

Plasticity

O14 Ageing Chamber

The Wallace O14 Ageing Chamber reliably ages rubber in accordance with international standards, as an integral part of determining the Plasticity Retention Index (PRI) of raw natural rubbers.

The O14 comes in two models. The O14-48 handles 48 samples at a time, and the O14-96 handles 96 samples at a time. The O14-96 also comes with a convenient traceability fixture to ensure proper matching of samples and easy sample handling.

Use the O14-96 Ageing Chamber in conjunction with the Wallace Plastimeter (P14), high speed cutter (WAS2) and traceability fixture to ensure maximum productivity.

Features

- **Accurate and reliable temperature control**
- **Drawers individually time controlled**
- **Tri-colour LEDs indicate status for each of the four test compartments**
- **High-tech PID Temperature Controller with digital display**
- **Easy access to replace air filter**



Principle of Operation

Housed in a robust steel case, the O14 features an aluminium block with four chambers that carry the drawer units and sample dishes.

High-quality insulation inside the case minimises heat loss. 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.

Test Procedure

Test samples are cut with the Wallace Volumetric Specimen Cutter and placed in drawers in the traceability fixture. 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 and an audible alarm sounds, 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. The sample tray is placed in the traceability fixture and transferred to the P14 for a PRI test. The samples are then left for a minimum of 30mins to a maximum of 2hrs (ISO, ASTM standards) to get to room temperature before PRI testing.

The traceability fixture is not applicable to the O14-48.

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°C ± 0.5°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



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Specifications

Wallace Ageing Chamber		
Part Number	WAO14-96	WAO14-48
Dimensions (mm)	230 (h) x 270 (w) x 490 (d)	230 (h) x 270 (w) x 490 (d)
Weight	23kg	23kg
Maximum Power	200W	200W
Chamber Size (mm)	12 (h) x 50 (w) x 280 (d)	12 (h) x 50 (w) x 280 (d)
Chamber Temperature	140°C ±0.2°C	140°C ±0.2°C
Number of Heating Chambers	4	4
Number of Dishes per tray	8	4
Number of Samples per tray	24 max.	12 max.
Number of Samples per O14	96 max.	48 max.
Operating Temperature	5 to 40°C; Altitude 2000m maximum	5 to 40°C; Altitude 2000m maximum
Humidity Range	10 to 80% RH non-condensing	10 to 80% RH non-condensing
Temperature Recovery	<3 mins @ 140°C after sample insertion	<3 mins @ 140°C after sample insertion

Included		
Ageing Chamber	1 off	1 off
High Capacity Trays	8 off (4 off in oven, 4 off in fixture)	N/A
Standard Capacity Trays	N/A	4 off
Dishes	120 off	60 off
Traceability Fixture Trays	4 off	N/A
Traceability Fixture Coloured Buttons	80 off	N/A

Standards

BS ISO 2007, BS ISO 2930, ASTM D3194

