

Ductility

DUCTILITY

STANDARD

pr EN 13398, ASTM D113, AASHTO T51, NF T66-006, CNR No. 44, NLT 126

Introduction

This method is used for determining the ductility of bituminous materials by measuring the elongation before breaking when two ends of a briquette specimen are pulled apart at a specified speed and temperature. The test is performed with a ductility machine, which can be fitted with a liquid refrigerator-circulator (see model 86-D2030/A) to perform tests at a temperature below 25°C or for use in tropical areas. Furthermore the standard ductility machine 81-B0140 can be upgraded with a Force ductility kit to measure the tensile force exerted on the specimens and determining the conventional energy of bitumen binders from traction characteristics.

This upgraded option (see code 81-B0140/UP1) includes three load cells, digital display unit and Macro-Excel program for data acquisition and processing for connection to PC.

81-B0140

Ductility testing machine.

230 V, 50 Hz, 1 ph.

81-B0140/Z

Same as above but 110 V, 60 Hz, 1 ph.

81-B0140/Y

Same as above but 220 V, 60 Hz, 1 ph.

General description

The machine can perform three simultaneous tests. The bath is fitted with an immersion heater in order to obtain, in normal conditions, the 25°C test temperature using, as stabilising element, the cold water circulation in the stainless steel interspace.

For use in tropical areas or to perform tests below 25°C, the use of the 86-D2030/A liquid refrigerator-circulator is recommended.

The machine can be upgraded to measure the tensile force. See Upgraded options code 81-B0140/UP1.

Testing speed: 50 mm/min

Max. carriage displacement: 1500 mm

Power: 500 W heating element and 150 W motor

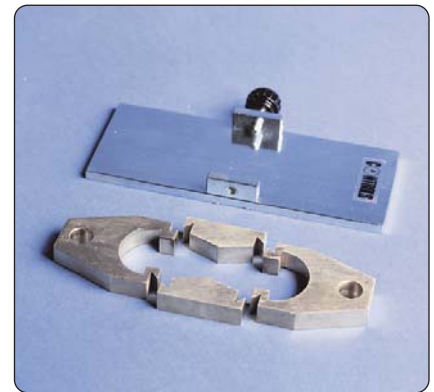
Dimensions: 2150x360x340 mm

Weight approx.: 104 kg

Accessories

► **81-B0141** Ductility mould. Made of brass, accurately machined to the specified dimensions. Weight 200 g

► **81-B0142** Ductility mould plate for 81-B0141 ductility mould



81-B0141, 81-B0142

note

Ductility mould and ductility mould plate are not supplied with the machine and have to be ordered separately. (See accessories)

Main features

- Double stainless steel bath with interspace for cold water or ethylene glycol circulation (when used with 86-D2030/A liquid refrigerator-circulator)
- Fiberglass insulation and external casing in enamelled steel
- Temperature control by digital system
- Immersion electric heater
- Carriage holding up to three standard briquette moulds
- Measuring rule.

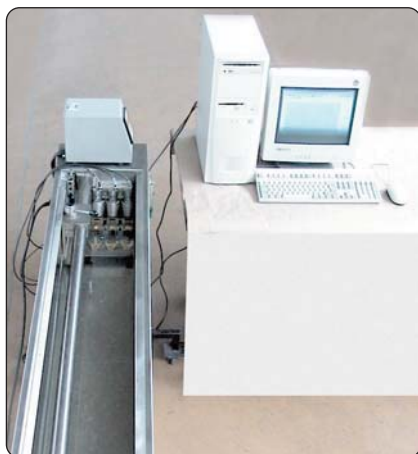


81-B0140

DUCTILITY TESTING MACHINE**UPGRADING OPTIONS****81-B0140/UP1****Force ductility kit**

The 81-B0140 machine can be upgraded with the installation of three load cells in line with each ductility mould and specimen test position, to measure the tensile force and determine the conventional energy of bitumen binders from traction characteristic. The kit, which has to be factory installed, includes:

- Three load cells 50 N cap. each
- Three channels digital display unit with RS 232 output for PC or printer
- Macro-Excel program for data acquisition and PC processing
- Installation on the ductility machine.



Detail of the three load cells installed inside the ductility bath (upgrading option 81-B0140/UP1)



81-B0140 Ductility machine fitted with 86-D2030/A Refrigerating circulator unit (bench not included)

86-D2030/A**Liquid refrigerator-circulator.**

230 V, 50-60 Hz, 1 ph.

86-D2030/AZ**Liquid refrigerator-circulator.**

110 V, 60 Hz, 1 ph.

General description

This unit has been specially designed for laboratory use to provide either cold water or for closed circulation of either water or ethylene glycol. Comprising a refrigeration compressor, silent and CFC free, water reservoir with cooling coil, electronic thermoregulator with digital display, which shows the water/liquid output temperature and sound proof metal case.

The unit include a liquid circulator pump for controlling the interspace casing of the ductility machine bath and a resistance heater fitted in the water reservoir to decrease, if needed the thermal inertia of the system.

- Provides cold water for general laboratory use
- Can circulate either water or ethylene glycol
- CFC free
- Silent



86-D2030/A

Specifications

Output liquid temperature range:

+5 to +25°C

Power: 1500 W

Water or liquid connections: 3/4"

Dimensions (lxdxh):

825x435x750 mm

Weight approx.: 70 kg