

Plasticity

The New Wallace Ageing Chamber (O14)

The new O14 Wallace Ageing Chamber, ages rubber in accordance with international testing standards. In conjunction with the Wallace Plastimeter (P14), it allows the user to determine the Plasticity Retention Index (PRI) of raw natural rubbers.

Features

- Accurate and reliable temperature control
- Drawers individually triggered
- Tri-colour LEDs indicate test status for each of four test compartments
- Up to 48 samples can be accommodated
- High-tech PID Temperature Controller with digital display
- Easy access to replace air filter

New:

- *Better air flow for reliable consistent results*
- *Uses optical sensors for improved drawer operation*



Housed in a robust steel case, the O14 features an aluminium block with four chambers that carry the drawer units and sample dishes. Heater elements are wrapped around the block and high-quality insulation inside the case minimises heat loss. The air pump has been upgraded to improve air flow and lifespan. Air is pumped via the air filter to provide clean pre-heated air to the chambers.

Test Procedure

Test samples are placed on round foil dishes, which are located in recesses in the drawer units. The drawers now use optical switches for more reliable operation. When a drawer is inserted, a timing sequence is triggered for that chamber. As the 30-minute ageing process ends, the LED light changes colour, indicating to the operator to remove the sample tray. If the ageing period is exceeded, the LED light changes to red indicating that the samples should be discarded. A temperature of 140°C (as specified by the standard) is maintained by a PID Controller, which continuously displays the chamber temperature. The O14 provides an additional protective feature whereby should the temperature exceed 150°C, the over-temperature cut out will be activated and all LEDs will flash simultaneously.

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The Plasticity Retention Index (PRI)

The PRI is a measure of the resistance of natural rubber to thermal oxidation. The procedure consists of a plasticity test (P_0) on a non-aged specimen, followed by a test (P_{30}) of a specimen that has been aged for 30 minutes at a temperature of $140^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$.

$$PRI = \left(\frac{P_{30}}{P_0} \right) \times 100$$

P_{30} is the median value of the aged results

P_0 is the median of the un-aged results

Specifications

Wallace Ageing Chamber (O14)	
Weight	23 Kg
Dimensions	270 (w) x 490 x (d) x 230mm (h)
Maximum Power	200 watts
Chamber size	50 (w) x 12 (d) x 280mm (h)
Number of heating chambers	4
Number of dishes per tray	4
Number of samples per tray	12 max
Number of samples per O14	48 max
Operating temperature	$140^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$
Temperature recovery	< 2 mins @ 140°C after sample insertion
Standards	BS ISO 2007, BS ISO 2930, ASTM D3194