD 19	USD 35	USD 30	USD 38

FIJI - the better analytical choice

- Multi fuel capacity
- Rapid screening detects all FAME types
- Called up in most major fuel specifications
- Lower capital investment
- Less cost per test
- Reliable and simple to use
- Minimal set up time
- Fast result



FAME - it could be present - it probably is!

It is often stated that FAME cannot be present in a country which does not utilise biofuels. The truth is that modern multi-fuel distribution and potential for co-mingling in storage and delivery systems means that FAME might be present in any territory.

Further information about FIJI can be found at:

www.stanhope-seta.co.uk/product.asp?ID=4914&bShowDetail=true