floXlab

ROCK MECHANICS • FRACTURE TOUGHNESS TESTING

FTA

Fracture Toughness Apparatus

Chevron-notch three-point bend testing on rock core specimens

FTA — 10 kN servo-controlled press, ISRM Level I & II compliant

Geotechnical & Rock Mechanics Testing Equipment

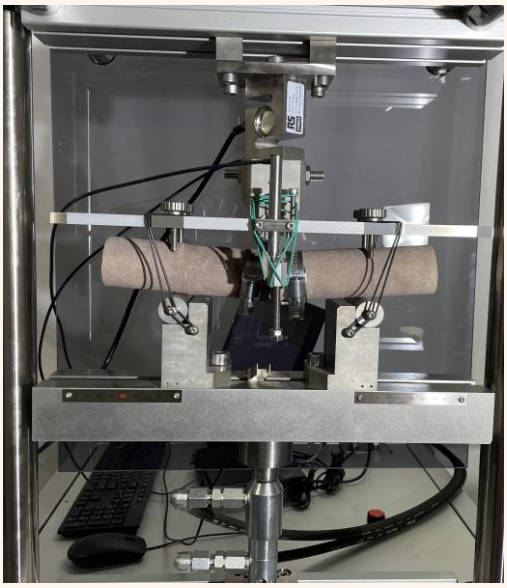
Overview

Purpose-built apparatus for rock fracture toughness measurement

- Determines fracture toughness — resistance to crack propagation
- Chevron-notched core in three-point bend configuration
- ISRM Suggested Method — Level I & Level II evaluation
- 10 kN servo-controlled press with high-precision load cell
- Continuous monitoring of LOAD, LPD and CMOD
- Two LVDT transducers + clip-on gauge synchronized
- Computer-controlled with Floxlab software & reporting
- Specimens of 54.7 mm and 4-inch diameter

Test Principle

Chevron-bend method for stable crack propagation



1 LOAD
Measured by a 10 kN load cell with ± 0.5 % accuracy

2 LPD
Load-point displacement measured by two LVDT transducers

3 CMOD
Crack-mouth opening displacement measured by a clip-on gauge

K_IC values derived from LOAD, LPD and CMOD

Stable crack propagation along the chevron ligament — ISRM Method 1 (Chevron Bend)

System Architecture

Four integrated subsystems

1 10 kN Hydraulic Press

Rigid bench-top press

- Fixed crosshead with two stiff lateral columns
- Hydraulic actuator integrated in lower crosshead
- Rapid piston displacement for positioning
- Precise & controlled loading during testing

2 10 kN Load Cell

High-precision force sensing

- Direct, real-time axial force reading
- Maximum load: 10 kN
- Accuracy: ± 0.5 % of full scale
- Direct interface with data acquisition station

3 3-Point Bend Fixture

ISRM Method 1 (Chevron Bend)

- Holds chevron-notched core in 3PB setup
- Specimens of 54.7 mm and 4-inch diameter
- Two support rollers + one loading roller
- Easy and fast specimen installation

4 Fracture Toughness Software

Floxlab proprietary software

- Predefined templates for fast execution
- Automatic K_IC Level I & Level II computation
- Real-time graphs of LOAD, LPD and CMOD
- Professional test report generation

Technical Specifications

Standard	ISRM Suggested Method	**Vertical clearance**	310 mm
Compression rating	10 kN (1 ton)	**Load cell accuracy**	± 0.5 % full scale
Specimen Ø	54.7 mm and 4 inches	**Load cell sensitivity**	approx. 2 mV/V
Specimen length	16 inches	**Weight**	250 kg
Horizontal clearance	500 mm	**Power supply**	220 VAC, 50 Hz

Step-by-step user-guided workflow — from sample setup to professional K_IC report

Get in Touch

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Thank you • Floxlab — your partner for rock fracture toughness testing