

## Water Content in Petroleum & Bitumen Product - Dean & Stark Method

ASTM D 95, DIN 1995 (obs.), DIN 52048 (obs.), EN 1428, IP 74, JIS K2275, AASHTO T55, BS 4385 (obs.)

**Product group(s):** Bitumen, Various

**User group(s):** Asphalt, Bitumen, Fuel, Mastics, Paint, Varnish

**Scope:** For the determination of water in petroleum products, tars, and other bituminous materials by the distillation method.  
The test arrangement consists of a set of glassware and a suitable heater.  
As far as the standard taper joints fit together, many other individual combinations are possible, dependent upon customer's requirements.

### Bituminous Material Methods:

The material to be tested is heated under reflux with a water-immiscible solvent, which co-distills with the water in the ample. Condensed solvent and water are continuously separated in a trap, the water settling in the graduated section of the trap and the solvent returning to the still.

### Emulsified Asphalts Methods:

They are determining the water content of an emulsified asphalt by reflux distillation, using a water trap to measure the amount of water present in the emulsified asphalt, as distinguished from either bitumen or petroleum solvent.



### Dean & Stark Distillation Test Equipment

- **Water Content Determination Apparatus**  
available with:  
electric heater or heating mantle

## Main Unit

**16-0830** **Water Content Determination Apparatus for Petroleum Products and Bituminous Materials (Dean & Stark)**

ASTM D 95 - AASHTO T55 - EN 1428 - IP 74 - JIS K2275

#### Consisting of:

1 round flask (500 ml), standard taper (NS 29)  
1 glass trap (10 ml), standard taper (NS 29)  
1 reflux condenser (400 mm), standard taper (NS 29)

#### Supplied with:

1 electric heater (800 W), stainless steel housing  
1 heating board (center hole Ø 70 mm)  
1 support rod (600 mm) with 4 adjustable clamps

Power supply: 230 V, 50/60 Hz

**16-1430** **Water Content Determination Apparatus for Petroleum Products and Bituminous Materials (Dean & Stark)**

#### Like 16-0830 but:

Power supply: 115 V, 50/60 Hz

**16-1839 Water Content Determination Apparatus for Petroleum Products and Bituminous Materials (Dean & Stark)**

Like 16-0830 but:

Supplied with:

- 1 heating mantle (for 500 ml round flask)
- 1 electronic energy regulator
- 1 support ring (for 500 ml flask heating mantle)
- 1 support rod (600 mm) with base plate, 4 adjustable clamps

Power supply: 230 V, 50/60 Hz

**16-1452 Water Content Determination Apparatus for Petroleum Products and Bituminous Materials (Dean & Stark)**

Like 16-1839 but:

Power supply: 115 V, 50/60 Hz

**Options & Accessories**

**17-0802 Circulation Air Oven**



Consisting of:

thermostatically-controlled, includes of 2-hours & permanent time switch, thermometer for temperature inspection and perforated intermediate bottom.

Important: Not explosion protected!

Technical Data:

- Temperature range: +60 to +200 °C
- Temperature constancy: +/- 2-3 K
- Capacity: 14 l
- Inner dimensions (W x H x D): 19 x 20 x 36 cm
- Outer dimensions (W x H x D): 31 x 38.5 x 47 cm
- Weight: 17 kg

Power supply: 230 V, 50/60 Hz

**16-0834 Gas Heating Device**

Consisting of:

- universal gas burner, wire netting, base plate, rod 750 mm,
- 2 adjustable clamps 40 mm Ø, 3 boss heads, and ring holder

**50-7027 Sleeve (NS 29/32) with Grip Ring, PTFE**

chem. resistant, gas- & liquid safe, vacuum tight  
(leak rate: <0.004 mbar, material thickness: 0.4 mm)  
for multiple use at -200 to +260 °C  
Note: not recommendable if taper clips are used.

**50-7047 Sleeve (NS 29/32) with Ripps, PTFE**

chem. resistant, gas- & liquid safe, vacuum tight  
(leak rate: <0.1 mbar, material thickness: 0.07 mm)  
for single use at -200 to +260°, pack of 10

**16-0870 Round flask, 500 ml (NS 45/40)**

(DIN 12 348) with standard taper

**16-0897 Flask-Adapter, standard taper (NS 45/40 into NS 29/32)**

**16-0874 Round Flask, 500 ml (NS 29/32), side neck (NS 14/23)**

(DIN 12 394) with standard taper

**16-0894 Thermometer DIN 12 784, with collar (NS 14/23)**

Range: 0 to +250 : 1 °C,  
Insertation depth: 150 mm, for round flask 16-0873

16-0887	<b>Trap (10 : 0.1 ml) (NS29/32)</b> End of the measuring tube: <u>round</u> 0-point ends: <u>above bottom</u>
16-0888	<b>Trap (10 : 0.1 ml) (NS29/32)</b> End of the measuring tube: <u>with cock</u> 0-point ends: <u>above cock</u>
16-0889	<b>Trap (10 : 0.1 ml) (NS29/32)</b> End of the measuring tube: <u>with cock</u> 0-point ends: <u>at cock</u>
16-0860	<b>Erlenmeyer-Flask, 500 ml (NS 29/32)</b> (DIN 12 387), borosilicate glass
16-0705	<b>Measuring Cylinder (500 : 5 ml)</b> borosilicate glass with plastic stand, ID 49 mm x H 342 mm

## Spare Parts

16-0866	<b>Round Flask, 500 ml (NS 29/32)</b> (DIN 12 348) with standard taper
16-0886	<b>Trap (10 : 0.1 ml) (NS29/32)</b> End of the measuring tube: <u>conical</u> 0-point ends: <u>at tip</u>
16-0879	<b>Liebig Reflux Condenser, 400 mm (NS 29/32)</b> with special drip tip for easy counting of drops
11-0139	<b>Support Board, center hole Ø 70 mm (2¾")</b> glass ceramics (150 x 150 x 4 mm)
11-0018	<b>Heater Rod 200 W, 115-230 V</b>
11-0019	<b>Heating Element with 4 heater rods</b> Power supply: 230 V, 50/60 Hz, 800 W
11-0029	<b>Heating Element with 4 heater rods</b> <u>Like 11-0019 but:</u> Power supply: 115 V, 50/60 Hz, 800 W
25-0004	<b>Control Module "m2" to regulate the heating power</b> Power supply: 230 V, 50/60 Hz
25-0009	<b>Control Module "m2" to regulate the heating power</b> <u>Like 25-0004 but:</u> Power supply: 115 V, 50/60 Hz

## Order Guideline

Minimum equipment: 1x Water Determination Apparatus  
Spares (approx. 1 year): Flask, Cylinder, Trap, Thermometer  
Additional requirements: