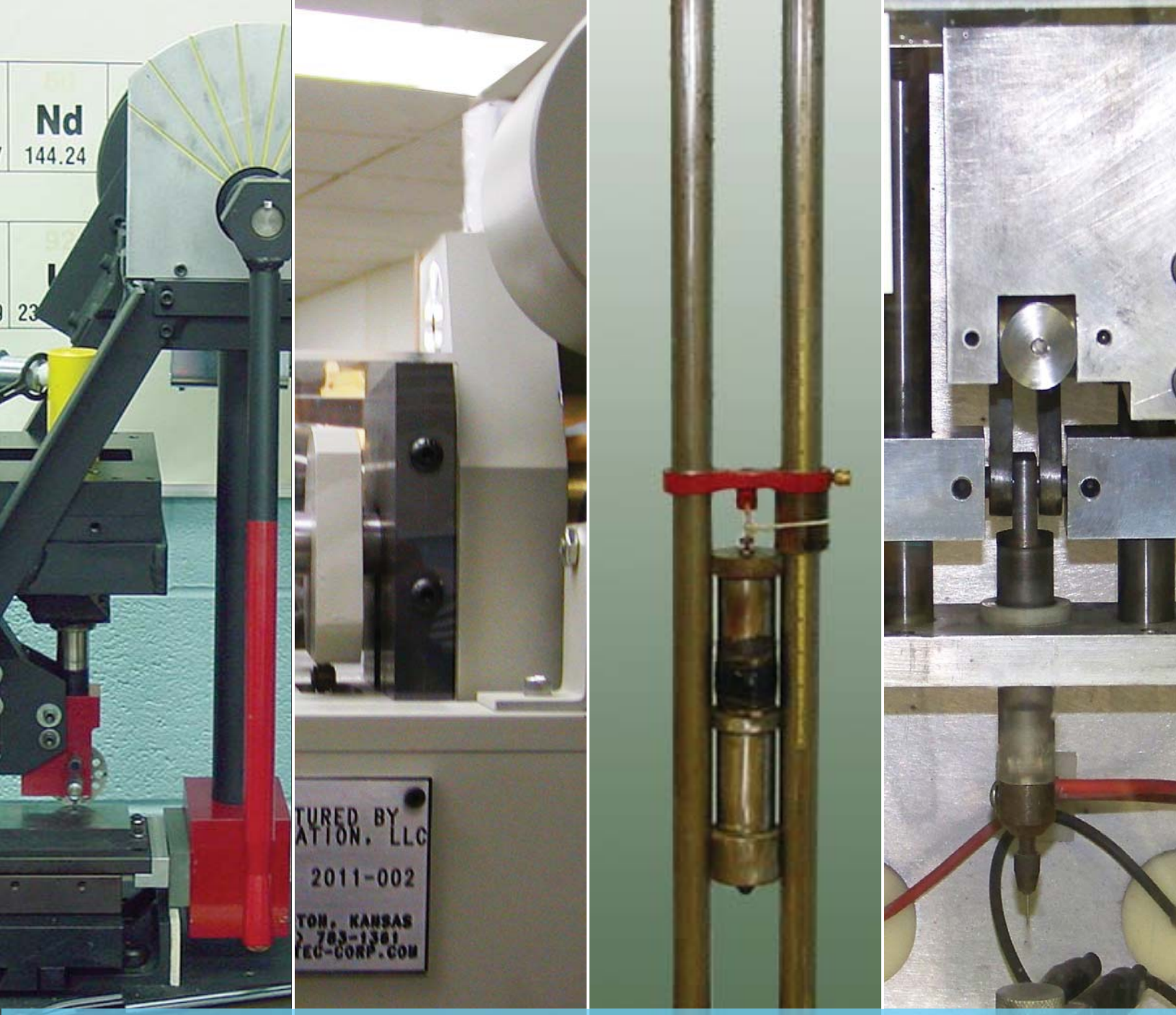


Explosives Measurement And Test Instrumentation

UTEC®

UTEC

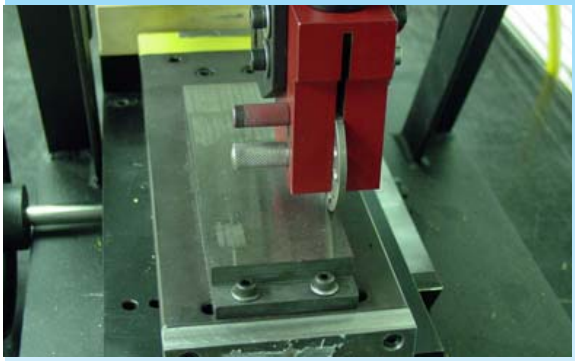
www.utec-corp.com

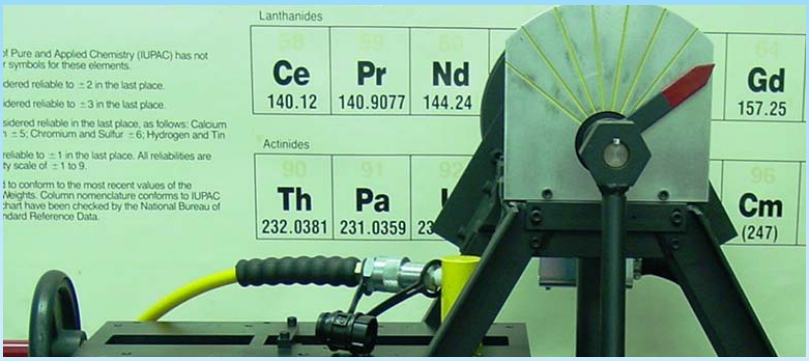
Revolutionary technology through research & testing

ABL Friction Test Apparatus

Friction testing of energetic materials:

There are several techniques through which explosives may be tested to determine their sensitivity to friction. One of the most popular is the ABL friction test. This test uses a line of explosives on a prepared metal plate, placed in front of a specially prepared metal wheel that is forced down upon the plate with a hydraulic press. The metal plate is then struck with a pendulum to move it, squeezing the explosives between plate and wheel as the plate moves. Initiation is determined and, typically, analyzed by the Bruceton analysis or Neyer d-optimal test.



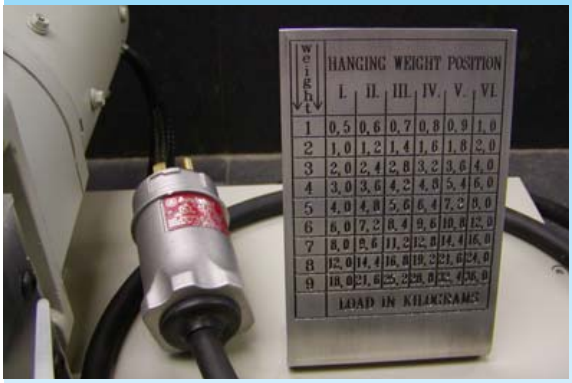


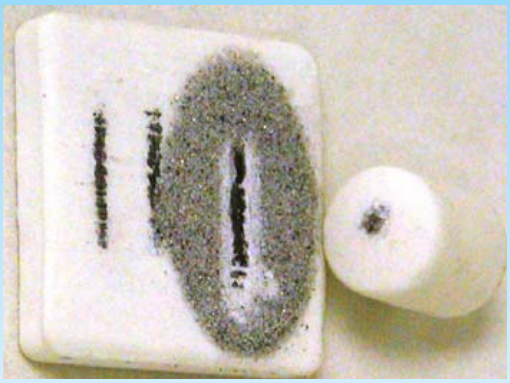
UTEC provides the ABL Friction Apparatus for clients who require in-house testing to determine the energy required to initiate a sample by friction energy application. The primary parts of the test apparatus are a moving anvil upon which the test sample is placed, a stationary wheel that applies a load to the sample, and a swinging pendulum that strikes the anvil to move it under the stationary wheel.

BAM Friction Test Apparatus

The most common test method used to identify and measure the sensitivity of a substance to frictional stimuli is the BAM Friction Test Apparatus.

The Friction sensitivity of explosives between hard surfaces is one of the most frequent causes of accidental explosions. Determination of friction sensitivity is thus a necessary part of explosive or energetic materials characterization, as well as that of modifi ed formulations or changes in manufacturing conditions, and for defining influences of impurities or ageing.





BAM Friction testing apparatus was developed by the German Federal Institute for Testing and Materials (BAM). The testing and evaluation of the response of solid, liquid or composite explosives, propellants, pyrotechnics and other energetic material substances, to impact, friction, and/or thermal stimuli is required by various international standards.

BOE Impact Test Instrument

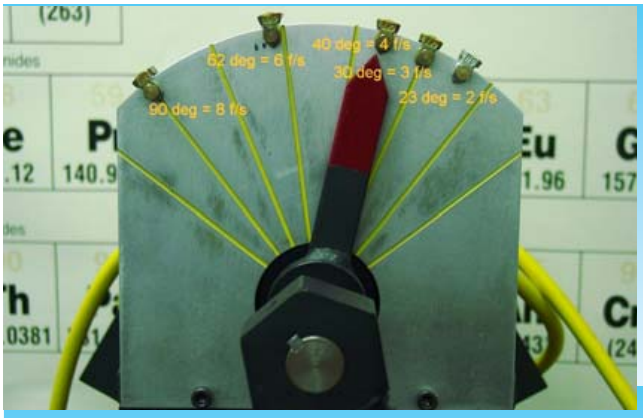
UTEC manufactures a Bureau of Explosives (BOE) Impact Test Instrument for in-house use and testing by end-users who need to determine the energy necessary to initiate an explosive or other energetic material via impact energy input.

The Department of Transportation (DOT) and Department of Defense (DOD) use the BOE Impact Instrument to determine whether a material is too sensitive for transport by conducting a 10-trial screen test. This test is presented as a means used to obtain initial impact data for a manufacturing classifi cation. However, a more thorough test using additional drop heights may be performed as needed, in order to conduct a hazards analysis, or to determine specifi c attributes of a known explosive formulation and its sensitivity to impact energy.

Electrostatic Discharge Test Instrument

Electrostatic discharge is one of the most frequent and the least characterized cause of accidental explosions of energetic materials. To have reliable data on electrostatic spark sensitiveness of energetic materials is thus a critical component within the manufacturing process, in research & development, physical processing, loading or demilitarization.

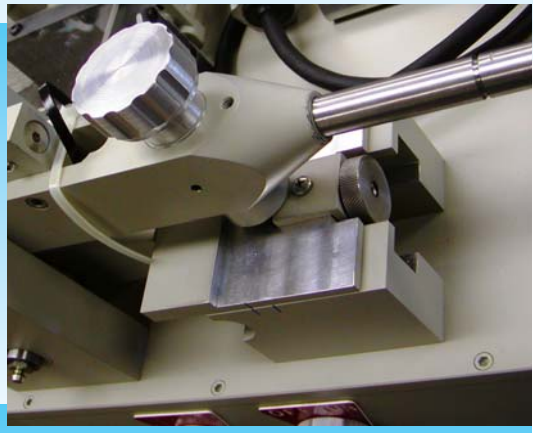
ESD testing is used to determine the response of an explosive when subjected to various levels of electrostatic discharge energy. Electrostatic energy stored in a charged capacitor is discharged to the test sample. The test sample is placed on a special holder that assures the electrostatic discharge will pass through the sample. A capacitor is charged with a known volt potential (typically 5000 volts). The discharge needle is lowered until a spark is drawn through the sample. The approaching needle method is most commonly used because it best models the safety issues involved with ESD sensitivity.



ABL Friction Test Apparatus

Designed and manufactured to perform as specified in the following tests:

- Test method 1021 as detailed in MIL-STD 1751A
- Test method 3(b)(iii) as detailed in the United Nations test manual (2nd Ed.)
- Section 5-3c in TB700-2 (DOD Hazard Classification Procedures)



BAM Friction Test Apparatus

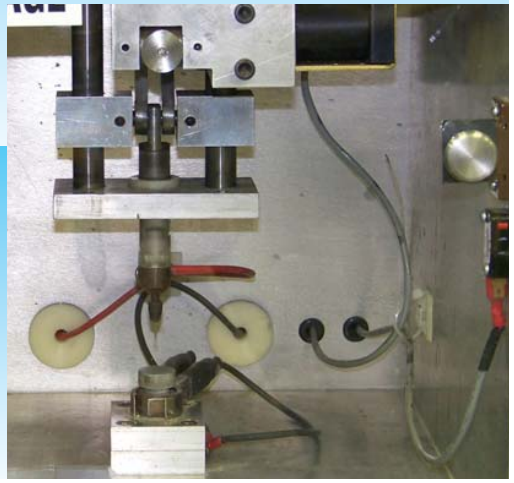
Designed and manufactured to meet requirements of:

- Test method 3(b)(i) as detailed in the United Nations test manual
- Test method 1024 as detailed in MIL-STD 1751A
- Section 5-3d in TB700-2 (DOD Hazard Classification Procedures)

BOE Impact Test Apparatus

Designed and manufactured to perform the following tests:

- Test method 3(a)(i) as detailed in the United Nations test Manual
- Section 5-4a in TB700-2 (DOD Hazard Classification Procedures)
- Test method 1011 as detailed in MIL-STD 1751A



Electrostatic Discharge Test Apparatus

Designed and manufactured to perform the following tests:

- Test method 1031 (NSWC method)
- Test method 1032 (ARDEC method)
- Test method 1033 (NAWC method) as detailed in MIL-STD 1751A

All UTEC equipment is calibrated in house using suitable molecular explosive standards. Operations training at UTEC's facility is also included.

For more information, contact us:

Technical & Manufacturing
8500 SE Jayhawk Drive
PO Box 320
Riverton, KS 66770
USA

+1 620.783.1361

Corporate
2420 Springer Drive
Suite 110 Norman,
OK 73069
USA

+1 405.928.7061

International Subsidiary
Old No: 4 / New No: 9
Anandan St. T. Nagar,
Chennai 600 017
INDIA

+91 9840032924

www.utec-corp.com