AHT12 - Abel Heat Tester

MODERNIZED STABILITY TESTER FOR ABEL TEST METHOD

Abel Heat Tester presents testing instrument for traditional investigation of thermal stability of nitrocellulose and nitrate esters based propellants according to follwed standards.

Application

The chemical stability of energetic materials is an essential quality parameter for reliable risk and safety management. Abel test was developed for the standard inspection of the stability of energetic materials. This method is implemented by most of the stability testing guidelines and national authorities for standardization.

Abel Test (also known as Abel Heat Test) is a traditional and reliable qualitative method with sufficient reproducibility. It is fast, affordable and requires no extra laboratory skills.

Principle

The unstable behaviour of nitrocellulose and nitrate esters based energetic materials is associated with the liberation of heat and gaseous decomposition products which contain also nitrogen oxides (NO_x). The exposition of the sample to a higher temperature increases its decomposition rate. Abel Test was developed to evolve NO_x in defined conditions and to detect it by standard reagent paper.

Abel Test is often combined with Bergmann-Junk, Methyl Violet Test, Vacuum Thermal Stability Test and HPLC. The result of the Abel Test is a time required for colour change of the reagent paper. Further consideration of these values provides an overview of materials' stability and their lifetime.

Compliance

STANAG 4178, DEFSTAN 13-189/1, AOP-7, ČOS137602

Specifications

AHT12	
Sample positions	12
Hole size (diameter x depth)	17.5 x 75 mm
Touch screen LCD interaface	Yes
Temperature limit	+ 180°C
Temperature accuracy	± 0.1°C
Typical temperatures	65.5; 76.6; 80.0 °C
User editable temperature	Yes
External calibration	Yes
Independent temperature limiting	Yes
Onsite firmware update	Yes
Weight	23 kg
Size (WxDxH)	26x26x32 cm
Power (110 or 220 VAC, 50-60 Hz)	700 W
USB connector	Yes (optional)

Energetic Materials
Stability & Compatibility
Heating Blocks

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Description

AHT12 is a stand-alone testing apparatus that comprises the heating block and inbuilt controlling unit with LCD interface.

The heating block is an aluminium cylinder with 12 holes for glass test tubes. The test tube is defined by the standard. Hole dimensions and test tube parameters can be customized. High-quality heating elements are controlled by means of precise PID electronics and independent overheating protection. Efficient composite insulation keeps low power consumption and sandwich structure provides excellent heat distribution for izothermal heat treatment.

Colour LCD touch screen interface includes information about the heating status. The salient feature of the user interface is an independent timer for each tube. This provides the highest precision of real exposition time and reduces stress-related to loading all tubes into the block at one time. Delayed tube inserting is also possible with a clear time reference.

Advantageous features

Standalone device with colour LCD touch screen interface

Accurate temperature controlling

Independent overheating protection

12 independent timers

User defined heating profiles

Easy onsite firmware update

Compact device, no laboratory skills required

Glassware

AHT Tubes / MK-11 Tubes	
OD	17 mm
Length	135 -150 mm
Permanent position marking	yes
Marking of 3 rings (MK-11 tubes)	on request

Stands

AHT Stand for 12 tubes	
Hole diameter	18 mm
Depth	90 mm
Position	12

Consumables

KI - Starch Papers	
Size	1x 3/8", 10x20 mm
Qty	100 pcs/pack
Packing	Glass vial

Hangers

Hangers for test papers	
Glass rod with hook	Platinum
Economy hooks	Stainless steel

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