

Coking Tendency - Micro Carbon Residue - MCR-210

ASTM D 4530, ISO 10370, IP 398, JIS K2270

Product group(s): Fuel

User group(s): Biodiesel, Biofuel, Diesel, Fuel, Gasoline

Scope: This test method covers the determination of the amount of carbon residue formed after evaporation and pyrolysis of petroleum materials under certain conditions and is intended to provide some indication of the relative coke forming tendency of such materials.

Due to its automatic method of operation controlled heating conditions and the use of Nitrogen as an inert gas, the Carbon Residue Tester represents an easy, more precise, faster alternative to the conventional ASTM D 189 Conradson Test Method.

The apparatus in principle consists of: a small oven of approximately 600 ml volume, the heating controlled by an incorporated micro-processor. Simultaneously, a carrier gas (Nitrogen) is forced through the oven. This protects the samples against oxygen in the air on one hand, and purges the oven, i.e. removes vapor resulting from the heating process.

The evolving vapor partially condenses as liquid, which falls into a removable trap, and partially continues as a vapor or smoke into the normal lab exhaust hood.

Therefore a bench close to a hood for smoke exhaust should be provided.

Use of the MCR to determine carbon residue requires a specially-developed time-temperature process that closely approximates the actual program of the standard Conradson Carbon Test.

Samples are run in small glass vials weighed before and after to determine % residue directly.

During the process, high or low gas flow is specified at each step and the test stops automatically when completed.

Up to 12 samples can be run simultaneously.

The operation of the MCR requires a nitrogen source (cylinder preferred) of max. 2.5 bar (absolute).

One cylinder will be sufficient for approximately 100 tests.

- up to 12 sample simultaneously
- programmable
- different vial sizes



Micro Carbon Residue Test Equipment

More details are mentioned in the "Order Number" section

Technical Data

<u>Coking Oven:</u>	with circular heating chamber Ø 85 mm by 105 mm deep
<u>Heating range of oven:</u>	up to 550 °C
<u>Process Controller:</u>	digital programmable controller
<u>Flow Rate of Gas supply:</u>	automatically regulated at 150 ml/min. and 600 ml/min.
<u>N2 Gas Supply:</u>	from piping
<u>Dimensions (W x D x H):</u>	250 x 300 x 600 mm
<u>Weight:</u>	15 kg

Main Unit

13-2900 **Micro Carbon Residue Tester - MCR-210**
ASTM D 4530 - IP 398 - ISO 10 370 - JIS K2270

Consisting of:

steel cabinet with electrically-heated oven with inert gas purge controlled at 150 or 600 cm³/min, controller for temperature and gas rate, pre-programmed to run standardized carbon residue tests.

Supplied with:

1 brass condensate trap
1 pack of 12 half-dram vials (2 ml)
1 sample basket for half-dram vials
1 basket handle
1 cleaning cable

Power supply: 220/240 V, 50/60 Hz, 1.5 kW

Options & Accessories

13-2946 **Reference Sample 1 (MCRT-Low)**
approx. 0.3 % (batch related)
Content: approx. 1 ounce / 30 ml

13-2947 **Reference Sample 2 (MCRT-Low)**
approx. 2.4 % (batch related)
Content: approx. 1 ounce / 30 ml

13-2948 **Reference Sample 3 (MCRT-Mid)**
approx. 8.48 % (batch related)
Content: approx. 1 ounce / 30 ml



13-2949 **Reference Sample 4 (MCRT-High)**
approx. 24.1 % (batch related)
Content: approx. 1 ounce / 30 ml

Spare Parts

13-1903 **Vial small, 2 ml (½ dram), pack of 144**
ASTM- & ISO-type, approx. Ø 12 x 35 mm

13-1904 **Vials Large 15 ml (4 dram), pack of 144**
ASTM-type, approx. Ø 20 x 70 mm

13-2925 **Vial Medium, 4 ml (1 dram), pack of 1**
ISO-type, approx. Ø 12 x 70 mm

13-2920 **Basket "ASTM/ISO", for 12 small vials (2 ml)**

13-2921 **Basket "ISO" for 7 vials**
(4 small vials (2 ml) & 3 medium vials (4 ml))

13-2922 **Basket "ASTM", for 6 medium vials (4 ml)**

13-2910 **Thermocouple**

13-2911 **Static Relay**

13-2912 **Solenoid Valve for air**

13-2913 **Solenoid Valve for nitrogen**

Order Guideline

Minimum equipment: 1x 13-2900
Spares (approx. 1 year): Vials, 13-1908
Additional requirements: Gas supply, Exhaust