Oxidation-Stability of Diesel & FAME - PetroOXY (automatic)

An alternative procedure to:
ASTM D 2274, ASTM D 5304, ISO 12205, EN 14112, EN 15751

Product group(s): Fuel
User group(s): Biodiesel, Biofuel, Diesel, Fuel, Gas Oil, Gasoline, Motor Fuel, Motor Gasoline

Scope:
- PetroOXY is a project to establish a new method to evaluate the storage stability of diesel & bio-diesel and offer the opportunity of an automatic instrument in order to give:
- Good repeatable results ... in a minum of time ... by best possible user safety!
- Both, the method and the instrument are designed in a way that they do not exceed the average test-time of other methods specified for releasing a fuel from any production facility or other storage.
- At this time there is no satisfactory method available to test the storage stability of FAME.
- Further the storage stability of mixtures of Petro-Diesel and Bio-Diesel is unpredictable and does not have an established test method.

PetroOXY - Method
The results include all volatile & non-volatile oxidation products, thereby providing a complete analysis of the sample’s oxidation stability.
5 ml of a sample is heated together with oxygen in a small hermetically sealed test chamber. (A filling pressure of 700 kPa (approx. 7 bar) was found satisfactory.) This initiates a very fast artificial aging process, that is displayed by a pressure drop in the system. It was found that the time consumption to the pressure drop is directly related to the oxidation stability.

Economical Aspects and Advantages
The PetroOXY-Method performs a massive reduction of testing time. Also the handling and cleaning time per test is limited to approx. 5 min.
As a result of improved repeatability, for producers there is the possibility of cost saving, because now the concentration of valuable additives can closer be limited to the required level.
The PetroOXY-Method so far has not been standardized, but for Gasoline, Diesel, Bio-Diesel and Blends draft Standards are completed and discussions in work-groups are conducted.

- microprocessor controlled
- results of 20 tests can be stored
- pressure and temperature is stored once per minute
- a maximum of 16000 data-sets can be stored
- data can be exported to a PC

Technical Data
Temperature Range: up to +160 °C
Re-Cooling Device: fan
Heater capacity: 500 W
Pressure sensor: 0 to 2000 kPa
Temperature sensor: Pt-100
Interfaces: 1 x RS-232 for Printer,
1 x RS-232 for Data-Export
Dimensions: 24 x 40 x 26 cm (W x D x H)
### Main Unit

**13-3000 PetroOXY Automatic Oxidation-Stability Tester**

**Suitable for:**
- FAME: (Method: EN 14112, EN 15751)
- Diesel: (Method: ASTM D 2274, ISO 12205; ASTM D 5304)

**Consisting of:**
- Automatic tester with microprocessor control, high-grade stainless steel housing with two-color powder coating, touch-key panel with large LC-display for pressure and temperature, as well as simple display of the pressure curve membrane key pad for selection of desired program and parameters, control electronics with power supply, heating control with safety over-temperature shutoff, cool-down fan, sample cup with galvanic coating for 5 ml standard sample, screw cap cover, safety and insulation cover, hose nipples, internal tubing, solenoid valves for automatic pressurization and pressure relief.

**Supplied with:**
- 1 set seals
- 1 set cleaning tissues
- 1 oxygen filling line
- 1 verification fluid set
- 1 software PetroOXY
- 1 data-transfer-cable
- 1 USB-adapter RS232

**Power supply:** 115/230 V, 50/60 Hz, EU-plug

**13-3001 PetroOXY Automatic Oxidation-Stability Tester**

Like 13-3000 but:

**Power supply:** 115/230 V, 50/60 Hz, US-plug

### Options & Accessories

#### Verification Fluid Set - PetroOXY

**13-3034**

**Consisting of:**
- 1 flask diesel oil (50 ml) with certificate
- 2 pipettes (5 ml)

#### Pressure-Calibration Manometer

**13-3035**

**with connection adapter**

**Technical Data:**
- Digital pressure gage: 0 ... 10 bar
- Accuracy: 0.1% FSS typ.
- Indication: kPa, bar, PSI

#### Works Certificate - PetroOXY

**13-3037**

about Pressure & Temperature, with 5 test points each

#### Temperature Calibration Set - PetroOXY

**13-3040**

**Consisting of:**
- 1 precision thermometer
- 1 measuring chain with temperature sensor
- 1 lid and 1 hood

#### Service Set - PetroOXY

**13-3049**

for test cell cleaning and leak detection

**Consisting of:**
- 1 lid with pressure port and tool-kit
- 5 ml syringe
- 100 ml leak detection-spray
## Spare Parts

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-3021</td>
<td>O-Ring-Set, pack of 100</td>
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<tr>
<td>13-3022</td>
<td>Pipettes, 5 ml, pack of 100</td>
<td>Graduated, made of plastic</td>
</tr>
<tr>
<td>13-3025</td>
<td>Cleaning-Tissue, pack of 100</td>
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</tr>
<tr>
<td>13-3030</td>
<td>Oxygen-Tubing, EU-version</td>
<td>Pressure reducing max. 8 bar</td>
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<tr>
<td>13-3031</td>
<td>Oxygen-Tubing, US-version</td>
<td>Pressure reducing max. 8 bar, 1/4” NPT</td>
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</tbody>
</table>

## Order Guideline

- **Minimum equipment:** 1x 13-3000
- **Spares (approx. 1 year):** 13-3021, 13-3022, 13-3025
- **Additional requirements:** Oxygen