

DART TESTER



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



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



Dart Tester - code 6990.000 - 6992.000

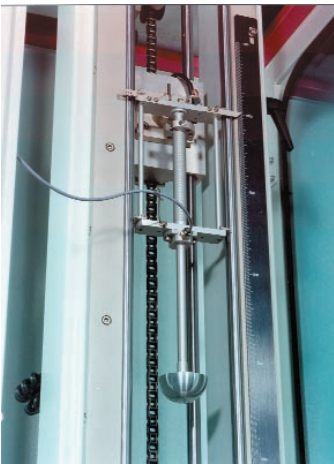
Top Falling Weight Impact Tester



Basic apparatus code 6990.000
with control cabinet for non
instrumented impact tests



Complete apparatus code 6992.000
with environmental chamber for
instrumented impact test



Detail of striker and holder

Scope

The Dart Tester code 6990.000 is a bench floor type falling weight impact system designed to perform impact tests both instrumented or non instrumented, in order to determine impact resistance of film, rigid sheets, or small components, at room temperature.

The Dart Tester code 6992.000, besides the features and performances offered by the model code 6990.000, it can carry out tests in a conditioned environment from -40°C to +100°C using liquid Nitrogen or an heating element respectively. A built-in fan guarantees uniform temperature distribution within the chamber. The instrument is equipped with a special software module which, using the data obtained by performing the test at different temperatures in the environmental chamber, provides a temperature transition analysis to establish brittle-ductile transition in relation to temperature.

With selectable drop height, variable masses, and a range of strikers and clamping possibilities, the Dart Tester allows to explore, improve and demonstrate the impact performance of your products or your raw materials. The Dart Tester allows the user to perform instrumented or statistical impact testing on all kind of samples, and it features an energy level up to 50 Joules and an impact speed up to 4.43 m/s. The pneumatic sample clamping force is constant, which increases the repeatability of test results.

The Dart Tester can perform Charpy tests, using a special support for Charpy specimens and a Charpy instrumented striker.

Standards

Designed and built to meet the following standards:
ISO 179-2, ISO 6603-1/2, ISO 7765-2, ASTM D 3763, ASTM D 4272, ASTM D 5628, DIN 53443-1/2 and other equivalent.

Main features

Impact energy: up to 50 Joules

Impact velocity: up to 4.43 m/s

Falling height: up to 1000 mm

Falling mass **minimum:** 510 g (obtained with the light striker holder code 6990.005 and the lightest striker (170 g) code 6990.906)

maximum: 5050 g (obtained with the heavy striker holder code 6990.030, its whole set of additional weights code 6990.050 and the heaviest striker (290 g) code 6990.909)

Safe and sound

The falling dart is guided by twin calibrated steel columns and impact energy is released directly through the specimen and its support system. That gives maximum structural strength and minimum dynamic interference. Protection doors with micro-switches allow easy and safe access to the upper and lower chambers. Striker release is activated by secure double push buttons, and residual energy after impact is absorbed by special shock absorbers.

Automatic striker pick-up

The drop height is selectable through a positioning micro-switch, and after one impact the striker will be collected and positioned automatically ready for the next impact. The Dart Tester uses a motoreducer and chain for striker control which means greater positioning precision than cables which tend to slip and/or stretch.

Range of strikers and impact masses

The broad range of forces applied in impact testing requires specific mechanical design solutions. CEAST has designed low energy light weight striker holders for low energy testing (code 6990.005), for example to carry out tests on films; as well as tough heavy weight striker holders (code 6990.030) to reach maximum energy.

Interchangeable strikers are available in different geometries in both instrumented and non-instrumented mode.

Instrumented strikers may be strain gauge or piezo-electric and are produced in various force ranges. Each striker can carry a set of weights to change the level of impact energy.

Specimen clamping

Different specimen clamping systems allow the user to place and hold different kinds of samples, films or sheets, pipes, rigid specimens and even finished products.

Two pneumatic cylinders move a plate down, holding the samples against the specimen support.

Adjustable height specimen support - code 6990.025

A specially designed adjustable height support facilitates tests on different kinds of samples, without changing the point of impact. Specimens with different thicknesses can be easily tested just varying the support height, without further regulations of the instrument. In this way, the impact energy drop height and speed remain unchanged.

Interchangeable clamping sets

Consisting of two interchangeable clamping rings of a certain diameter, according to different specimen dimensions and standards. One of the rings is mounted on the specimen support and the other on the upper clamping plate, allowing clamping of any kind of specimen. These optional sets are selected according to user needs.

Instrumented and statistical tests

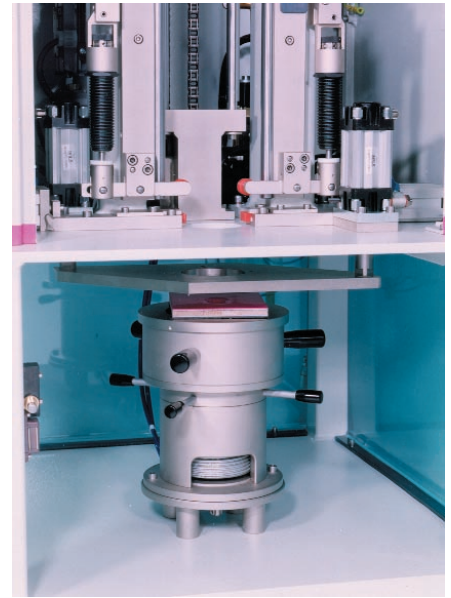
The Dart Tester can perform simple "pass-fail" tests using the basic instrument and non-instrumented striker, and/or instrumented tests for real impact analysis using the basic instrument and a wide range of instrumented strikers connected to the CEAST Data Acquisition System DAS 4000 (code 6566.000). (See also the DAS 4000 leaflet for full information about the software).

Main standard features

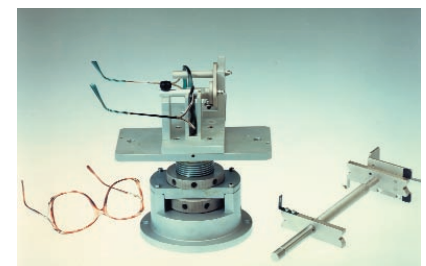
- Automatic striker re-positioning
- Pneumatic clamping plates
- Residual energy shock absorbers
- Safety system
- Double switch for striker release

Main optional features

- Das 4000 instrumented impact system
- Environmental chamber
- Anti-rebound device
- Velocity photo detector
- Device for Charpy impact test



Adjustable height support and clamping system



Special supports for finished products (on request)

Ancillary equipment

Striker holders

- Interchangeable light striker holder (340 g) code 6990.005 - For film tests
- Interchangeable heavy striker holder (560 g) code 6990.030 - For sheet tests or equivalent

Strikers

Diameter [mm]	Description	Non Instrumented code	Instrumented code	Range [N]
12.7	hemispheric head for film	not available	6990.906	1.000
12.7	hemispheric head for rigid specimens	6990.952	6990.902	3.000
12.7	hemispheric head for rigid specimens	not available	6990.907	10.000
20	hemispheric head for rigid specimens	6990.953	6990.909	3.000
20	hemispheric head for film	not available	6990.903	1.000
20	hemispheric head for rigid specimens	not available	6990.908	10.000
38.1	hemispheric head for film	6990.954	6990.904	1.000
50.8	hemispheric head for film	6990.951	6990.901	1.000
	Charpy-Din	not available	6990.910	6.000

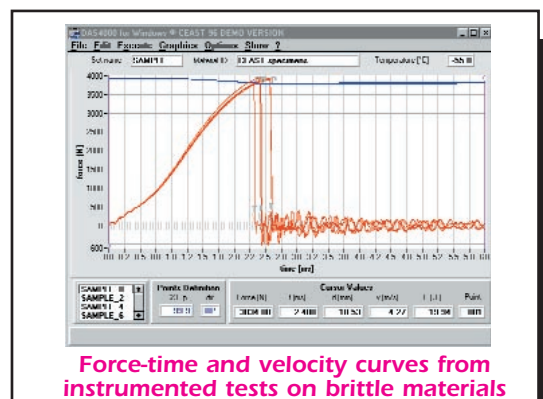
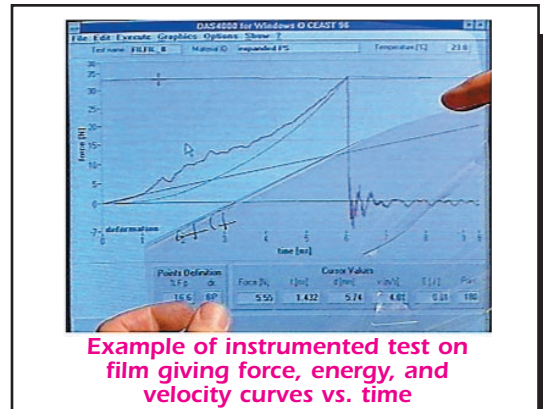
Additional weights

- Set for the light striker holder:
code 6990.040 - N° 2 x 5 g, N° 6 x 15 g, N° 1 x 100 g, N° 1 x 200 g
- Set for the heavy striker holder:
code 6990.050 - N° 3 x 100 g, N° 2 x 200 g, N° 7 x 500 g

Supports

Anular rings		
Internal diameter [mm]	Description	Code
40	for rigid specimens	6990.801
40	for film	6990.811
60	for rigid specimens	6990.802
60	for film	6990.812
76	for rigid specimens	6990.803
76	for film	6990.813
Must be used with the adjustable support for film and sheets code 6990.025		

Special supports	
Description	Code
For bending Impact Tests (Charpy)	6990.018
For film clamping complete with film ring clamping device - diameter 127 mm	6990.015



▪ Velocity photodetector code 6990.007

Option to be used when true impact velocity is needed in conjunction with data acquisition system. Complete flag to be mounted on striker. To be used with antirebound device code 6990.006

▪ Antirebound device code 6990.006

To be used only when one strike is required e.g. first damage tests. It is activated through photo-detector code 6990.007. Automatic release when striker is lifted up.

Technical Data		
Overall dimensions (L x D x H) [mm ³]	basic apparatus	560 x 600 x 1950
	control cabinet	420 x 580 x 180
Weight [kg]	basic apparatus	200
	control cabinet	40
Supply	380/220 V - 50/60 Hz - Threephase	
Power [Kw]	0.5	
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"



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