

NDG5

Puncture Strength Tester

This testing machine measures the *piercing strength* required for a needle to penetrate a sample. It is to measure rupture strength by *applying a vertical force*, used for testing physical properties of battery separators.

The NDG5 can be used to evaluate the strength of film inside lithium-ion batteries (separators) and to measure the strength required to pierce packaging materials such as food packaging films.

Measurement Examples

Strength evaluation for separators inside lithium-ion batteries

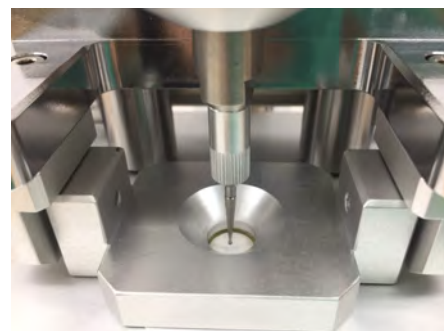
Piercing strength evaluation for food packaging films



FEATURE

● Specialized needle

Designed with separator measurement in mind (size: $\phi 1$, 0.5R tip shape)

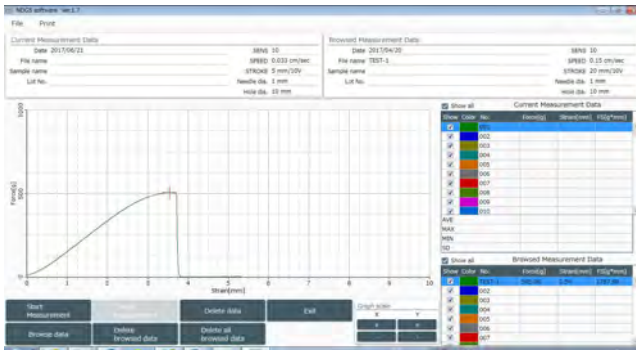


* The photo shows a needle with a holder.
Holder is not included in a single needle purchase.

SYSTEM CONFIGURATION DIAGRAM / MEASUREMENT DATA

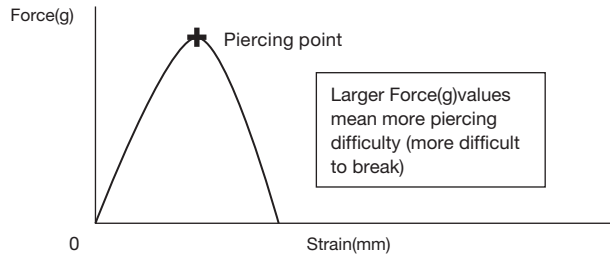


Sample Measurement Software Screens



▲ Piercing point

Obtainable Data



Force(g) = Penetrating power
 Strain(mm) = Amount of displacement
 FS(g·mm) = Load to penetration (Force × Strain)

*Larger Force (g) values mean more piercing difficulty (more difficult to break)
 *Larger Strain (mm) values mean more piercing difficulty (more stretchy)
 *Larger FS (g·mm) values mean more piercing difficulty (more difficult to break and more stretchy)

NDG5 Puncture Strength Tester

Dimensions/Weight (approx.)	Measuring unit: W230 × D230 × H460 (mm) / 13 kg Amplifier: W180 × D400 × H400 (mm) / 13 kg
Power source	100 VAC, power consumption: 20 W Max.
Measurement environment temperature and humidity	20 to 30°C / 50 to 70% RH. (No condensation.) Temperature and humidity should be kept constant during measurement. (Standard temperature and humidity conditions: 20°C / 65% RH) *The instrument should be located to minimize influence from wind or vibrations.
Load detection	Detector: Ring-type detector with differential transformer Load (full scale): Switchable between 4 ranges (100 gf, 200 gf, 500 gf, 1000 gf) Accuracy: ±0.5% or less of full scale
Displacement detection	Detector: Potentiometer Displacement quantity: Max. 20 mm Accuracy: ±1% or less of full scale

Needle diameter	1.0 mm
Sample diameter after setting the sample	10 mm
Displacement rate	Standard measurement: 0.02 mm/sec <1 mm/50 sec> High-sensitivity measurement: 0.0067 mm/sec <1 mm/150 sec> Other rates can be specified by settings.
Measuring movement	Load control system Displacement control system The above 2 systems are switchable
Sample size	Dimensions: 15 x 15 mm (min.) Thickness: 1mm (max.)

⚠ Caution For safety use, please read the operation manual / the instruction carefully and thoroughly before using the tester.

Specification details recorded here are subject to change without notice. We appreciate your understanding.