

Density of Semi-Solid Asphalt Binder

ASTM D70 - ASTM D1429 - IP 190 - ISO 3838 - JIS K2265 - DIN 52 004



- ⊕ **Stainless steel bath**
- ⊕ **Cooling coil**
- ⊕ **Bath drain**
- ⊕ **Easy to operate**
- ⊕ **Position for nine pycnometers**

General

The ASTM D70 test method covers the determination of the relative density and density of semi-solid asphalt binder, asphalt cements, and soft tar pitches by use of a pycnometer. The sample is placed in a calibrated pycnometer. The pycnometer and sample are weighed, then the remaining volume is filled with water. The filled pycnometer is brought to the test temperature, and weighed. The density of the sample is calculated from its mass and the mass of water displaced by the sample in the filled pycnometer. The bath has place for nine pycnometers. The apparatus can also be used for the specific gravity of water and brine (ASTM D1429, test method A).

The temperature range of the bath is from ambient +5°C to 250°C. On the TC16 a ridge (P/N 13T8050) needs to be mounted to support the adjustable brackets to insert the pycnometers in the bath. These brackets can be used for Hubbard or Gay-Lussac pycnometers. Each bracket can accommodate three pycnometers. Maximum three brackets can be placed in one TC16. Either a bracket for Hubbard or for Gay-Lussac pycnometers needs to be bought depending which type of pycnometer will be used. In order to work @ 15°C or @ 25°C an external TLC15-5 circulator needs to be connected. Please see table three for further information.

Item	Unit	TC16
P/N 230V/50-60Hz		00T0671
P/N 115V/60Hz		00T0861
Power	[kW]	1.5
Range	°C °F	Ambient .. 250 Ambient .. 482
Reading		°C or °F
Setting	[°]	0.1
Stability ±	[°C]	0.02
Heating	[W]	1400
Bath volume	[L]	16
Bath openings	[mm]	Position for nine pycnometers
Bath depth	[mm]	220
Length	[mm]	455
Width	[mm]	295
Height	[mm]	440
Materials	Used inside bath: stainless steel 304, brass	
CE	Conforms to CE regulation	

Accuracy

The insulation of the bath and electronic design result in a very stable working temperature of $\pm 0.02^\circ\text{C}$. The set point can be set in steps of 0.1°C in the range of 0°C up to 250°C ($32..482^\circ\text{F}$). The accuracy on the display is displayed in 0.1°C . However the controller has an internal accuracy of 0.01°C .

Temperature readout

Standard available in °C, on request in °F.

Pump

When not used for density measurement, the pump can be used to circulate the bath content to an external application.

Safety

The bath conforms to CE regulation. It is further equipped with a mechanical resettable safety thermostat.

Necessary accessories and options

Please see the tables on the next pages.

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Table 1: Necessary accessories for ASTM D70 or ASTM D1429 (test method A)



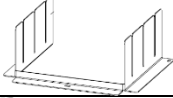




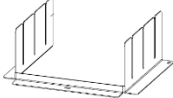


Part Number	Picture	Suggested quantity	Description
00T0671		1	TC16 circulator 230V/50-60Hz
00T0861			TC16 circulator 115V/60Hz
13T8049		1	TC16 cover for ASTM D70/IP 189
13T8050		1	Ridge for D70 brackets
13T8051		3	Bracket for three Hubbard pycnometers (one piece)
31T0031		9	Pycnometer Hubbard


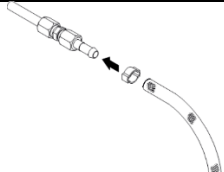
Table 2: Necessary accessories for IP 190

Part Number	Picture	Suggested quantity	Description
00T0671		1	TC16 circulator 230V/50-60Hz
00T0861			TC16 circulator 115V/60Hz
13T8049		1	TC16 cover for ASTM D70/IP 190
13T8050		1	Ridge for D70 brackets
13T8052		3	Bracket for three Gay-Lussac pycnometers (one piece)
31T0030		9	Pycnometer Gay-Lussac

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Table 3: Optional accessories

Part Number	Picture	Suggested quantity	Description
00T0565		1	TLC15-5 230V/50Hz external cooling circulator to measure the density @ 25°C, 20°C or 15°C (below or near ambient temperature).
00T0567			TLC15-5 230V/60Hz external cooling circulator to measure the density @ 25°C, 20°C or 15°C (below or near ambient temperature).
00T0570			TLC15-5 115V/60Hz external cooling circulator to measure the density @ 25°C, 20°C or 15°C (below or near ambient temperature).
12T1075		1	Tubing with connectors and clamps to be used between a TLC15-5 and a TC16.

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