

Rheometers

Solids clamping tool for performing DMTA with rectangular specimens

For HAAKE MARS iQ Rheometer Series with temperature chamber

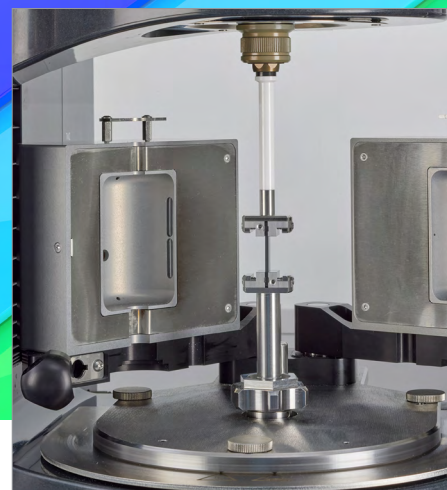


Figure 1: HAAKE MARS Rheometer with TM-CR-O450 temperature chamber and solids clamping tool for rectangular specimens.

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Keywords

HAAKE MARS iQ Air Rheometer series, TM-CR-O450 temperature chamber, solids clamping tool, rectangular specimens, dynamic mechanical thermal analysis (DMTA), DIN/ISO 6721-1, injection molding machine

A solids clamping tool for measurements according to DIN/ISO 6721-1 is available for the Thermo Scientific™ HAAKE™ MARS™ iQ Rheometer Series in combination with the temperature chamber TM-CR-O450 (Figure 1).

This tool consists of an upper and lower clamp, each equipped with two adjustable jaws that guarantee flexibility when working with various sample thicknesses and surface properties. Rectangular specimens with 1.0 to 14.0 mm widths, thicknesses from 0.15 to 7.0 mm, and lengths up to 62 mm can be tested with the solids clamping tool. The jaws are easy to remove for cleaning and exchange. Jaws with different surface profiles for different sample stiffness (soft, medium, hard) are available.

The height of the lower clamp can be adjusted to ensure that each specimen is centered within the oven. This guarantees that samples of different lengths are homogeneously tempered with minimal temperature gradients. An adjustable temperature sensor assures that temperature is measured in close proximity of the sample center.

Figure 2 shows the results of a dynamic mechanical thermal analysis (DMTA) of a polycarbonate (PC) sample performed with the solids clamping tool. For this purpose, specimens with dimensions of 50.0 mm x 10.0 mm x 2.0 mm were produced with a suitable mold with the HAAKE MiniJet Pro Injection Molding Machine (Figure 3).¹

Detecting the maximum of the loss modulus G'' is a frequently used method to determine a single value for the glass transition temperature of a sample in DMTA. For the PC sample, this method identifies the glass transition temperature at 138 °C.

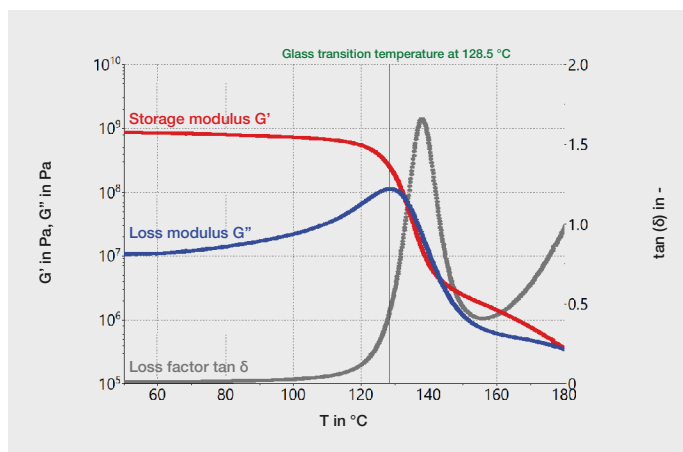


Figure 2: Dynamic mechanical thermal analysis with polycarbonate (PC).

References

1. 623-2086 product specifications "Thermo Scientific HAAKE MiniJet Pro Piston Injection Moulding System"



Figure 3: HAAKE MiniJet Pro Injection Molding Machine with selection of molds.

Ordering information

Description	Cat. No
Solids clamping tool and related accessories	
Solids clamping tool for TM-CR-O450 consisting of lower holder SCL 1-14 R-O/SS, upper holder SCU 1-14 R-O/SS with "Connect Assist" including jaws for medium samples	222-2537
Jaws for soft samples (4 pieces)	222-2427
Jaws for medium samples (4 pieces, spare parts)	222-2428
Jaws for hard samples (4 pieces)	222-2429

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