



CCSi features the Gibitre™ Temperature Retraction (TR) and Brittleness Point Tester for the evaluation of the effects of crystallization and for the comparison of the viscoelastic properties of rubber and rubber-like materials at low temperatures, as described in [ASTM D1329](#), “Standard Test Method for Evaluating Rubber Property—Retraction at Lower Temperatures (TR Test).” **NOTE 1**

The instrument is also designed for the determination of the lowest temperature at which rubber vulcanizates and rubber coated fabrics will not exhibit fractures or coating cracks when subjected to specified impact conditions, as described in [ASTM D2137](#) “Standard Test Methods for Rubber Property—Brittleness Point of Flexible Polymers and Coated Fabrics.” **NOTE 2**

The Temperature Retraction (TR) and Brittleness Point Tester is also employed for the determination of the temperature at which plastics and elastomers demonstrate failure (by impact) when brittle, as described in [ASTM D746](#) “Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.”

CCSi manufactures the test specimen cutting dies for [ASTM D746 Types I, II, and III](#), [D1329 \(25, 38, and 51 mm\)](#), and [D2137 Types A and B](#).

NOTE 1

Related Methods, Temperature Retraction (TR) Test:

- ISO 2921
- BS 903-A29 (UK)
- NF T4NF T46-032 (France)

NOTE 2

Related Methods, Brittleness Point Test:

- ISO 812
- DIN ISO 812 (Germany)
- BS 903-A25 (UK)

The Gibitre™ Temperature Retraction (TR) and Brittleness Point Tester features PC controlled operations and Microsoft Windows® based operating software. In both testing procedures, the entire testing cycle is precisely controlled by the PC.

The electro–mechanical and pneumatic mechanisms greatly simplify the testing procedures, reducing technician intervention and producing accurate, precise and reliable results. The PC acquires and stores test data and performs enhanced test functions.

Other features include: digital electronics, integral apparatus for conducting both temperature retraction and brittleness point tests, automatic PC controlled “start–to–finish” test cycles, 5 litre testing chamber and a self contained thermostatic bath which may be cooled by either liquid nitrogen or carbon dioxide.

Additional features include conveniently located instrument controls, status indicators and a large backlit LCD data / function display.

The acquisition and storage of data allows the creation of a referential database for subsequent development of production control, R&D, and QC/QA applications.



Gibitre™ Temperature Retraction (TR) and Brittleness Point Tester: Features

Instrument:

- Cooling of test bath carried out with Liquid Nitrogen using internal heat exchangers or with dry ice (carbon dioxide);
- Bath temperature control by means of thermoregulator with PID microprocessor with 0.1 C° accuracy;
- 5 litre capacity 404 stainless steel testing chamber equipped with mixer to ensure the thermal uniformity of the test bath;
- Air Pressure Control system with filtering and lubrication of compressed air.

Temperature Retraction Test (TR Test):

- Automatic reading of retraction of six samples with 0.25 mm resolution;
- Pneumatic locking and release of test samples during the test;
- Pneumatic system for raising and lower of the sample holder.

Brittleness Point Test:

- Pneumatically operated piston with a pressure regulator to adjust the striker speed, dependent upon on the number of samples and the density of the cooling medium;
- Selectable Striker clearance of 4.8, 5.2 or 6.4 mm;
- Sample holder for as many as 10 test specimens.

Control System for Temperature Retraction (TR Test):

- Automated test cycle with temperature adjustment and automatic release of the samples on termination of the conditioning time;
- Graphical representation of the Retraction Curve for each samples (6) and of the bath temperature;
- Testing of different samples with varying percentages of elongation during the same test cycle;
- Calculation of significant test results for individual samples;
- Calculation of average and standard deviation for each group of samples tested;
- Setting of tolerance limits for conditioning temperature to verify correct pre-start conditioning.

Control System for Brittleness Point Test:

- Manual entry of test result on each sample at a defined test temperature;
- Automatic adjustment of temperature for next test.

Gibitre™ De Mattia Immersion Type Flex Tester: Specifications

Test temperature:	0 – 120 C° (dependent on heat transfer media)
Data Output:	TR Test: <ul style="list-style-type: none"> · TR10, TR30, TR50, TR70, TRx1 & TRx2 · Calculated TR points: t10, t30, t50, t70, tx1 & tx2 (tx1 / tx2 are user defined points) Brittleness Point Test: <ul style="list-style-type: none"> · Test temperature
Data Display:	<ul style="list-style-type: none"> · % Retraction vs. Temperature Curves for each sample · Temperature vs. Time
Temperature Control:	PID with ± 0.1 C° accuracy
Cooling System:	Liquid nitrogen with internal heat exchangers or CO ₂ (dry ice)
Test Chamber:	5 liter, 404 Stainless Steel with mixer
Test Bath:	Methyl Alcohol – Silicon Oil
Sample Holder:	<ul style="list-style-type: none"> · TR–Test: 6 samples · Brittleness Point Test: 10 Samples
BP Test Striker:	<ul style="list-style-type: none"> · Striker with automatic or manual start · Pressure regulator for pneumatic piston
Insertion/Extraction:	Pneumatic system for TR Test
Power:	220 VAC ± 10%, 1 PH, 50 ± 3 Hz, 4 Amp
Power Consumption:	600 Watt
Air Supply:	6 bar (~87 psi), Filter/Regulator/Lubricator Required
Dimensions (W x D x H):	540 x 540 x 2200 mm (21.3 x 21.3 x 86.6 in.)
Weight:	235 kg (518.2 lb.)
List Price:	Please Submit a Request for Quotation (RFQ)

Copyright © 2006 CCSi, Inc. • All Rights Reserved • Published February, 2006