NEW HORIZONS IN TEMPERATURE TECHNOLOGY

asphalt binder analyser

CARBOLITE®

carbolite asphalt binder analyser (ABA 7/35)

Carbolite introduces its Asphalt Binder Analyser which is fully compliant with the latest ASTM, AASHTO and BS Draft standards specifying equipment and procedures in determining the asphalt binder content of hot mix asphalt/bituminous mixtures by the loss on ignition method. This method replaces the traditional solvent procedure and thereby not only avoids the health and environmental concerns associated with chlorinated solvents, but also the related expense of such chemicals.

The ABA 7/35 asphalt binder analyser combines a sophisticated furnace and weighing system to continuously measure the weight loss of a bituminous mixture during combustion, and automatically calculates its binder content at the end of the test.

construction

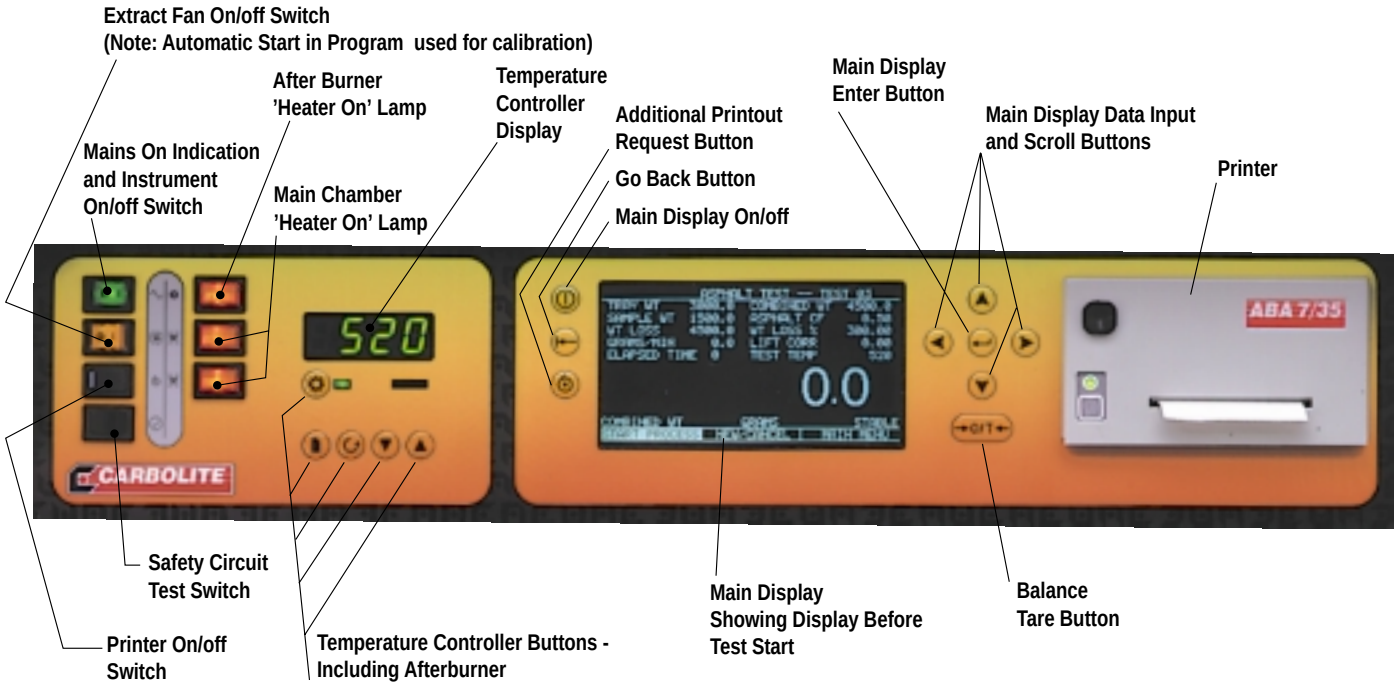
- The use of double skin construction ensures a safe and cooler outer case temperature.
- The analyser is designed for use as either a bench mounted model or can be positioned on an optional work height support stand.
- A door safety switch cuts power to the elements when the door is opened and a 180° opening side opening door allows complete access to the chamber opening.
- Low thermal mass insulation ensures that the furnace, rated at 750°C, is ready for use after only 30 minutes heat up time; this rapid heat up time allows the unit to be switched off in between tests and eliminates the need for a 24 hour timer.
- Exposed element coils are recessed from the chamber opening and have the advantage of increased life due to lower element loading and the reduced risk of contamination build up on the element surface.
- An independently controlled afterburner significantly reduces furnaces emissions. The unit is designed to be fully compliant with the relevant standards, without requiring a filter system, thereby eliminating maintenance to clean filters.
- The analyser is supplied with two sets of sample trays, loading handle, cooling cage and printer paper. The furnace is rated for 8kW for operation on 208/240 volts, 50/60Hz, three phase or single phase, and the furnace holding power is approximately 3kW.
- The balance pan extension in the furnace chamber ensures that the sample tray is guided into position and is positively located within the chamber, ensuring ease of loading/unloading and preventing contact with the elements.
- The balance can be simply calibrated using standard weights whilst in position. A lift compensation factor allows for the lift created by the volatile extraction fan and reduced air density.
- The control panel incorporates the temperature controls for the main chamber and the afterburner, an easy to read dot matrix display where helpful step by step instructions, test set-up parameters and all test results are displayed, a printer that provides a permanent record of tests, and on/off power controls.
- Input of the sample start weight, which must always be weighed externally, can be entered either manually or uniquely and automatically via an optional second external Ohaus balance connected to the unit via RS232 digital communications and eliminates the possibility of operator error.
- Both ‘asphalt mix’ and ‘dry aggregate’ calibration factors can be determined automatically by the ABA unit. The unit has the unique advantage of being able to calculate the binder contents using calibration factors based on asphalt mixes and dry aggregate samples, without the need for a conversion between the two. Test set up parameters can be saved with unique (customer specified) file names into libraries and easily recalled at a later date.
- The digital temperature controller (Carbolite model 201, which is designed exclusively by Eurotherm) indicates the furnace chamber temperature and can easily be activated to show the set temperature. The controller has a highly accurate self-tuning feature and ramp to setpoint capability and the superior design features eliminate the need for routine calibration. The push buttons are housed behind an integral and attractive wipe-clean membrane.

benefits

- The ability to automatically calculate and use calibration factors based on both asphalt mixes and dry aggregates.
- Unique automatic input of sample start weight via an optional second external Ohaus balance which eliminates operator error.
- Rapid heat up rates permit the unit to be switched off between tests, resulting in reduced power consumption and eliminating the need for a 24-hour timer.
- Customisation of test parameters and ability to save named test setups in a library.
- Choice of print format: either continuously throughout the test showing the results at minute intervals or a final end of test analysis.
- Permits large sample sizes (up to 4.5kg) to be tested.
- Precise measurement - weights measured to 0.1g.
- User friendly design.
- Cost savings due to reduction in testing time and elimination of costly chemicals.

safety features

- Automatic door locking during testing which cannot be disabled by interruption of the power supply once the test has commenced.
- Door safety switch isolates-power to the elements when the door is opened.
- Independently controlled afterburner significantly reduces furnace emissions.
- Eliminates health and environmental concerns related to the use of chlorinated solvents.



the test

Once the test has commenced, the door is automatically locked for the entire period of the test and the extraction fan is automatically started. Average test times range from 20 minutes for 6mm samples, to 45 minutes for a 40mm sample. During the test, the integral dot matrix display shows the asphalt sample weight to a display accuracy of 0.1g, the present weight loss (both in grams and as a %), the rate of change of sample weight and also the duration of the test. This unique display gives an immediate indication of the progress of the test. The binder content, percentage weight loss and calibration factor are measured to 0.01%.

At the end of the test, which is signalled by an audible alarm, the display changes to clearly show the binder content of the sample, the door is unlocked and the results are printed. A choice of printouts is available; either as a final end of test analysis or as a continuous print-out showing results every minute including a final end of test analysis. Additional print outs can be requested at the end of the test for permanent records of test documentation.

The final printed test results include the furnace set temperature, sample weight, final weight, weight loss in grams and percentage weight loss, calibration factor, test run time, the time and date.

Print format for an asphalt calibration factor showing running test data

Initial sample weight measured externally & entered manually or automatically

TEST DATA

Run Time	Sample Weight	Weight Loss	% Loss
1	1500.0	0.0	0.00
2	1500.0	0.0	0.00
3	1499.9	0.1	0.01
27	1414.0	86.0	5.73
28	1413.4	86.6	5.77
29	1413.2	86.8	5.79
30	1413.0	87.0	5.80

ASPHALT BINDER TEST RESULTS

LIBRARY TEST NAME

Furnace Set Temp. : 540°C
Sample Weight : 1500.0g
Final Weight : 1413.0g
Weight Loss : 87.0g
% Loss : 5.80%
Asphalt C. F. : 0.60%
Test Run Time : 30min
Time : 10:51
Date : 12/02/98

ASPHALT BINDER CONTENT 5.20%

Mix ID :

Sample :

Binder Spec :

Operator :

Sample weight loss during test as grams

Asphalt calibration factor: predetermined CF for current sample

Total sample weight loss during test as %

Final calibrated asphalt binder content

DISTRIBUTED BY:

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