OXIDATION STABILITY FOR DISTILLATE FUEL OIL (ASTM D2274, IP 388)-

Compliance with following International Standards:

ASTM D2274, IP 388

Introduction:

This test method covers the measurement of the inherent stability of middle distillate petroleum fuels under specified oxidizing conditions at 95 °C.

Significance & Use

This test method provides a basis for the estimation of the storage stability of middle distillate fuels such as No. 2 fuel oil.

Operating Process

A 350-mL volume of filtered middle distillate fuel is aged at 95°C (203°F) for 16 h while oxygen is bubbled through the sample at a rate of 3.0 L/h. After aging, the sample is cooled to approximately room temperature before filtering to obtain the filterable insoluble quantity. Adherent insoluble are then removed from the oxidation cell and associated glassware with trisolvent. The trisolvent is evaporated to obtain the quantity of adherent insoluble. The sum of the filterable and adherent insoluble, expressed as milligrams per 100 mL, is reported as total insoluble.

Brief Construction Details

The complete unit comprises of following main parts and accessories

1) Heating bath:

1. Double walled oil bath with inlet provision
2. Rectangular shape
3. Stainless steel structure
4. Outer body fabricated from Stainless Steel - 304
5. Inner chamber fabricated from Stainless Steel - 316
6. Heavy insulation between inner chamber and exterior body
7. Inner chamber is fitted with efficient heating element and PT-100 Sensor
8. Bath temperature is controlled by Microprocessor based dual display PID Temperature indicator cum controller
9. Bath is capable of maintaining the temperature at 95 ± 0.2°C
10. Fitted with stainless steel stirring device to maintain uniform temperature throughout the chamber operation

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11. Accommodates 8 test positions - 8 oxidation cells with 8 flow meters
12. Temperature control accuracy : ± 0.2°C
13. Temperature display : LED
14. Temperature range : 5 °C above ambient to 200 °C
15. Supplied with over temperature protection safety cut-off

2) Oxidation Cell

1. Made of of borosilicate glass,
2. Consists of a test tube, condenser, and oxygen delivery tube.

3) 8 nos. Metallic Copper Catalyst of following dimension

Copper catalysts consist of a wire of non - annealed commercial electrolytic copper of diameter between 1.00 and 1.02 mm. And wire shall have a length of 305 ± 1.0 mm rolled into a spiral of approximately 20 mm external diameter and 50 mm in length.

4) 8 nos. rotameters (flow meters) of following features

These are rotameter type flowmeters with the capacity to measure the flow rate of oxygen in the range (3 ± 0.3) liter / hour. One flowmeter will be provided for each oxidation cell.

5) Filter Assembly

Filter units contain an integrally sealed fitted glass support bed (perfectly ground to match a funnel) for holding a 47 mm diameter Filter membrane. Supplied with sintered glass disc support for membrane, Funnel, Flask and Aluminum anodized Clamp & Rubber cork fitting.

6) Filter Media

47 mm diameter cellulose ester surfactant-free membrane filters with a nominal pore size of 0.8 µm.

7) Evaporating Vessel

1. Made of borosilicate glass beaker,
2. 200-mL capacity
3. Tall style

Following accessories will be the part of standard supply

1. Oil bath for the immersion of 8 standard test-tubes held by a double bottom
2. Stainless steel structure
3. Insulated double wall
4. Eight independent flowmeters that transfer oxygen at (3 ± 0.3) l/h rate
5. Heavy duty motor stirrer
6. Outlet system

7. Complete of glassware

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