RAY-RAN POLYTEST

STATIC - DYNAMIC COEFFICIENT OF FRICTION
Microprocessor Controlled Measurement

WORLD WIDE TESTING FOR QUALITY
The well proven Ray-Ran microprocessor technology used throughout the Polytest range of testing equipment has been incorporated into the Friction Tester. The microprocessor integration has taken static and dynamic friction measurement accuracy to new levels.

The machine’s operation is ergonomically simple. Parameters and results are displayed in the large, easy to read LCD. Data entry is via a simple touch keypad. Test procedures are self prompting direct from the microprocessor. The built-in printer gives hard copy test results and batch statistics.

Supplied as standard is an RS232 output and a Windows based software programme. Both tabular and graphical presentation of results are given. A temperature controlled platen up to 120ºC, and a freezer bed with a minimum temperature control to 0ºC are available. Fixtures and facilities for Peel testing of pressure sensitive materials to all International Test Standards are available as an option.
Ambient bed temperature recorded and printed for each individual test.

RS232 Output and Ray-Ran Friction software for Windows supplied as standard.

### Test Parameters
- **Batch Started At:** 10:39 01/04/99
- **Operator ID No.:** 123
- **Material Reference:** 456
- **Batch Reference No.:** 789
- **Settling Time:** 5 secs
- **Sled Weight:** 200 g
- **Sled Velocity:** 800 mm/min
- **Surface Temperature:** 17.20 ºC
- **Test Distance:** 100 mm

#### Test Results (Number 1)
- **Static**
  - Coeff. of Friction: 0.478913
  - Load: 95.78268 g
- **Dynamic**
  - Coeff. of Friction: 0.333384
  - Load: 66.67676 g

#### Test Results (Number 2)
- **Static**
  - Coeff. of Friction: 0.468329
  - Load: 93.66594 g
- **Dynamic**
  - Coeff. of Friction: 0.346617
  - Load: 69.32336 g

#### Test Results (Number 3)
- **Static**
  - Coeff. of Friction: 0.500000
  - Load: 100.0161 g
- **Dynamic**
  - Coeff. of Friction: 0.333384
  - Load: 66.67676 g

### Batch Statistics
- **No. of Tests:** 3
- **Mean**
  - Static C. of F.: 0.482441
  - Static Load: 96.48819 g
  - Dynamic C. of F.: 0.337795
  - Dynamic Load: 67.55891 g
- **Standard Deviation**
  - Static C. of F.: 0.016168
  - Static Load: 3.233550 g
  - Dynamic C. of F.: 0.007642
  - Dynamic Load: 1.528367 g
- **Coefficient of Variation**
  - Static: 3.351212%
  - Dynamic: 2.262273%
Friction is often referred to as a result of the sliding motion (action) of one body moving over another body. To cause this motion to take place, the force acting at right angles to the normal weight of one body acting on the other must overcome the resistance to the motion which is known as friction. The determination of friction is calculated as follows, and it can readily be seen that friction is the coefficient of the force divided by the weight.

Coefficient of friction is generally denoted by the Greek letter - \( \mu \).

The normal weight of one body acting on another body - \( W \) grams.

The force required to move (slide) one body over the other body - \( F \) grams.

Friction has two distinct characteristics. The static friction which resists the initial movement between two bodies, and the dynamic friction which opposes the movement once it has started. Generally, the static friction is greater than the dynamic friction. If you push or pull an object over a surface, it requires a greater load to start moving the object than the load it requires to keep it moving. The basic principals applied to friction between dry surfaces are as follows:-

- For low contact pressures between two bodies, that is, a pressure which does not distort/deform the surface structure/texture between the two bodies, the friction is directly proportional to the normal force acting between the two bodies.
- Providing the normal force between two bodies remains the same, the coefficient of friction is independent of the area of contact between the two bodies.
- At low sliding speeds between the two bodies, the friction is independent of the sliding velocity. However, it is generally found that at high speeds the friction tends to reduce in value.

**Specification**

- Measurement: Static friction, dynamic friction & peel testing.
- Load Cell: 1,000g standard. Larger load cells available.
- Sleds: 200g (63.5 x 63.5). Sleds to suit all International Test Standards.
- Test Speeds: Infinitely variable to 1,800mm/minute via microprocessor.
- Test Travel Distance: Infinitely variable to 350mm/minute via microprocessor.
- Heated Bed: Available upon request.
- Freezer Bed: Available upon request.
- Calibration: Equipment supplied as standard.
- Bed Ambient Temperature: Recorded digitally and printed for every test.
- Hard Copy printed results as standard.
- RS232 output with Windows software supplied as standard.
- Peel Test: Attachments for 180°. Other attachments available.

All Ray-Ran products meet with the requirements of CE legislation and are supplied complete with appropriate markings and certification.

**SHIPPING CHARACTERISTICS**

- Net Weight: 30kg
- Gross Weight: 45kg
- Gross Size: 78cm x 48cm x 30cm

**ELECTRICAL CHARACTERISTICS**

- 220-240 volts 1ph 50Hz
- 110-120 volts 1ph 60Hz