Elastocon®

Testing with precision

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SWEDAC ACKREDITERING 1678 ISO/IEC 17025

Our calibration lab is accredited by Swedac

SP Certified ISO 9001

Elastocon manufactures instruments for testing of rubber and plastic materials.

- Specimen preparation
- Ageing ovens
- Stress relaxation and creep
- Low temperature testing
- Windscreen fogging
- Computerised testing
- Electrical tests
- Custom built instruments
- Calibration service

Cell Ageing and Cabinet Ovens

for precision ageing of rubber and plastic materials

Cell Oven EB 01, with four cells, single temperature and **Cell Oven EB 07,** with three cells, individual temperature control. The test piece holder in each cell can take up to 24 standard test pieces.

The high temperature accuracy is achieved by using an aluminium block with channels for pre-heating the air.

Cabinet Ovens EB 04 and EB 10.

Ideal for ageing finished products and large test pieces which are unsuitable for cell ovens.

The excellent temperature stability and distribution is achieved by using an inner chamber with a controlled air flow.

EB 04 with connection to external compressed air and flowmeter and **EB 10** with a factory set throttle to give a fixed air exchange rate of 7 or 12 changes per hour.

All Elastocons Ovens meet or exceed the requirements in IEC 811 and ISO 188

New generation Ageing Ovens

Elastocon have now launched a new range of ovens which incorporate a number of improvements. The most obvious difference is the use of a small PLC with a colour touch screen.

New model are EB 01-II, EB 04-II, EB 10-II and EB 12-II

Changes compared to previous model are:

- Improved insulation
- Lower surface temperature
- New touch screen control utilising a micro PLC
- Countdown timers.
- Alarm history.
- Test names can be given.
- Improved door with new hinges and two point locking.
- Improved door sealing.
- Easier shelf installation and removal.
- New four glass window

New Ageing Ovens with colour touch screen

Stress Relaxation System

for testing stress relaxation

Relaxation system for continuous measurement in either compression or tension. Meets the requirements in ISO 3384, ISO 6914 and ASTM D6147.

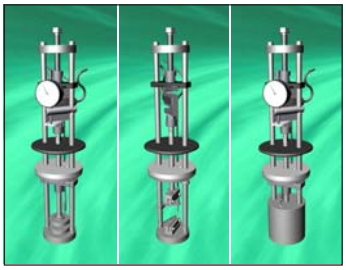
The relaxation rigs are used in combination with the cell ageing ovens EB 01 or EB 07 or our new range of ovens when testing at elevated temperature.

Relaxation rigs arranged for different test methods.

Rig 1 is arranged for testing in compression according to ISO 3384.

Rig 2 is arranged for testing in tension according to ISO 6914 method A.

Rig 3 is arranged for testing in liquid according to ISO 3384.



Sealed container for testing of Stress Relaxation in liquids

New Cell Ovens for Stress Relaxation

We have now developed versions for use in relaxation testing.

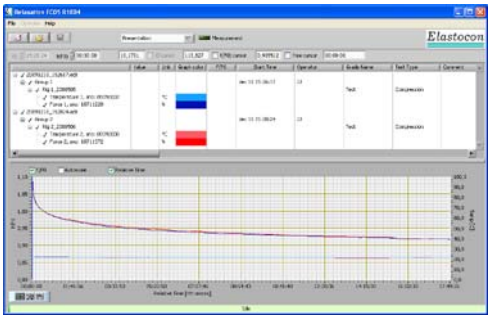
The height of these ovens is lower and incorporates an integrated draught hood, to eliminate variation in force measurements due to temperature and air effects.

The ovens are available in the following versions:

- 4 cells with individual temperature control (EB 21)
- 6 cells with individual temperature control (EB 22)
- 6 cells with the same temperature and cycling between - 40 °C to 250 °C (EB 17)
- 4 cells with the same temperature control (EB 23)

New software for Relaxation Testing , EC 05

This new software evaluates results from relaxation tests according to ISO 3384 and ISO 6914. The software is user friendly and many functions can be done by a mouse click.



Automatic Creep and Relaxation Tester, EB 18

We have further developed our creep and stress relaxation systems into a combined creep and relaxation instrument.

The instrument is based on our triple temperature oven EB 07, which means that each test station can run with an individual temperature.

The test rigs are based on our relaxation rig EB 02, but lowering and raising of the rigs is motor driven. The compression or tension of the samples is also motor driven with a servo motor.

The instrument has displacement resolution of 0,0001 mm with an accuracy of 0,003 mm and can be equipped with load cells from 100 N to 2 000 N.

Low Temperature Testers

For rubber materials there are four important standardized test methods for Low Temperatures.

Elastocon Brittleness Tester, ET 05, for automatic determination of Brittleness point according to ISO 812, ISO 974, ASTM D746 and ASTM D2137. The brittleness tester is designed as a computerized falling weight tester, where the speed is set by the height and the energy by the attached weights.

The test rig is raised by a pneumatic cylinder.

Brittleness Tester

TR Tester

Elastocon TR Tester, ET 01, for determination of low temperature characteristics by the temperature retraction procedure according to ISO 2921 and ASTM D1329.

The Elastocon TR Tester, has 6 test stations, is computerized and performs the test automatically after the cooling media has been cooled down and the samples have been mounted. An automatic release of the samples, after the precooling period, is included.

Gehman Tester

Elastocon Gehman Tester, ET 02 for determination of the relative stiffness characteristics of vulcanized or thermoplastic rubbers, also called the Gehman procedure. The test is done according to ISO 1432, ASTM D1053, or technical equivalent standards.

The Elastocon Gehman Tester, has 6 test stations, is computerized and performs the test automatically.

Combinations

The TR-Tester, Gehman Tester and Brittleness Tester can be combined using the same base unit and a rig changing system.

The combined instrument consists of a base unit with a cooling bath and the electronics. The three different test rigs are then mounted on a carousel. No lifting is necessary when switching from one method to another.

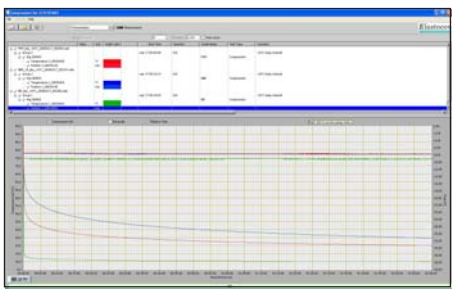
An automatic computerised Low Temperature Tester increases the precision up to 5 times. The capacity will also increase by about 50 % and not least the labour time will decrease about 75 %

Combinations

Low Temperature Compression Set, EV 09 ISO 815-2

By using our special compression rig you can now perform low temperature compression set without opening the deep freezer and without touching the test piece.

Uncertain results due to temperature influence is no longer a problem.



Low Temperature Compression Set (LTCS) This software can monitor the temperature during the test time and records the recovery when the test piece is released.

Windscreen Fogging Tester

Determination of fogging characteristics of trim materials in the interior of automobiles

EB 03 Equipment for determination of windscreen fogging according to ISO, DIN, ASTM and other automotive standards. The equipment has a compact design with the heating bath and cooling bath integrated in one casing.

For cooling the water bath, the instrument can be connected to tap water of max 18 °C. If the tap water is too warm, a model EB 03C can be supplied with a built in cooling system with Peltier elements.

Accessories

In parallell with a fogging test, a control test with the reference liquid DIDP shall be made to determine the fogging value.

A suitable balance for gravimetric tests with 0,00001 g

Glossmeter Erichsen, Picogloss 560 MC

Film Creep Tester

Film Creep Tester EB 24 based on our Ageing Oven EB 10-II with a digital ruler system including a line laser pointer for manually measuring the creep.

The ruler is connected to a computer and the values are fed into an Excel template which calculates the result and presents the graphs.

- Controlled air flow, 14 air changes /hour.
- Window, w x h 370 x 300 mm.
- Hooks to hang 10 test pieces 25 x 100 mm.
- Measuring system with laser pointer, 0,01 mm resolution, to measure elongation, range 300 mm.
- Software to feed the data into an Excel template. Template included. This means the data is fed into an Excel template by pressing a button on the measuring scale. The test result is then calculated by the Excel template.
- PC computer with Win XP Pro and Office software included.
- 10 Sets of grips to attach to the test pieces, together with weights, 1,3 kg and 2,3 kg.

Hot Set Tester

Oven for determination of Hot Set according to IEC 811-2-1

EB 16-II is made for hot set testing of cable material according to IEC 811-2-1. To avoid too high temperature loss when inserting and cutting the samples, the samples are introduced through a small opening in the top of the oven. To get a suitable working height and not shake the samples during insertion, the oven is fixed and the sample holder moves up and down by a servo motor driven screw system.

The oven has a controlled air exchange rate and low air speed which can be controlled by a flow meter, meeting the requirements for ageing ovens in IEC 811.

Measurements are made through the window with a laser pointer mounted on a measuring scale placed on the door. The window can be taken apart for cleaning.

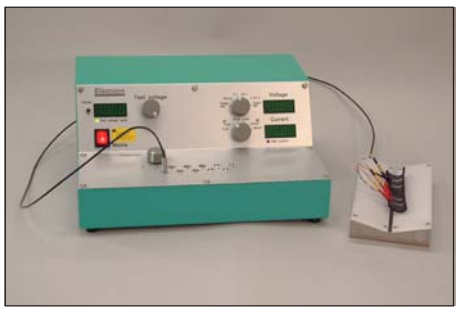
With a push on a button on the scale the measured values are entered in an Excel template, when measuring the elongation. The set is measured outside the oven with a digital caliper also connected to the computer.

A finished report can then be produced in Excel.

Resistivity Tester

Resistivity Tester, EE 01, for determination of volume resistivity on conductive and semi-conductive rubber materials, according to ISO 1853.

The instrument has an integrated differential volt-meter, built into the head of the electrodes and a very sensitive ammeter, together with a very high input resistance for the voltmeter. The measuring range is from 10^{-1} Ohm· m to 10^{8} Ohm·m



Resistivity Tester, EE 03, for determination of volume resistivity on semi-conductive cable materials, according to IEC 60502-2.

The instrument has an integrated differential voltmeter, built into the head of the electrodes and a very sensitive ammeter, together with a very high input resistance for the voltmeter.

Specimen Preparation

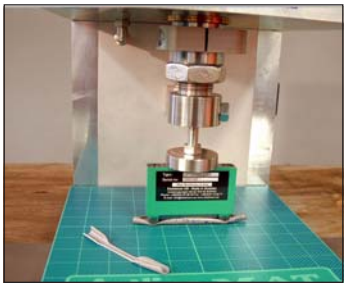
Pneumatic specimen Cutting Press EP 02 and Manual specimen Cutting Press EP 08, for preparation of test specimens of rubber and plastic materials, by punching. The cutting presses are small and and have a system for quick change of cutting dies. They stand on rubber feet and do not need to be attached to the table.

Cutting Press EP 02

Cutting Press EP 08

Using of cutting dies with a guiding rod

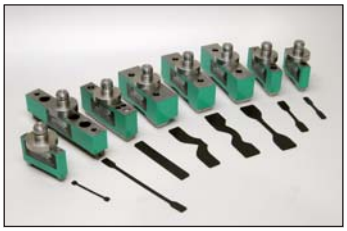
When cutting samples which curl and do not lie flat, the guiding rod (EP 04.04) can be used. The guiding rod makes it possible for the operator to manipulate the sample to optimise the cutting location.



Guiding rod

Specimen Cutting Dies

EP 04, are manufactured in both standard and special shapes. A special shank for mounting in presses EP 02 and EP 08 can be fitted. All cutting dies are now manufactured with an ejector plate, which helps the work and protects the edges and operator.



Specimen Cutting Dies

Rotating knives dia 10, 13 or 16 mm for making buttons

Various

EV 01, Thickness Gauge for thickness measurement according to ISO 23529 and compression set measurement according to ISO 815-1

Thickness Gauge EV 01

Compression Set Rig, EV 03, according to ISO 815-1.

The rig consists of two circular polished plates of stainless steel with a central screw and spacer.

The EV 03 fits in all the Elastocon Cell Ovens and is placed below the sample holder.

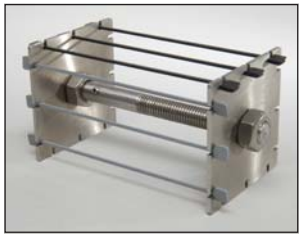
- Spacer set with spacers from 1 to 11,5 mm in 0,5 mm steps EV 03.01
- Spacer set from 0 to 11,9 mm in 0,1 mm steps EV 03.03

Compression Set Rig EV 03

Tension Set Rig EV 04, according to ISO 2285.

The Rig is made of stainless steel and can be adjusted from 25 to 100% extension.

The rig can easily be mounted on the sample holder of the Cell Ovens.



Tension Set Rig EV 04

New Lab Freezers

Elastocon freezing boxes have highly efficient insulation resulting in very slow temperature rise. The insulation also results in a large inner volume, which together with minimal outer volume saves space and gives low energy consumption. This provides less influence on the environment as well as the pure environmental friendly refrigerant.

ET 03 Low Temperature freezer -10 to -45°C suitable for compression set at low temperatures.

ET 07 Very Low Temperature freezer -30 to -60°C

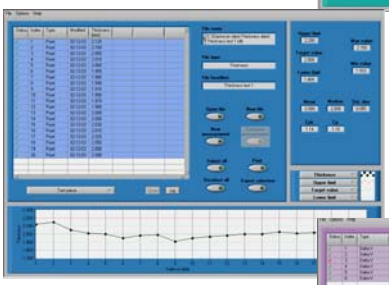
ET 04 Ultra low Temperature freezer -60 to -85°C suitable for cooling the liquid for Gehman, TR and Brittleness testers

Software

Hardness Software

The Hardness software EC 01 can be connected to several hardness testers from Wallace, Bareiss, Zwick and Durotech for all Shore and IRHD scales.

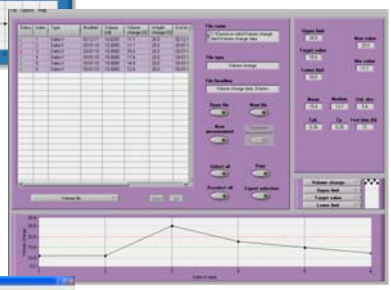
Thickness Software



The Thickness software EC 02 can be connected to Mitutoyo gauges.

Thickness measurements and calculations of compression set.

Balance Software



The Balance software EC 03 can be connected to Sartorius and Mettler balances, for measuring density, weight change and volume change.

Creep Software

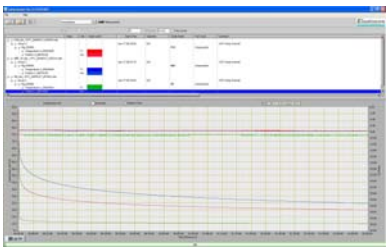
The Creep software EC 04 is a user friendly software as many functions can be made with a click of the mouse.

Creep on plastic materials can be done according to ISO 899 and similar standards.

Stress Relaxation software

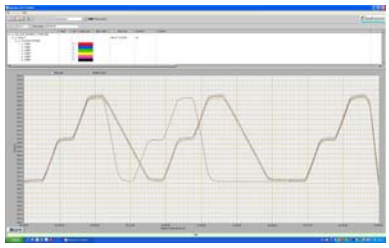
The Relaxation software EC 05 is a user friendly software as many functions can be done by a mouse click.

Low Temperature Compression Set



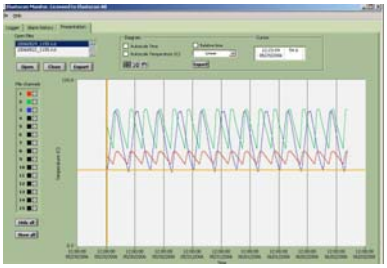
Low Temperature Compression Set (LTCS) EC 10 This software can monitor the temperature during the test time and records the recovery when the test piece is released.

Monitor Plus Software



EC 11 is a data monitoring software monitoring instruments such as ovens and laboratories for temperature and humidity.

Monitor Ramp Software

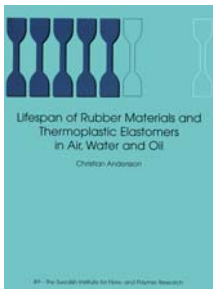


EC 07 is a software for monitoring temperatures and control program cycles in Elastocon Ovens over longer time periods.

Rubber literature

Lifetime estimation of Rubber materials

Abstracts and papers from 13 presentations during the seminar Oct 31 - Nov 1, 2000 Borås, Sweden



A Technical report of a five year ageing project

75 Rubber and TPE materials have been tested in air, water and oil up to five years at temperatures from 40 °C to 250 °C

ISO Rubber Standards

about 290 standards for

Products
Physical testing
Chemical analysis

A new CD-ROM every year

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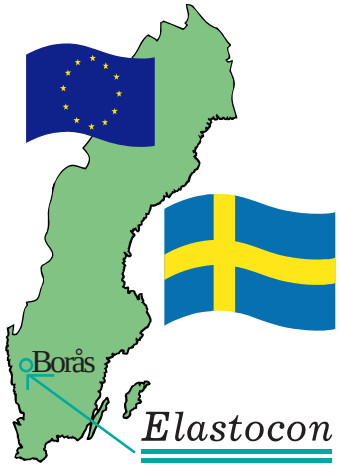

The history of Elastocon AB

Elastocon was founded in 1987 by Göran Spetz, who was then working at SP Technical Research Institute of Sweden as a research engineer. After two years in the family garage, Elastocon moved to the present location in Borås.

The first product was a system for measuring stress relaxation developed when ISO TC 45 developed the test method ISO 3384.

The second product was a cell ageing oven developed for precise heat ageing and testing of stress relaxation at elevated temperatures.

The third product was a fogging tester for the determination of windscreen fogging in automobiles.

After that Elastocon has developed about 80 new products from compression set rigs to automatic computerised instruments such as the TR-tester.

Göran Spetz has participated in the standardisation of rubber test methods since 1978 in the Swedish reference group and is a Swedish delegate in ISO TC 45 and convener in three working groups. This has given the company a lot of input and ideas for making testing instruments.

The objective of Elastocon is to manufacture instruments giving more reliable results than other instruments for existing test methods and to develop new instruments for new test methods, for rubber and plastic materials.