

### Elastocon AB

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Our calibration and testing services are accredited according to ISO 17025. We are also certified according to ISO 9001.



## Accredited contract testing services



**Elastocon performs contract testing and consultancy assignments in rubber and plastic. Our specialities are ageing tests, estimation of lifetime and testing of low temperature properties on rubber materials.**

We are accredited for 16 rubber testing methods, see the box to the right. It is Swedac, the Swedish Board for Accreditation and Conformity Assessment, that performs the accreditation. Swedac's website says the following about what it means:

*“To be accredited, skills, procedures and methods are tested so that all quality requirements are met as a standard. Next, Swedac check regularly that the company continues to meet the requirements for their accreditation.*

*The purpose of accreditation is to ensure that certification, inspection and testing is done with high quality and safety for life, health and environment. Accreditation means that inspections are performed impartial, accurate and based on internationally recognized standards.”*

*Elastocon's testing laboratory is accredited by Swedac for 16 rubber testing methods. We can also offer several other types of testing methods, mainly for rubber and plastics. With our accelerated weathering test equipment we also test other types of materials – read more about accelerated weathering tests on page 3.*

### Accredited rubber test methods in Elastocon's testing laboratory

<b>ISO 34-1</b>	Tear strength
<b>ISO 37</b>	Tensile stress-strain properties
<b>ISO 48-2</b>	Hardness IRHD
<b>ISO 48-4</b>	Hardness Shore
<b>ISO 188</b>	Accelerated ageing and heat resistance
<b>ISO 812</b>	Low-temperature brittleness
<b>ISO 815-1</b>	Compression set
<b>ISO 815-2</b>	Low temperature compression set
<b>ISO 1432</b>	Low-temperature stiffening (Gehman test)
<b>ISO 1817</b>	Resistance to liquids
<b>ISO 2781</b>	Density
<b>ISO 2921</b>	Low-temperature retraction (TR test)
<b>ISO 3384-1</b>	Stress relaxation in compression
<b>ISO 3384-2</b>	Cycling relaxation in compression
<b>ISO 6914</b>	Ageing characteristics by measurement of stress relaxation in tension
<b>ISO 11346</b>	Estimation of life-time and maximum temperature of use

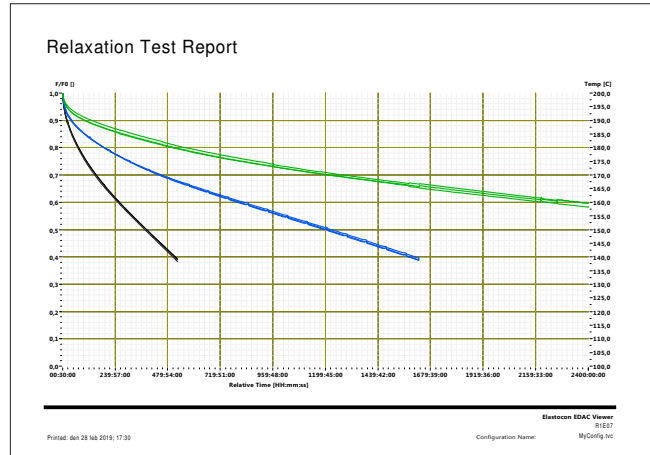


# Lifetime estimation of rubber materials

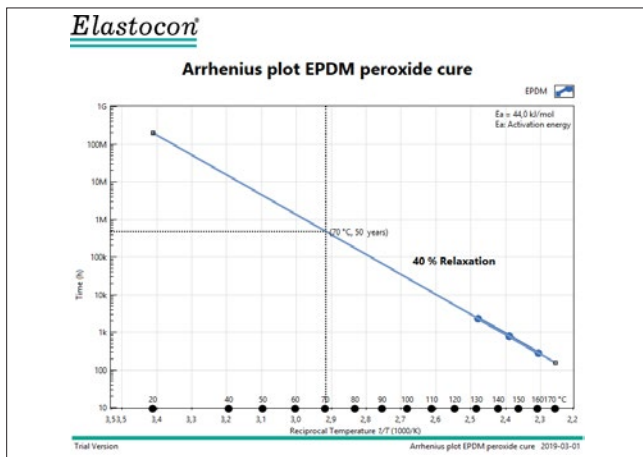
One of our specialties is lifetime estimation, especially of rubber materials.

The testing is performed at three different temperatures and a critical property is tested until the function is finished.

When testing rubber, it's common to use stress relaxation in either compression or tension. The times to reach the "end of life" time for each temperature will be plotted in an Arrhenius graph and the lifetime at lower temperatures can be extrapolated.



EPDM relaxation curves at three temperatures.



Arrhenius plot at 40 % relaxation.

## Standardisation

To participate in the standardisation of rubber test methods is important when working with testing. Two of the company personnel are active within the Swedish standards and in ISO TC 45.

Göran Spetz is a member of the Swedish SIS Committee for Rubber and chairman of two working groups in ISO/TC45. Elastocon's laboratory manager Alice Lindh also participates in the SIS and ISO work. Both of them also participate in several other working groups.

The involvement in the standardisation gives a good knowledge of the latest test methods. It's also an opportunity to meet several interesting people like the chemistry Nobel Prize winner, Mr Tanaka from Shimadzu in Japan.



Engineer Kichi Tanaka received the Nobel Prize in Chemistry in 2002. He held a lecture at the ISO TC meeting in Kyoto that year, soon after hearing about his prize, hence the presence of Japanese television. Göran Spetz welcomes him to Sweden.

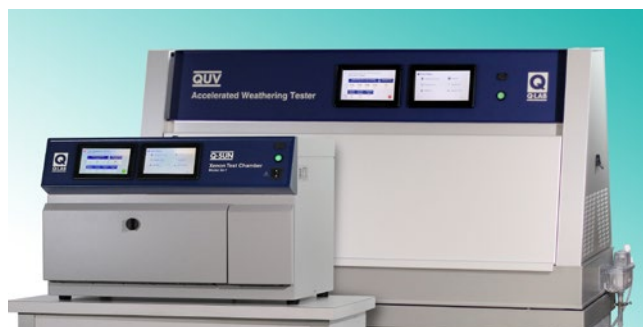


# Accelerated weathering and light stability tests of products and materials

Elastocon offers accelerated weathering and light stability tests of products and materials on a smaller scale in our own laboratory, in test equipment from Q-Lab:

- The QUV accelerated weathering tester with UV light and moisture.
- The Q-SUN Xe-1 and Xe-3 xenon test chambers are light-fastness, colorfastness, and photostability test chambers, which reproduce the damage caused by full-spectrum sunlight and rain. The Xe-3 xenon test chamber utilizes three separate xenon lamps for a large capacity. The specimen tray is also larger, which is useful for exposing large, or three-dimensional parts or components.

For customers within the Nordic countries, we can also pass on requests to Q-Lab's testing laboratory in Germany and outdoor exposure testing in Arizona and Florida.



The Q-SUN Xe-1 xenon test chamber and QUV accelerated weathering tester, can both be found in Elastocon's testing laboratory.

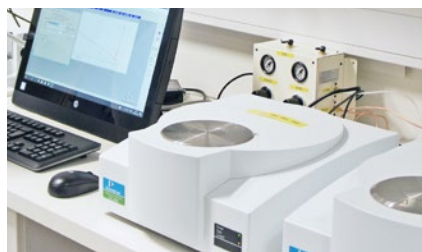
For more information or quotes regarding weathering and light stability tests, please contact Elastocon via e-mail: [info@elastocon.se](mailto:info@elastocon.se)

## Material analysis

Elastocon have increased the number of test methods in our test lab with analysis of polymer materials.

**TGA 4000** can be used for determination of the composition of vulcanizates and uncured compounds by thermogravimetry acc to ISO 9924. The standard specifies a thermogravimetric method for determination of the total organic content, carbon black content and ash.

**DSC 4000** is an instrument for differential scanning calorimetry (DSC). It can be used for determination of melt interval and phase transitions.



TGA 4000 and DSC 4000 are both thermal analysis instruments from PerkinElmer.

**FTIR** (Fourier Transform Infrared Spectroscopy).

FTIR is a technique used to obtain an infrared spectrum of absorption or emission of a solid, liquid or gas. A FTIR spectrometer simultaneously collects high-spectral-resolution data over a wide spectral range. The method is ideal for qualitative analysis of polymeric raw materials and finished products.

**TCi** is a thermal conductivity meter from C-Therm. It can measure thermal conductivity and effusivity on all types of materials, such as solids, liquids, powders and pastes.



TCi is a thermal conductivity meter from the Canadian company C-Therm.



**XRF, X-ray fluorescent analysis.** Elemental analysis from Mg to U. For determination of, among other things, inorganic fillers in rubber and plastic materials.



**Identipol QA2.** The instrument combines a DSC and a DMA. The

QA2 instrument is designed to provide information on the type and quality of thermoplastics in a quick and easy way. It is especially suitable for work with recycled plastic.



For more information or quotes please contact Elastocon via e-mail: [info@elastocon.se](mailto:info@elastocon.se)

## Material selection – specifications

Elastocon can assist you with a material specification for the material in your products and make ongoing tests of your delivered products. This can be very important for your product quality, especially if you use a supplier far away from you.

## Training

Do you need customized training regarding testing and calibration, either with us or at your site?

**Please contact us for more information.**

# Examples of test methods

## Sample preparation

For sample preparation, we have equipment for:

- Punching of rubber and plastic materials
- Water cutting of plastic material
- Splitting of rubber materials
- Compression moulding of granules into test sheets

## Test methods for rubber

ISO 34-1	A, B and C	Tear strength
ISO 36		Adhesion to textile fabrics*
ISO 37		Tensile stress-strain properties
ISO 48-2	N and M	Hardness, IRHD
ISO 48-4	A, D and AM	Hardness, Shore
ISO 188	A	Heat ageing
ISO 812		Low-temperature brittleness
ISO 815-1	A and B	Compression set at ambient or elevated temperatures
ISO 815-2	A and B	Compression set at low temperatures, LTCS
ISO 1407		Solvent extract*
ISO 1408		Carbon black content*
ISO 1431		Resistance to ozone cracking*
ISO 1432		Low temperature stiffening, Gehman test
ISO 1817		Effect of liquids
ISO 1827		Shear modulus*
ISO 1853		Measurement of resistivity*
ISO 2285	A and B	Tension set at constant elongation*
ISO 2781		Density
ISO 2921		Low temperature retraction, TR-test
ISO 3384-1	A and B	Stress relaxation in compression
ISO 3384-2		Stress relaxation in compression, testing with temperature cycling
ISO 4649		Abrasion resistance*
ISO 4650		Identification of rubber*
ISO 4662		Determination of rebound resilience*
ISO 4665		Resistance to weathering*
ISO 6914	A	Stress relaxation in tension
ISO 7743		Compression stress-strain properties*

\* Not included in accreditation.

## Test methods for rubber

ISO 8013	Creep in compression or shear*
ISO 9924	Analysis of plasticizer, polymer, carbon black and ash residue*
ISO 11346	Estimation of life-time

## Test methods for plastic

ISO 175	Effects of immersion in liquid chemicals*
ISO 178	Flexural properties*
ISO 179	Charpy impact*
ISO 180	IZOD impact*
ISO 527	Tensile properties*
ISO 868	A and D Indentation hardness by means of a durometer (Shore hardness)*
ISO 899	Creep behavior – tensile creep*
ISO 1133	Melt Flow Index*
ISO 1183-1	A Density of non-cellular plastics*
ISO 4892-2	Exposure to laboratory light sources – Xenon-arc lamps*
ISO 4892-3	Exposure to laboratory light sources – Fluorescent UV lamps*
ISO 11357-2	Determination of glass transition temperature*
ISO 11357-6	Determination of OIT*
ISO 13468-1	Determination of transmittance*
ISO 14782	Determination of haze*

## Other test methods

ISO 6452	Fogging characteristics of trim materials in the interior of automobiles*
ISO 22007-2	Determination of thermal conductivity and diffusivity*
<b>Various standards</b>	Gloss measurement*
ASTM D2244	Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates*
ASTM D3895	Determination of OIT, Oxidative-induction time*
ASTM D7984	Determination of thermal effusivity*

## Contacts for contract testing

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