PRESSURE AGEING VESSEL PAV

The Pressure Ageing Vessel (PAV) has been developed to simulate in-service ageing of asphalt binder after 5 to 10 years. The binder is exposed to high pressure and temperature for 20 or 65 hours (selectable up to 99) to simulate the effect of long-term oxidative ageing.

The ageing of asphalt binders during service is affected by ambient temperature and by mixture-associated variables, such of component proportions in thhe mix, aggregate properties and many more. This conditioning process is intended to provide an evaluation of the relative resistance of asphalt binders to oxidative ageing at selected elevate temperatures and pressures. It is normally performed after an initial conditioning using a Rolling Thin Film Oven (RTFOT).

Residue from this conditioning practice may be used to estimate the physical and chemical properties of asphalt binders after several years of i-service ageing in the field and to compare these properties to pre-conditioning test results of the same binder.

The **Pressure Ageing Vessel PAV** can be used as part of your **Superpave performance based testing** program.

The apparatus consists of a stainless steel (AISI 304 with ASME and CE certi?cations) pressure vessel with encased band heaters and interal pressure and temperature controls. Data logs of both temperature and pressure are saved on USB stick or transferred to PC at the end of the test.

The user friendly software allows the operator to view the vessel temperature and pressure in real time, both as set targets ad actual values, with a high rate of refresh. It is also possible to view, in real time, the temperature and pressure graphs.

The instruments features PID temperature control and highly ef?cient heaters that allow heating rate and temperature control exceeding the Standards' specifications.

Pre-heating of the instrument can be programmed (maximum 60° C for safety reasons) to allow the operator to ?nd the PAV ready for the next test at any time. An acoustic alarm advises the operator qhen the test is finished.

The PAV requires a suitable compressed air tank, 2.1Mpa minimum pressure.

This could be for example an air compressor or commercial bottled air, depending on reference standards**.**

PRESSURE AGEING VESSEL PAV

SPECIFICATION

1.The pressure vessel shall be constructed in stainless steel and designed to operate at 2.1 ± 0.1 MPa between 90 and 1100C with interior dimensions adequate to hold ten PAV pans and a pan holder. The pan holder shall be capable of holding ten PAV stainless steel pans in a horizontal (level) position. The holder shall be designed for easy insertion and removal from the vessel when the holder, pans, and asphalt binder are at the conditioning temperature.

2.The pressure vessel shall withstand 2.5 MPa of maximum pressure, however it shall be equipped with a safety over-pressure release valve which releases the pressure at 2.4 MPa.

3.The pressure vessel shall be certified to ASME and CE.

4.The air pressure shall be monitored by a pressure transducer and digitally displayed, avoiding the need of pressure gauges on the instrument's case.

5.Freely selectable test temperatures from 800C to 1200C, PID controlled to ± 0.5.

6. Platinum RTD temperature internal measurement to ± 0.10C.

7.The instrument shall feature an over temperature limit switch which turns off the heating elements at 1500C.

8.The instrument shall be equipped with an efficient heating system allowing the test temperature to be achieved in just one hour.

9.The instrument shall feature programmable pre-heating functions (up to 600C) for time optimization

10.The instrument shall have the following safety features:

- Electrically locked top cover, to avoid direct exposure of the pressure vessel during the test.
- Forced ventilation cooling system allowing quick cooling of sample rack and to avoid accidental burns.
- 600C pre-heating limit to avoid accidental burns during sample rack positioning.
- Over temperature limit switch.

- Over pressure relief valve.

11.The control of the instrument shall be performed using a digital 6" colour touch screen display, reclining for operator comfort.

12.The user friendly software allows the operator to view the vessel temperature and pressure in real time, both as set targets and actual values, with a high rate of refresh. It is also possible to view, in real time, the temperature and pressure graphs.

13.Data logs of both temperature and pressure are saved on USB stick or transferred to PC at the end of the test.

14.Capable of operating at 230 V, 50 Hz or 110 V, 60 Hz.

15.Temperature and pressure calibrations performable by the user.

16.The instrument shall be connectable to a network, for remote monitoring of the test status from PC, Tablet or Smartphone.

17.It should be supplied complete with PAV pan, rack etc.

STANDARDS

- ASTM D6521
- EN 14769
- AASHTO R28

FEATURES

- Platinum RTD temperature internal measurement to +/- 0.1° C
- Freely selectable test temperatures from 80° to 120°C, PID controlled to +/- 0.5°C
- Efficient heating system allowing the test temperature to be achieved in one hour, exceeding the Standards' specification Programmable pre-heating functions (limited to 60° C to avoid accidental burns during sample rack positioning) for time optimization Pressure monitored by transducer and controlled to 2.1 +/- 0.1 MPa
- User friendly software allows real time readout of vessel temperature and pressure 6" colour touch screen reclinable display
- Temperature and pressure calibrations performable by the user CE and ASME certified pressure vessel
- Electrically locked top cover, to avoid direct exposure of the pressure vessel during the test Forced ventilation cooling system allowing quick cooling of sample rack to avoid accidental burn
- Over temperature limit switch
- Over pressure relief valve

ACCESSORIES

81-PV2600/1

Spare sample container (TFOT pan) for PAV

81-PV2600/2

Spare sample rack for PAV

81-PV2610

Vacuum Degassing Oven (VDO) - meets AASHTO R28, ASTM D6521 and EN 14769 test standards - 230V, 50-60Hz, 1Ph

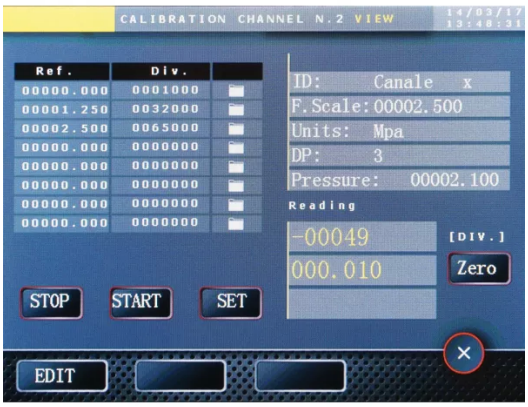
81-PV2610/Z

Vacuum Degassing Oven (VDO) - meets AASHTO R28, ASTM D6521 and EN 14769 test standards - 110V, 60Hz, 1Ph

ORDERING CODE

81-PV2600

Pressure Aging Vessel (PAV) conforming to ASTM D6521, AASHTO R28, EN 14769. 230 V, 50-60 Hz, 1 ph

81-PV2600/Z

Pressure Aging Vessel (PAV) conforming to ASTM D6521, AASHTO R28, EN 14769. 110V, 60 Hz, 1 ph.