Thermal Oxidation Stability of Aviation Turbine Fuels
ASTM D3241

TO10 – Thermal Oxidation Stability Test Rig

Methods:

ASTM D3241
IP 323, ISO 6249
ASTM D1655, D7566
DEF STAN 91-091



- **5th Generation of Jet Fuel Thermal Oxidation Test**
- **Full compliance with ASTM D3241, IP 323, ISO 6249**
- **Unmatched operation simplicity and reliability**
- **Fully automated test sequence**
- **Repeatable tight control of all test parameters**
- **Intelligent communication for optimal traceability**
- **DR10 – ITR tube rater connectivity**
- **Enhanced safety**

The TO10 revolutionizes this routine thermal oxidation stability test of jet fuels by bringing **unmatched operation simplicity and reliability of test results**. This innovative instrument assures perfect control of sample flowrate, volume and pressure, combined with unparalleled precision of heater tube temperature profile control test after test.
The operator work is **simplified** to its maximum: a dedicated gauge allows easy and perfect tube positioning, no tools are needed to assembly the test. The smart software makes it possible to initiate an **automated test** and monitor all the test conditions in real time. Together with the fast cooling, the TO10 **improves drastically the lab productivity.**
The instrument provides **full traceability** of the test run (including the tube rating) without a need of extra accessories or specific tubes. The **referee** automatic tube rater ITR (DR10) can be linked to TO10 for automatic data transmission.

Applications

Based on its flexibility, its robustness and reliability, the TO10 is designed for any type of application, research, civilian and military fuel certification.

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Operation

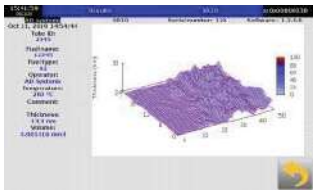
Running a test with the TO10 is straightforward and very easy. Then **the entire procedure is automated:** fuel aeration, test sequence, ΔP control, tube rating (with the DR10-ITR) and reporting.



Reporting

All test conditions are displayed and reported by the instrument (including the ΔP monitoring and the tube rating). When the TO10 is coupled with the DR10, the 3D curve and deposit ratings are automatically linked to the test conditions and final report, bringing **full traceability of the test** in one action. The report can be printed, transmitted to LIMS or copied to USB.





Safety

The TO10 represents major improvement in safety. The double door and VOC extraction systems protect operators from exposure to hazardous vapors. The light indicator prevents the operator from any burning risk. Automatic beaker detection prevents test initiation if one of them is not in place.

Benefits

The TO10 is **the most reliable instrument** available. It controls precisely all the test conditions: heater tube temperature profile, constant fuel flow and pressure. **Easy** to use and **fully automated**, the instrument comes with unique dedicated gauge for easy tube positioning.
Bringing a **step forward in safety**, the TO10 is as well the **most cost efficient oxidation rig** thanks to its complete automation, direct menu access, simplified mounting reducing drastically operator time, and **fast active cooling** when the test is finished.
Intelligent communication with automatic DR10-ITR deposit rater allows to report **the referee result in all jet fuel specifications.**

Technical specifications	Description
Test Methods	ASTM D3241, IP323, ISO 6249 Up to 21 customized test methods
Test Temperature	100°C – 380°C
Test Time	4 – 600 minutes
Operating Pressure	3.45 MPa (500 psi) ±1%
Differential Pressure	0 – 750 mmHg (bypassed automatically at +250 mmHg)
Fuel Aeration	Standard 1.5 L/min or programmable Standard 6 min or programmable
Fuel Flow	Std 3.0 ml/min ±1% or programmable Dual 5mL syringe pump No flow pulses or peaks
Air Flow Humidity	Desiccant cartridge with humidity sensor. Automatic dryness control and alert for the desiccant replacement
Thermocouple	Type K, class 1, 0 to 500°C range, Embedded calibration data
Bus Bar Cooling	Heatpipe fluid technology + Peltier modules Each bus bar independently controlled to maintain consistent tube temperature profile test after test
Heater Tube Assembling	Dedicated gauge helps operator to quickly and perfectly position the heater tube in test assembly.
Fuel Vapor Handling	Dedicated compartment with sliding doors. Fuel vapors extractor included
Results Storage	Result Database Limited only to capacity of external device
DR10 – ITR Connectivity	When connected to DR10 , full data of tube rating can be automatically transferred
LIMS connectivity	Ethernet TCP/IP ; Combined TO10 run & DR10 tube rating report can be transferred
Communication	USB (2), Ethernet (1)
Printing	USB graphic printer (optional)
Dimensions	440 x 600 x 670 mm (17”x 23”x 26”)
Weight	75 kg (165 lbs)
Power supply	100/240 V – 50/60 Hz – 8 A
Operating Conditions	Temperature: from +10 to +35°C RH: 20% to 90% non-condensing

We reserve the right to alter specifications without notification

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