

# M034

# HDT Vicat Tester – 1 to 3 stations

Standards: - ISO 75 – ASTM D648 - Temperature of deflection under load  
 - ISO 306 – ASTM D1525 - Vicat test

## Introduction

The Mi-Tech HDT-Vicat Tester has been designed for simple and independent control of plastics, according to the referred standards.

The operation requires little training. The instrument allows the measurement of changes in stiffness of a material (polymer, composite ...) at elevated temperature levels. Also the performance of different materials can be compared on criterion of mechanical strength in temperature.

This instrument is primarily a tool of control, performing HDT or Vicat tests, by simply changing some accessories

## Features

### Instrument:

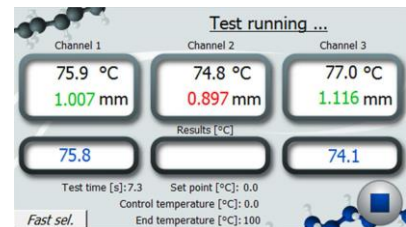
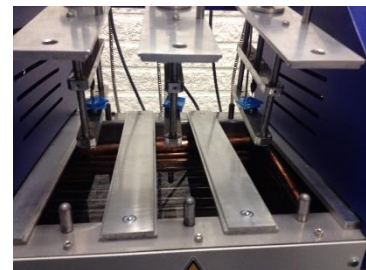
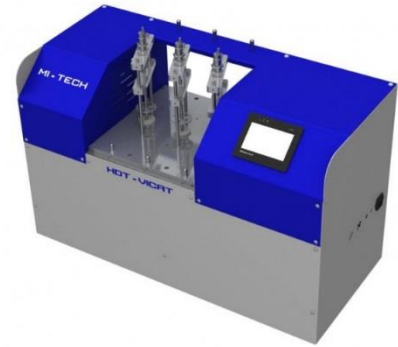
- ⊕ Stainless steel bath. Isolated for limiting heat loss and protection against burns.
- ⊕ Two heating elements
- ⊕ Cooling system based on tap water. Manual operation standard. Automatic operation as an option
- ⊕ Valve for easy removal of the oil.
- ⊕ PID controller connected to a PT100, for assuring an accuracy of 0.1°C bath temperature.
- ⊕ Stirring mechanism to homogenize the bath temperature

### Control panel:

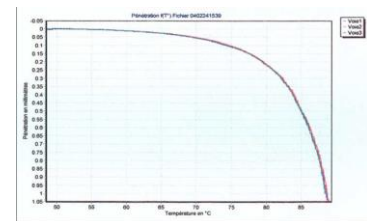
- ⊕ Easy to operate touch screen for configuration of test parameters (thermal ramp, alarm, detection limit, automatic cooling, etc.)

### Test Rigs:

- ⊕ Accuracy of travel, 10 microns
- ⊕ Non contact displacement sensor
- ⊕ Removable, precise fitted base plate
- ⊕ All parts, subject to temperature variations are made of Invar (uniquely low coefficient of thermal expansion)
- ⊕ Individually fitted with PT100, accuracy 0.1°C
- ⊕ HDT or Vicat weights included



Touch screen control



Software screen shot

## Specifications

Power supply: 230V, 50Hz	Temperature Range: Ambient +10 – 300°C
Consumption: Max. 2300 Watt	Temperature resolution: 0.1°C
Cooling: Tap water	Displacement range: 4 mm – Accuracy: 10 µm

## Options

Automatic Cooling	PC and Software control
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Dimensions and weights:	Instrument - 1 station	Instrument - 2 stations	Instrument - 3 stations
Bath volume	13 tot 15 l	15 to 20 l	20 to 25 l
Dimensions (cms.)	45 x 48 x 55	45 x 48 x 70	45 x 48 x 82
Weight (kg)	29	37	45

## Test principles

The measurement principle is simple: to determine the temperature at which a sample under a given load is softened to allow a decrease in 3-point bending (HDT) or depressed (Vicat) of a needle.

The samples are placed in a thermostatic bath equipped to impose a temperature ramp. An electronic system continuously measures the descent of the load placed on the specimen, and stores the temperature corresponding to the criterion used.

During the test, the values of temperature and deflection, can be recorded at regular intervals of time (or deflection)

### HDT Test (Heat Deflection Temperature)

Also known as "temperature of deflection under load" which involves placing the sample (3) 3-point bending (1), immersed in an oil bath.

This sample receives a constant load (2), while applying a temperature ramp of 120°C. h-1 (4).

The temperature HDT is reached when the sample surface reaches a standard angle.

The charges applied through the tip on the sample are: 1.8 MPa, 0.45 MPa and 8 MPa.

### Vicat Test

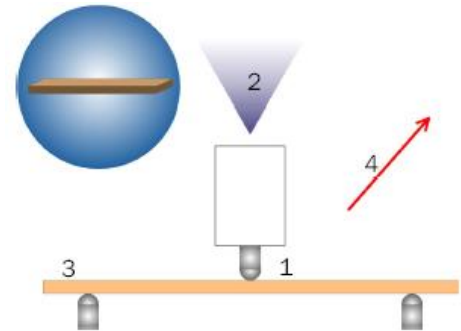
The sample, immersed in an oil bath, is laid flat, and receives a constant load through a rod of 1 mm<sup>2</sup> crosssection.(1).

The bath temperature is increased linearly from 50°C.h-1 (4).

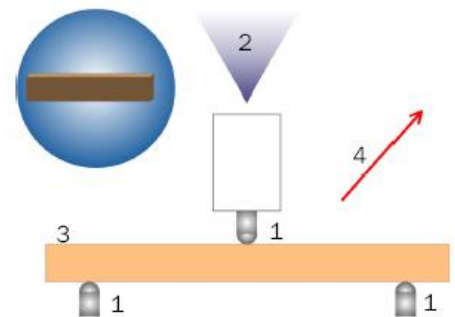
The Vicat temperature is reached when the rod has penetrated 1 mm into the sample.

The charges applicable (2) of the sample (3) via the tip is: 1.8 MPa or 0.45 MPa.

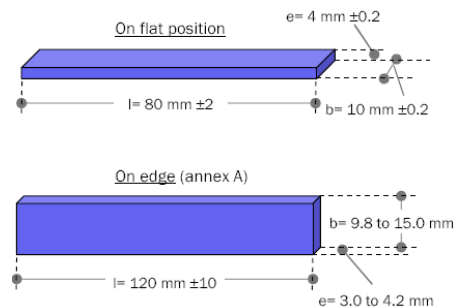
#### HDT –test in flat position



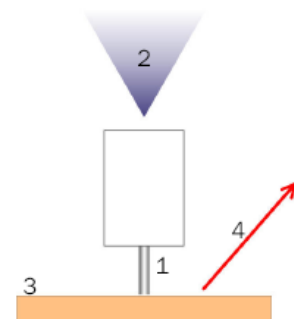
#### HDT – test on edge



#### HDT - Sample dimensions ISO 75



#### Vicat – test



#### Vicat - Sample dimensions ISO 306

