Plasticity

O14 Ageing Chamber

The Wallace O14 Ageing Chamber reliably ages rubber samples in accordance with international standards, as an integral part of determining the Plasticity Retention Index (PRI) of raw natural rubbers. The PRI is a measure of the resistance of natural rubber to thermal oxidation (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.

The Wallace O14 Ageing Chamber, in conjunction with the Wallace Plastimeter (P14), high efficiency cutter (WAS2) and traceability fixture, ensures maximum productivity when determining the PRI of natural rubber.

Wallace supplies the O14 Ageing Chamber in two models with a capacity to age 48 or 96 samples respectively.

Determining the PRI of rubber requires the accurate matching of the aged and non-aged rubber samples when performing the plasticity test. Wallace has designed a stackable traceability fixture which not only allows for accurate matching of the samples, but also ease of handling of samples between sample preparation, ageing and plasticity testing. Matching is achieved by coloured buttons in the tray handle and fixture tray.

Features

- **Accurate, stable and reliable temperature control**
- **Drawers individually time controlled**
- **Tri-colour LEDs indicate time status individually for each of the four test compartments**
- **Audible alarm alert at 30 minute time lapse**
- **Over-temperature cut out**
- **Easy to use traceability fixture**

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. This block plus high-quality insulation creates a very stable temperature profile and 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. A reliable air pump provides the air flow as required by the relevant standards

Test Procedure

Test samples are cut with the Wallace Volumetric Specimen Cutter. These samples are then placed into drawers and onto the traceability fixture matched to the correct colour codes. Matching samples are transferred from sample preparation to ageing, whereby the drawer is removed from the traceability fixture and inserted into the ageing chamber. 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 drawer is placed in the traceability fixture in its matching position and transferred to the P14 for a PRI test. Samples are to be cooled to room temperature and tested no earlier than 30mins and no later than 2hrs after ageing is completed.

O14 Ageing Chamber

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	140ºC ±0.2ºC	140ºC ±0.2ºC
Number of Heating Chambers	4	4
Number of Dishes per Sample Drawer	8	4
Number of Samples per Sample Drawer	24 max.	12 max.
Number of Samples per O14	96 max.	48 max.
Operating Temperature	5 to 40ºC; Altitude 2000m maximum	5 to 40ºC; Altitude 2000m maximum
Humidity Range	10 to 80% RH non-condensing	10 to 80% RH non-condensing
Temperature Recovery	<3 mins @ 140ºC after sample insertion	<3 mins @ 140ºC after sample insertion

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

Standards

BS ISO 2007, BS ISO 2930, ASTM D3194