Tinius Olsen

Environmental Chambers

The Tinius Olsen Environmental Chamber provides a means for performing physical tests within a temperature range of –70°C to 300°C (-95 °F to 570 °F), and is suitable for use with most twin screw materials testing machines.

An internal radial fan provides efficient air circulation, minimizing temperature gradients in the chamber, while a digital controller ensures accurate temperature control. As an option, sub-zero temperature testing is available using liquid nitrogen as the cooling medium.

The chamber door is fitted with a triple glazed window allowing the test area to be viewed; it also allows the sample to be be scanned for strain measurements while using the Tinius Olsen 500L laser extensometer. When liquid nitrogen is used, a demisting facility is fitted.

The chamber is supported on a frame positioned between the columns of the testing machine. When the chamber is not in use, it can be rolled back and parked clear of the operating area.

Fig. 1. Environmental chamber and controller.

Fig. 3. Chamber shown mounted on frame and between columns of test machine. Also shown is a laser extensometer for taking strain measurements during the course of a test.

Fig. 2. Environmental chamber shown with door closed and viewing window visible.

Technical Specifications

OPERATING TEMPERATURE RANGE	°C °F	Ambient to 300 Ambient to 570
OPTIONAL TEMPERATURE RANGE	°C °F	-70 to 300 -94 to 570
TEMPERATURE GRADIENT		+/- 1°C after 30 minutes within 80% center volume of chamber
TEMPERATURE STABILITY		+/- 1°C after 30 minutes
INTERNAL DIMENSIONS	mm in	250 x 245 x 605 (WxDxH) 9.8 x 9.6 x 23.8 (WxDxH)
EXTERNAL DIMENSIONS	mm in	355 x 650 x 750 (WxDxH) 14 x 25.6 x 29.5 (WxDxH)
WINDOW DIMENSIONS	mm in	320 x 140 12.6 x 5.5
POWER		110/220 VAC, 50/60 Hz, 3kW 1ph
WEIGHT INCLUDING CONTROLLER	kg lb	62 137

Furnace and High Temperature Extensometer

The Split Furnace has been designed primarily for use on materials testing machines where samples are being tested in tension or compression. Each furnace is unique to its application, but they all share some common features.

Each furnace has a high quality rigid stainless steel outer case with a polished finish. Rigidity is most important to prevent the insulation from cracking in service and also to allow high temperature extensometers to be mounted directly on the furnace case.

A typical control system is based on a precision digital temperature controller that provides 4 segment programmability, a single type K thermocouple, and all connecting cables.

Bigger furnaces can be supplied that are made with additional heating tiles and control capability to allow much greater thermal uniformity over larger specimen gauge lengths.

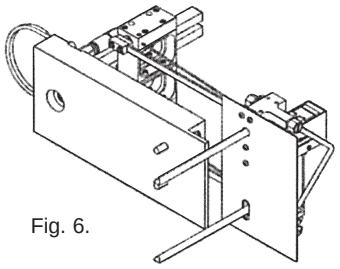

Fig. 6.

There are two types of clip-on types of extensometer that can be used with the furnace. The first type (Fig. 7.) is an LVDT based extensometer that incorporates extension bars to move the measurement outside the furnace. The second type (Fig.6.) incorporates a water cooled strain-gage extensometer.

Fig. 7.

Fig. 4. Typical high temperature split furnace.

Fig. 5. Engineering plan view drawing of split furnace mounted in test frame and showing the addition of a water cooled strain gage extensometer.

Technical Specifications

OPERATING TEMPERATURE RANGE	¡C ¡F	to 1200 to 2200
TEMPERATURE GRADIENT	¡C ¡F	+/- 5 +/- 9
TYPICAL INTERNAL DIMENSIONS	mm in	90 mm bore diameter, 400 mm tall 3.5 in bore diameter, 15.7 in tall
TYPICAL EXTERNAL DIMENSIONS	mm in	303 mm diameter 400 mm high 11.9 in diameter, 15.7 in high
POWER		110/220 VAC, 50/60 Hz, 3kW 1ph

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