

Tensile Testing System for Mineral Wool

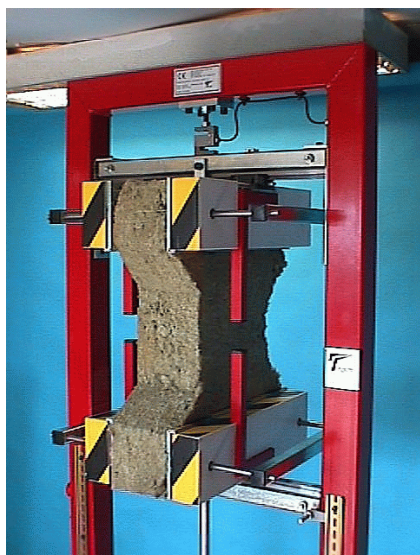
Systèmes d'Essais de Traction pour Laine Minérale

System zur Zug-Prüfung von Mineral Wolle

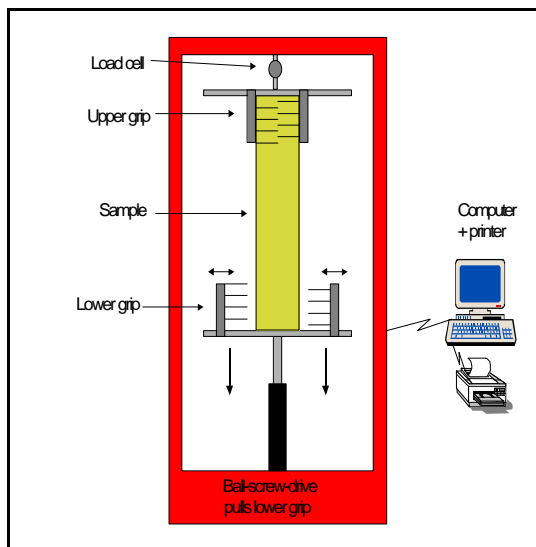
Tensile

Insulation

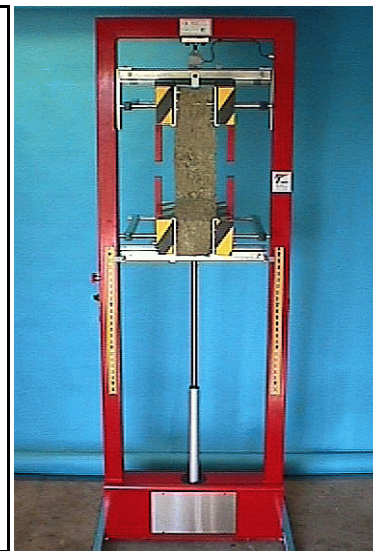
TEN 1 000..12 000 N



Test with a short sample



Operation principle



Test with a long sample

Quality Assurance and Process Control

Specially designed for the mineral wool industry, this universal tension tester offers a unique solution for generating, filing and displaying quality data. It is built around a rigid steel frame with a ball screw drive pulling down in the specimen, and it offers the user a fast and effective way of generating and presenting a quality report. Additionally it offers a data filing and retrieving system providing the user instant access to reports on any previously tested samples. Much more than just the strength test results can be included in the quality report. The **TRAM QA** software offers a simple way to incorporate all relevant quality parameters in a system of tables that can be set up for almost any application. It is ideally suited to quality assurance and process control as well as research and development. It is capable of performing a wide range of complex testing procedures and can be set up for relevant international or national standards.

The special machine design provides optimum stiffness resulting in accurate deformation measurements. Testing is controlled from the computer after keying in sample identification. During the testing the load-deformation curve is simultaneously generated on the monitor. All registrations and calculations are performed automatically by the PC and stored on the hard disk for later reference and/or statistical analysis. The reporting and calculation of data can be setup to match the users individual needs. Additionally the system incorporates a facility to connect it to an external device such as a balance so that results can be directly transferred to system for further processing.

The machine is supplied with grips to suit the products to be tested. Automatic positioning of the loading beam virtually eliminates the waiting time between tests. Additionally the system incorporates a facility to connect it to an external device such as a balance so that results can be directly transferred to the program for further processing.



QUALITY ASSURANCE

Specification

MODEL	TEN 1 000/5 000/12 000 N The system can be set-up to specific standards upon request
Max travelling length	500 mm as standard
Daylight between columns	600 mm as standard
Max Loading-cell-force	1000, 2000, 5000 or 12000 N
Force measuring resolution	0.1 N or 1 N
Loading speed control	selectable load- or travelling speed. Programmable sequence for automatic testing and fast return.
Loading speed-range	0- 300 mm/min
Deformation resolution	0.01 mm
Sample fixing	Grips with pin penetration of the batts (batt's length 600-1000 mm, width up to 500 mm and thickness up to 200 mm). The grips have a self centring device for fast and easy mounting of the batts. This device also makes a fast release of the batts after the test. The grip's pins are shielded
Supply voltage	220/240 V or 110/120 V, 50-60 Hz
Approx. weight	200 kg
Computer control system	PC with additional hard-and software, and printer. The TRAM QA software makes the testing, filing and analysing of data extremely versatile - refer to the separate brochure for the software.
Data generation	<ul style="list-style-type: none"> • Real-time generation of load/deformation curve. Instant calculation of Breaking Load, Ultimate Deflection, Modulus Of Rupture, Stress at Proportionality limit, Modulus of Elasticity, Strain at Ultimate Load, Fracture Energy etc. • Up to 230 samples can be filed in each set, and additional data (e.g. weight/m², board-width, etc.) can be added to the set. A log is maintained on all data-sets, giving easy access to a specific set.
Data Presentation	The test results can be shown on the computer monitor or printed out in a table for each set of samples, together with average - and standard deviation values. Additionally a load deflection curve with all the specifics of a single test can be printed out. Various statistical analyses can be performed automatically, and results can be printed out in a lay out according to your specification.

Specifications are subject to change without notice.

Full compliance with the European standard EN1608. Closed, dust proof construction with very few movable parts exposed. The measurement process is controlled by the computer. This makes it easy to change tension speed, reaction to measured results etc. In the apparatus measuring time is optimized - only five manual operations are needed:

? Insertion of a sample ? Closing grips ? Start testing ? Opening grips ? Removal of the sample.

The grips are effectively shielded when open. The operation of the grips is manual in order to prevent the operator from getting hurt by an accidental closing of the grips. The tensile strength is automatically logged in the computer upon the end of measurement. This optimizes measuring/calculation time and secures measuring data. The software is very flexible, and when sample thickness, weight and ignition loss are part of the setup, tensile strength is immediately available. The measurement is furthermore displayed as a tension curve (which is also saved in the computer for further investigation). This gives the possibility of evaluating elasticity and other properties. A statistical module for long term evaluation of data is available as an additional option.

Comprehensive electronic protection prevents the machine from overloading damage or driving out of limits. A simple calibration procedure is included in the software. Due to the modular design of the equipment and the versatility of the software, tailored systems can be offered at a moderate price. Systems for other board, sheet and slab manufacturing industries can also be supplied.

The equipment offers a great opportunity to improve quality management through instantaneous data generation. In spite of the highly advanced and automatic testing procedure operation is easy.

Please contact TRAM or your local distributor for additional information.



TRAM A/S
 Dinesensvej 20
 DK-9000 Aalborg, Denmark
 Phone: +45 98120499
 Fax: +45 98132755
 E-mail: tram@email.dk
 Homepage: www.tram.dk