

CTL 004 – MIE III Test Apparatus Data Sheet

An instrument for determining the minimum ignition energy of a powder product when discharged in the form of a dust cloud.

The Minimum Ignition Energy of a dust cloud apparatus is used to determine the smallest quantity of energy, as a capacitive spark discharge, required to explode (ignite) a powder product. The resulting data can then be used to assess the electrostatic discharge risks posed in processing and handling industrial powder products on plant.



MIE system



MIE main case

Benefits

- Easy to use and maintain
- Voltage and capacitance can be controlled in very fine increments
- Arc gaps can be manually adjusted for researching alternative gaps being more conducive to ignition (ASTM standard permits reduction of arc gap down from nominal 6 mm to 2 mm).
- Delivers results to ASTM E2019-03 and ISO/IEC 80079-20-2 (trickle charge method)
- Wide range of available accessories

Functional specification and deliverables

- Mains supply – Volts/Amps: 220-240 V AC / 3 A
- Energy range: 2 mJ – 2000 mJ
- 29 device capacitance bank (fine energy selection increments)
- 0-15 kV adjustable high voltage power supply
- Arc gap breakdown voltage monitoring unit utilising JCI 140 internal proximity voltmeter
- Dust/air dispersion unit with set of acrylic Hartmann tubes
- Niacinamide known calibration sample test result data/calibration certificate
- Accessories: 20 acrylic Hartman tubes, 1x complete tube assembly, high voltage discharge probe, fuses and other maintenance spares

Installation recommendations

POWER REQUIREMENTS	1 x 220V-240V 3 Amp mains supply to power the 19" control unit, 1 x 220V / 3Amp mains supply to the dispersion base
LOCATION RECOMMENDATIONS	The 19" control unit must be located adjacent to the fume cupboard to be used (ideally left hand side so cables pass through fume cupboard from left to right to the dispersion base or right hand side if not possible)
AIR REQUIREMENTS	7 barg service air. Dried and moisture free. Compressor should have drain traps to remove moisture. Air-line diameter 6mm
DIMENSIONS OF UNIT	Control unit 19" rack – 53 cm (w) x 45 cm (h) x 62 cm (d) Requires space of: 55 cm (w) x 48 cm (h) x 82 cm (d) Hartmann dispersion base (inside fume cupboard) –36 cm (w) x 40 cm (d) x 52 cm (h) when tube in place – sold with MIE apparatus as standard. Constant arc power source (inside fume cupboard but away from MIE tube) – 40(w) x 34 (d) x 17cm (h) –provides a means of screening test samples in conjunction with the Hartmann dispersion base) - optional. Ideally fume cupboard should be 80cm (w) x 80 cm (d) x ca 80cm (h). A standard 3 ft or 4 ft wide fume cupboard will be ample (fume cupboard not supplied)

Optional extras



- Constant arc screening transformer/power source: for test sample screening
- Glass Hartman Tubes
- JCI 140/JCI 148 voltmeter – for self-checking calibration of high voltage output of the MIE apparatus with the knowledge and confidence that the voltmeter has no detrimental loading effects on the output voltage.
- Hot coil glass tube with hot coil and independent power source: for screening thermal sensitivity of powders at 1000°C when dispersed as a dust cloud. Samples with positive results can then be tested with the CTL005 MIT Cloud apparatus.
- Training

Instrument support

The decision to purchase equipment versus contracting out test work is most commonly dependent on the number of test samples (or ongoing samples) that you are going to have to obtain data on and the costs involved plus support structure that you have.

If the decision has been made to set up a process safety laboratory facility for your own inhouse test requirements, then DEKRA are happy to provide advice on location of our equipment and training on identical equipment at our own facilities.

Calibration and future support services is also an important aspect of any lab facility start up decision. DEKRA are happy to help with this. We frequently calibrate instrumentation for our worldwide customers at our base here in Southampton, UK.

DEKRA Organisational & Process Safety

Contact

DEKRA Organisational and Process Safety are a behavioural change and process safety consultancy company. Working in collaboration with our clients, our approach is to assess the process safety and influence the safety culture with the aim of making a difference.

In terms of behavioural change, we deliver the skills, methods, and motivation to change leadership attitudes, behaviours, and decision-making among employees. Supporting our clients in creating a culture of care and measurable sustainable improvement of safety outcomes is our goal. The breadth and depth of expertise in process safety makes us globally recognised specialists and trusted advisors. We help our clients understand and evaluate their risks, and we work together to develop pragmatic solutions. Our value-adding and practical approach integrate specialist process safety management, engineering, and testing. We seek to educate and grow client competence in order to provide sustainable performance improvement. Partnering with our clients, we combine technical expertise with a passion for life preservation, harm reduction and asset protection.

We are a service unit of DEKRA SE, a global leader in safety since 1925 with over 48,000 employees in 60 countries and five continents. As a part of the world's leading expert organisation DEKRA, we are the global partner for a safe world.

We have offices throughout North America, Europe, and Asia.

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Would you like more information?

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