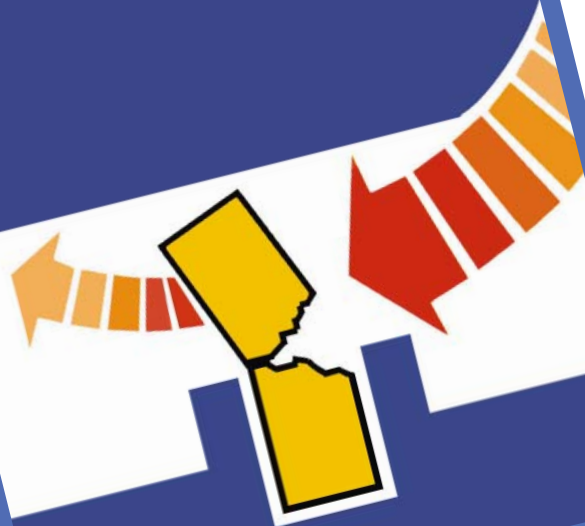




# STRAINVIS



DESIGN AND PRODUCTION OF  
INSTRUMENTS AND APPARATUS  
FOR QUALITY CONTROL  
ON MATERIALS



These instruments are made in  
compliance with CE health and  
safety requirements



**Introduction**

The CEAST Strainvis is designed in order to carry out determination of the tensile, compressive, flexural creep and creep rupture of plastics, rubber and composite polymer. By means of the STRAINVIS it is possible to measure the extension, compression or deflection as a function of time; and the time to rupture or failure of a specimen subject to a constant load at a specified temperature.

The Strainvis, the state of the art on creep tests, has been designed with a modular 5 stations conceptions. In a very easy and user-friendly way it is possible to interchange the working stations with different combinations of tensile, flexural and compression creep.

The CEAST Strainvis represents the best solution in order to predict the creep modulus and strength of materials under Long-term loads. This CREEP TESTER is used to predict dimensional changes that may occur, as a result of tensile, compressive and flexural loads, when the material will be used on service conditions.

Data from these 4 methods can be used either in research or in quality control in order to compare material, to design final products, and to characterize plastics for long term performance under constant Load.

**Principle of Creep Methods**

The principles of tensile, compressive, and flexural creep methods are stated hereafter the most important international standard organization.

All these international standards apply the following definitions:

- **compression** - the decrease in length produced in a test specimen during a creep test
- **deflection** - the change in mid-span position of a test specimen during a creep test
- **extension** - the increase in Length produced in the gage length of a test specimen during a creep test
- **creep modulus** - the ratio of initial applied stress to creep strain.
- **creep strain** - the total strain, at any given time, produced by the applied stress during a creep test
- **stress** - the ratio of the applied load to the initial cross-sectional area, or the maximum stress in the outer fibers due to an applied flexural load.



The way to express and to calculate the results is described in the international standard documents.

**Standards**

The CEAST Strainvis has been designed to meet the following standards: ISO, 178, ISO 899, ASTM D 638, ASTM D 2990, DIN 53441, DIN 53444, DIN 53452, DIN 53455, NF T 56-120 and other equivalent.

**Technical Features**

- Working temperature range: +30 ÷ +150°C
- Thermic stability: ±1°C
- Working stations: 5, independent one from the other
- Variable load (for each stations): min. 5 N; max. 500 N, step 5 N (directly applied load)  
min. 500 N; max. 5000 N, step 50 N (with load amplification 10:1)  
according to the above mentioned standards
- Specimen:
- Maximum detectable specimen deflection: 10 mm
- Resolution: 0.01 mm

**Design Characteristics**

The equipment consists of:

- 1 thermostatic chamber
- 5 independent strain measures devices, one for each sample
- 5 load application devices
- Control panel

## Modular Stations

The determination of tensile, compressive and flexural creep is obtained by means of interchangeable modular stations:

### Tensile Creep

The Tensile Creep is the time dependent strain resulting from a tensile stress.

#### Specimen dimensions:

- Overall length min. 110 mm; max. 170 mm
- Thickness max. 6 mm
- Width at ends max. 32 mm
- Initial distance between grips max. 120 mm; min. 60 mm

Test specimens for tensile creep measurement shall be either type I or type II as specified in method ASTM 0 638.

In addition, specimens specified in ISO 899 or other equivalent standards can be applied.

### Compressive Creep

The decrease in length produced in a test specimen during a creep test is defined: the time dependent strain resulting from a compressive stress.

#### Specimen dimensions:

- Diameter max. 28 mm
- Height max. 18 mm

Test specimens for compressive creep may be suitably prepared in the manner described in ASTM D 2990 or any other equivalent method.

### Flexural Creep (three points bending)

The increase of strain with time when a constant stress is applied on a three points bending geometry

#### Specimen dimensions

The test specimen shall have constant rectangular cross-section.

- Length max. 200 mm
- Width max. 25 mm
- Thickness max. 28 mm
- Specimen supports span min. 10 mm; max. 140 mm

## Electronic Strain Measuring Devices

Strain measuring devices are independent for each station and can be used in conjunction with any testing device (tensile, compression or flexural).

The specimen deformation is detected by high precision LVDT sensors, used data are recorded and analysed.

### Software cvSTRAIN - code 0710.450

The software, based on Ceast View platform, manages the whole test.

All the parameters which characterize the test, group of up to five different measuring stations, are asked as input parameters in two different steps: in the first one the parameters of the whole test (operator, temperature, number of points for decade in the acquisition - according to a logarithmic watch), in the second one those of each station (material, failure identification, stress condition, specimen dimensions, mass applied). In output, the software elaborates the data stored providing, for each measure, in addition to the failure time (if failure happened) the curves: **creep strain vs Log(time)** and **creep modulus vs Log(time)** and the relevant values. In order to document the temperature during the test (as required by ISO 899), the software provides also a curve **temperature vs Log(time)**.

All the performed measures are collected in a specific database according to CeastVIEW.

Separate leaflet available.



### Ancillary Equipment

- 6800.001 Device with clamps for tensile testing complete of small shoulders
- 6800.002 Device for creep testing in 3 points flexion
- 6800.003 Device for creep testing in 4 points flexion
- 6800.004 Device for creep testing in compression
- 0203.735 12-channels steps recorder

### Technical Characteristics

Overall dimensions (LxDxH) [mm]	2050 x 850 x 1900
Weight [kg]	550 (plus 250 additional weights)
Supply	230 V - 50 Hz - Singlephase (110 V - 60 Hz on request)
Power [W]	5000
Paint	fuchsia RAL 4006 - gray RAL 7035

"Due to the continuous development policy of CEAST's Research and Development Department, changes may be introduced without notice"



[www.ceast.com](http://www.ceast.com)



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