

# FLASH POINT

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# AUTOMATED FLASH POINT TESTERS



Automated Pensky-Martens Flash Point Tester

## Automatic Abel Flash Point Tester

- Conforms to IP 170 and related specifications
- Simple automation routine for easy operation

The automated Abel flash point tester is used primarily to test flammable and combustible materials for shipping and safety regulations. The flash tester provides an increased temperature range of operation as compared with other testers, allowing greater flexibility in testing samples according to the Abel test method. The unit provides a test range to 110°C and can be extended to -30°C by any appropriate external chiller. The flash point tests are simply conducted by mounting the flash cup filled with sample into the test position and selecting a pre- or user-programmed test method. Automation routines provide accurate test results. A quick search method is available to determine the flash point of unknown samples. The dual detection system (thermal and ionization) allows for testing all types of products. Ignition by gas flame or electrical ignitor is included, along with safety cut-off devices. Test results are automatically corrected to standard pressure (101.3 kPa). The system is equipped with a differential Pt-100 RTD probe designed to duplicate the response time of a mercury-in-glass thermometer and with multiple sensors that continually monitor instrument function, displaying an error message if a problem is detected. Supervision software is included.

*Temperature range of Flash Tester can be extended. Please contact Koehler Customer Service for additional information.*

### Specifications

Conforms to the specifications of:

IP 170; ISO 1523, 13736;  
NF M 07-011; NF T 66-009

Electrical Requirements: **CE**

115V 60Hz, Single Phase  
230V 50/60Hz, Single Phase

### Dimensions l x w x h, in.(cm)

10.25 x 21 x 19.75 (26 x 5.53 x 50)

Net Weight:

44 lbs (20kg)

## Auto Pensky-Martens Closed Cup Flash Point Tester

- Conforms to ASTM D93 and related specifications
- Dual flash point detection system (thermal and ionization) for measurement of samples containing water and/or silicone
- Gas or electric ignition
- Flash point operation range between 0 and 400°C
- Simple automation routine for easy operation
- Large viewing screen for observing test status at a distance from the unit
- Automatic barometric correction

The automated Pensky-Martens flash point tester accurately determines the lowest flash point temperature of fuels, lubricating oils, and homogenous liquids (ASTM D93 A), or liquids containing suspended solids as well as liquids that tend to form a surface film during testing (ASTM D93 B). Flash point tests are simply conducted by mounting the flash cup filled with sample into the test position and selecting a pre- or user-programmed test method. A quick search method allows for determination of flash points for unknown samples and a method for asphalts is also included. The automation routines provide accurate test results, even with users inexperienced in flash point test methods. The flash point test result is automatically corrected to standard pressure (101.3 kPa). The unit is equipped with a differential Pt-100 RTD probe designed to duplicate the response time of a mercury-in-glass thermometer as per ASTM D93-02a and E1-03a. The system features multiple sensors for continually monitoring of instrument function and displaying an error message if a problem is detected. The performance of the electrical ignitor is continuously checked, and the user is notified upon the need of replacement due to either damage or the end of its useful life. The system is easily interfaced with an external PC for operation and method updates. When performing a test, the system will display the stirring speed, temperature curve (also printed out), and current test status. The system alerts the user if the first application of the ignitor results in a flash or if no flash point is detected at the end of the test program. If a flash is not detected 30°C above the expected flash point or at 400°C, then the test is automatically aborted for safety. An easy connection to the air ventilation system or external water connection provides a quick cool down between test runs for operational efficiency.

### Specifications

Conforms to the specifications of:

ASTM D93; IP 34; ISO 2719; DIN EN 22719;  
NF M 07-019; JIS K2265

Electrical Requirements: **CE**

115V 60Hz 1000W  
230V 50/60Hz 1000W

### Dimensions l x w x h, in.(cm)

10.25 x 21 x 19.75 (26 x 5.53 x 50)

Net Weight:

44 lbs (20kg)

# AUTOMATED FLASH POINT TESTERS

## Automatic Tag Closed Cup Flash Point Tester

- Conforms to ASTM D56 and related specifications
- Simple automation routine for easy operation

The automated Tag Closed Cup flash point tester ensures the accuracy and precision required according to the ASTM D56 and related test methods. The test sample is heated at a prescribed rate of temperature increase throughout the standard temperature test range to 100°C. The flash point tests are simply conducted by mounting the flash cup filled with sample into the test position and selecting a pre-programmed test method or the search mode to determine an approximate flash point. The automation routines provide accurate test results. Ignition by gas flame or electrical ignitor is included, along with safety cut-off devices. The measurement range can be extended to -30°C by any appropriate external chiller. Supervision software is included.

*Temperature range of Flash Tester can be extended. Please contact Koehler Customer Service for additional information.*

### Specifications

Conforms to the specifications of:  
ASTM D56; IP 304  
Electrical Requirements: **CE**  
115V 60Hz, Single Phase  
230V 50/60Hz, Single Phase

**Dimensions** l x w x h, in. (cm)  
21 x 10.5 x 19.75 (53.5 x 26 x 50)  
Net Weight:  
44 lbs (20kg)



*Automated Tag closed Cup Flash Point Tester*

## Automatic Cleveland Open Cup Flash Point Tester

- Conforms to ASTM D92 and related specifications
- Simple automation routine for easy operation
- Flash point operation between ambient and 400°C
- Gas or electric ignition

The automated Cleveland Open Cup flash point tester accurately determines flash and fire point temperatures of viscous petroleum products including oils and bitumens over an extended temperature range. When examining highly viscous specimens, a preheating time and temperature are set in order to liquefy the sample for testing. The surface skin from bituminous samples can be removed with a skimmer. The flash/fire point tests are simply conducted by mounting the flash cup filled with sample into the test position and selecting a pre-programmed test method or the search mode to determine an approximate flash point. The test results are automatically corrected to standard pressure (101.3 kPa). Equipped with a differential Pt-100 RTD probe, the system is designed to duplicate the response time of a mercury-in-glass thermometer. Multiple sensors continually monitor instrument function, displaying an error message if a problem is detected. The performance of the ionization sensor which detects the flash and fire points is continuously monitored, and the user is notified upon the need of replacement. If a flash is not detected 20°C above the expected flash point or at 420°C, then the test is automatically aborted for safety. The system is easily interfaced with an external PC for operation and method updates. When performing a test, the system will display the stirring speed, temperature curve (also printed out), and current test status. The system alerts the user if the first application of the ignitor results in a flash or if no flash point is detected at the end of the test program. If a flash is not detected 30°C above the expected flash point or at 400°C, then the test is automatically aborted for safety.

### Specifications

Conforms to the specifications of:  
ASTM D92; IP 36; ISO 2592  
Electrical Requirements: **CE**  
115V 60Hz 1000W  
230V 50/60Hz 1000W

**Dimensions** l x w x h, in. (cm)  
21 x 10.5 x 19.75 (53.5 x 26 x 50)  
Net Weight:  
44 lbs (20kg)

### Ordering Information

Catalog No.		Order Qty
<b>Automatic Abel Flash Point Tester</b>		
<b>K87300</b>	Automatic Abel Flash Point Tester, 115V 60Hz	1
<b>K87390</b>	Automatic Abel Flash Point Tester, 230V 50/60Hz	
<b>Automatic Pensky-Martens Closed Cup Flash Point Tester</b>		
<b>K87100</b>	Automatic Pensky-Martens Closed Cup Flash Point Tester, 115V 60Hz	1
<b>K87190</b>	Automatic Pensky-Martens Closed Cup Flash Point Tester, 230V 50/60Hz	
<b>Automatic Tag Closed Cup Flash Point Tester</b>		
<b>K87700</b>	Automatic Tag Closed Cup Flash Point Tester, 115V 60Hz	1
<b>K87790</b>	Automatic Tag Closed Cup Flash Point Tester, 230V 50/60Hz	
<b>Automatic Cleveland Open Cup Flash Point Tester</b>		
<b>K87400</b>	Automatic Cleveland Open Cup Flash Point Tester, 115V 60Hz	1
<b>K87490</b>	Automatic Cleveland Open Cup Flash Point Tester, 230V 50/60Hz	

# FLASH POINT BY PENSKY-MARTENS CLOSED CUP TESTER



*K16200 Pensky-Martens Flash Tester with  
K16220 Accessory Stirrer Motor (Sold Separately)*

## Specifications

Conforms to the specifications of:

ASTM D93; AASHTO T73-811; IP 34; ISO 2719; DIN 51758; FTM 791-1102; NF M 07-019

Electrical Requirements: **CE**

115V 60Hz, Single Phase, 6.5A

220-240V 50/60Hz, Single Phase, 3.4A

## Included Accessories

Brass Test Cup with Handle

Thermometer Holder

Cover Assembly

## Dimensions l x w x h, in. (cm)

9½ x 8 x 22½ (24 x 20 x 57) with optional stirrer motor installed

Net Weight:

K16000: 21 lbs (9.5kg)

K16200/K16270: 24 lbs (10.9kg)

## Shipping Information

Shipping Weight: 30 lbs (13.6kg)

Dimensions: 3.1 Cu. ft.

**Please refer to page 32 about our automated Pensky-Martens Closed Cup Flash Point Tester or inquire by contacting Koehler Customer Service.**

*For NIST traceable certified thermometers, please refer to the ASTM Thermometer section on pages 184 through 191.*

## Test Method

For flash point determinations of fuels, lubricating oils, liquids containing suspended solids and liquids that tend to form a surface film during testing.

## Pensky-Martens Closed Cup Flash Tester

- Conforms to ASTM D93 and related specifications
- Choice of electric or gas heating

Determines flash points of a wide range of products by a closed cup method with two option speed stirring of the sample. Extensively used in shipping and safety regulations for detection of contamination by volatile and flammable materials in fuel oils and lubricating oils, and for characterization of hazardous waste samples.

Smooth operating cover mechanism slides shutter open and applies test flame at the turn of a knob. Cover fits over brass test cup and includes pilot flame, test flame reference bead, built-in stirrer and plated brass thermometer ferrule.

Electrically heated model is equipped with a 1000W nickel-chromium heater with stepless variable control for accurate, repeatable temperature rate of rise settings per specifications. Heater unit is enclosed in a stainless steel housing with cooling vents. Includes line cord receptacle and switch for accessory slow speed stirrer.

Gas heated model has a built-in nickel plated brass natural gas burner, or can be supplied with an artificial gas burner or liquid propane burner (specify when ordering). Both models are mounted on a sturdy cast iron base.

## Ordering Information

Catalog No.		Order Qty
<b>Pensky-Martens Closed Cup Flash Tester</b>		
<b>K16200</b>	Electrically Heated Model, 115V 60Hz	1
<b>K16270</b>	Electrically Heated Model, 220-240V 50/60Hz	
<b>K16000</b>	Gas Heated Model	
<b>Accessories</b>		
<b>K16220</b>	Stirrer Motor, 115V 60Hz Slow speed gear motor rotates stirrer of Pensky-Martens Tester at 115rpm for Procedure A and at 250rpm for Procedure B. Includes adjustable support bracket and mounting rod. Installs in base of flash tester.	1
<b>K16228</b>	Stirrer Motor, 220-240V 60Hz	
<b>K16229</b>	Stirrer Motor, 220-240V 50Hz	
<b>250-000-09F</b>	ASTM 9F Thermometer Range: 20 to 230°F	
<b>250-000-09C</b>	ASTM 9C Thermometer Range: -5 to +110°C	1
<b>250-000-10F</b>	ASTM 10F Thermometer Range: 200 to 700°F	
<b>250-000-10C</b>	ASTM 10C Thermometer Range: 90 to 370°C	1
<b>K16010</b>	Cover Assembly Complete assembly. Includes shutter, flame exposure device, stirrer and thermometer ferrule.	
<b>K16020</b>	Brass Test Cup With heat resistant handle.	
<b>K16020-NI</b>	Nickel Plated Test Cup With heat resistant handle	

# FLASH POINT BY TAG CLOSED TESTER

## Test Method

For flash point determinations of liquids with a viscosity of below 5.5 centistokes (cSt) at 104°F (40°C) or below 9.5cSt at 77°F (25°C), and a flash point below 200°F (93°C) except cut-back asphalts, those liquids which tend to form a surface film under test conditions and materials which contain suspended solids.

## Tag Closed Cup Flash Tester

- Conforms to ASTM D56 and related specifications
- Gas or electrical heating

Determines flash points of liquid products by the Tag Closed Cup method. Features stepless variable heat control with reference dial for accurate repeat setting of temperature rate of rise per specifications. Also available with gas burner instead of electric heater. Precision machined cover mechanism simultaneously opens slide shutter and applies test flame to sample at the turn of a knob. Includes liquid bath with constant level overflow, brass test cup, plated brass thermometer ferrules and test flame reference bead. Bath and cover mechanism are constructed of plated brass. Heater is enclosed in a cast aluminum base assembly.

**Please refer to page 33 about our automated Tag Closed Cup Flash Point Tester or inquire by contacting Koehler Customer Service.**



**K14600 Tag Closed Cup Flash Tester**

### Ordering Information

Catalog No.		Order Qty
<b>Tag Closed Cup Flash Tester</b>		1
<b>K14600</b>	Electrically Heated Model, 115V 60Hz	
<b>K14670</b>	Electrically Heated Model, 220-240V 50/60Hz	
<b>K14690</b>	Gas Heated Model	
<b>Accessories</b>		
<b>250-000-09F</b>	ASTM 9F Thermometer Range: 20 to 230°F	2
<b>250-000-09C</b>	ASTM 9C Thermometer Range: -5 to +110°C	
<b>250-000-57F</b>	ASTM 57F Thermometer Range: -4 to +122°F	2
<b>250-000-57C</b>	ASTM 57C Thermometer Range: -20 to +50°C	
<b>K14510</b>	Cover Assembly Includes slide shutter burner and thermometer ferrules	
<b>K14520</b>	Brass Test Cup	

*For NIST traceable certified thermometers, please refer to the ASTM Thermometer section on pages 184 through 191.*

## Specifications

Conforms to the specifications of:  
ASTM D56; IP 304; FTM 791-1101  
Electrical Requirements: **CE**  
115V 60Hz, Single Phase, 1.3A  
220-240V 50/60Hz, Single Phase, 0.6A

## Included Accessories

Brass Test Cup  
Cover Assembly (includes Slide Shutter, Burner and Thermometer Ferrules)

## Dimensions l x w x h, \*in. (cm)

5x5x16 (13x13x41)  
\*with thermometers inserted  
Net Weight: 7 lbs (3.2kg)

## Shipping Information

Shipping Weight: 8 lbs (3.6kg)  
Dimensions: 0.76 Cu. ft.

# FLASH AND FIRE POINTS BY CLEVELAND OPEN CUP



K13900 Cleveland Open Cup Flash Tester

## Specifications

Conforms to the specifications of:

ASTM D92, D6074, D6158; AASHTO T48; ANS Z-11.6; IP 36; ISO 2592;  
DIN 51376; FTM 791-1103, FTM 141-4294

Electrical Requirements: **CE**

115V 60Hz, Single Phase, 6.5A  
220-240V, 50/60Hz, Single Phase, 3.4A

## Included Accessories

Brass Test Cup

## Dimensions lwxh,in.(cm)

10x5½x14 (25x14x36)

Net Weight: 8½ lbs (3.9kg)

## Shipping Information

Shipping Weight: 12 lbs (5.4kg)

Dimensions: 1.5 Cu. ft.

## Test Method

For flash and fire points of all petroleum products, except fuel oils and those having an open cup flash below 79°C (175°F).

## Cleveland Open-Cup Flash Tester

- Conforms to ASTM D92 and related specifications
- For flash points above 79°C (175°F)

Determines flash and fire points by the Cleveland Open-Cup method. Consists of test flame applicator, brass test cup, thermometer support, heating plate and electric heater. Applicator is precisely aligned per specifications and pivots for test flame application at specified temperature intervals. Hinged thermometer support raises to facilitate placement and removal of test cup. Adjust flame size using built-in needle valve and comparison bead.

Equipped with a 1000W nickel-chromium heater with stepless variable heat control for accurate repeat setting of temperature rate of rise per specifications.

Heater unit is enclosed in a stainless steel housing with cooling vents. Test flame applicator and thermometer support are constructed of machined nickel plated brass.

*Please refer to page 33 about our automated Cleveland Open Cup Flash Point Tester or inquire by contacting Koehler Customer Service.*

## Ordering Information

Catalog No.		Order Qty
<b>Cleveland Open-Cup Flash Tester</b>		1
<b>K13900</b>	Electrically Heated Model, 115V 60Hz	
<b>K13990</b>	Electrically Heated Model, 220-240V 50/60Hz	
<b>Accessories</b>		
<b>250-000-11F</b>	ASTM 11F Thermometer Range: 20 to 760°F	1
<b>250-000-11C</b>	ASTM 11C Thermometer Range: -6 to +400°C	
<b>K14000</b>	Cleveland Open Flash Cup Precision machined brass with heat resistant handle	

*For NIST traceable certified thermometers, please refer to the ASTM Thermometer section on pages 184 through 191.*

## FLASH POINT BY TAG OPEN-CUP APPARATUS

### Flash Point and Fire Point of Liquids by Tag Open-Cup Apparatus

### Flash Point of Cutback Asphalt with Tag Open-Cup Apparatus

#### Test Method

For determination of flash and fire points of liquids at temperatures of up to 325°F (163°C) and flash points of cutback asphalts at temperatures of less than 200°F (93°C).

#### Tag Open-Cup Flash Tester

- Conforms to ASTM D1310, D3143 specifications
- Choice of gas or electrically heated

Determines Tag Open-Cup flash point of liquid products and cutback asphalts. Includes sample test cup, plated brass liquid bath with constant level overflow, pivoting ignition taper with pilot light and reference bead, pivoting thermometer holder, heater and cast aluminum base.

Electrically heated model is equipped with stepless variable heat control for accurate control of temperature rate of rise per specifications. Gas heated model also available.



**K15600 Tag Open-Cup Flash Tester**

#### Ordering Information

Catalog No.		Order Qty
<b>Tag Open-Cup Flash Tester</b>		
<b>K15600</b>	Electrically Heated Model, 115V 60Hz	1
<b>K15670</b>	Electrically Heated Model, 220-240V 50/60Hz	
<b>K15690</b>	Gas Heated Model	
<b>Accessories</b>		
<b>250-000-33F</b>	ASTM 33F Thermometer Range: -36.5 to +107.5°F	1
<b>250-000-33C</b>	ASTM 33C Thermometer Range: -38 to +42°C	1
<b>250-000-09F</b>	ASTM 9F Thermometer Range: 20 to 230°F	1
<b>250-000-09C</b>	ASTM 9C Thermometer Range: -5 to +110°C	
<b>250-000-35F</b>	ASTM 35F Thermometer Range: 194 to 338°F	
<b>250-000-35C</b>	ASTM 35C Thermometer Range 90 to 170°C	1
<b>K15610</b>	Leveling Device For proper adjustment of sample level in test cup. Meets ASTM specifications. Polished aluminum	
<b>K15620</b>	Draft Shield	1
<b>K15520</b>	Sample Cup	

For NIST traceable certified thermometers, please refer to the ASTM Thermometer section on pages 184 through 191.

#### Specifications

Conforms to the specifications of:  
ASTM D1310, D3143  
Electrical Requirements: **CE**  
115V 60Hz, Single Phase, 13A  
220-240V 50/60Hz, Single Phase, 0.6A

#### Included Accessories

Borosilicate Glass Sample Cup

#### Dimensions lwxh, \*in.(cm)

10x7x17 (25x18x43)  
\*with thermometer inserted  
Net Weight: 7½ lbs (3.4kg)

#### Shipping Information

Shipping Weight: 9½ lbs (4.3kg)  
Dimensions: 1.3 Cu. ft.

# FLASH POINT AND SUSTAINED BURNING OF LIQUIDS



*K16500 Rapid Flash Tester, Closed Cup*

## Flash Point of Liquids by Small Scale Closed Cup Apparatus

### Flash Point by Small Scale Closed Tester

### Sustained Burning of Liquid Mixtures by Setaflash Tester (Open-Cup)

#### Test Method

Verifies the flash point or the sustained burning qualities of small samples in the range of  $-30^{\circ}\text{C}$  to  $+300^{\circ}\text{C}$ .

#### Rapid Flash Tester

- Conforms to ASTM D3278, D3828, D4206; DOT CFR 49-173.115; IATA; ISO 9038 and related specifications
- One minute test with a 2mL sample
- Simple to operate

Rapid Tester<sup>®</sup> provides rapid determinations of flash point or sustained burning qualities by using a small sample. A flash/no flash test result is achieved in one minute for flash points below  $212^{\circ}\text{F}$  ( $100^{\circ}\text{C}$ ) with a 2mL sample. Ideally suited for quality assurance and environmental compliance testing as well as actual flash point for paints, fragrances, hydrocarbons and other liquids. Open cup models are used for determining sustained burning qualities characteristics of mixtures of flammable and nonflammable liquids or liquids with widely different flash points when assessing flammability characteristics. Features convenient semi-automatic operation for flash/no flash tests. Set the test temperature on the digital display and inject a 2mL or 4mL sample into the sample cup. The tester quickly stabilizes itself at the desired value, permitting the test flame to be applied and the result to be observed by the operator. Unit also performs conventional determinations of actual flash temperature by the small scale closed tester method.

Two models are offered: the Closed Cup Model is for routine flash point tests in the range from  $-30$  to  $+300^{\circ}\text{C}$  ( $-22$  to  $+572^{\circ}\text{F}$ ); the Open-Cup Model is for sustained burning tests in the range from ambient to  $212^{\circ}\text{F}$  ( $100^{\circ}\text{C}$ ). Both models include automatic temperature control with  $^{\circ}\text{C}/^{\circ}\text{F}$  selector switch, syringe, electronic timer, integral NIST traceable thermometer, and an external fuel cylinder valve for connection to a customer-supplied fuel cylinder or other fuel source.

#### Specifications

Conforms to the specifications of:

ASTM D3278, D3828, D4206; IP 303; ISO 3679, ISO 3680, ISO 9038; DOT CFR 49-173.115; IATA

Electrical Requirements:

115V 60Hz  
220-240V 50/60Hz

#### Included Accessories

Thermometer, range  $32$  to  $572^{\circ}\text{F}$  ( $0$  to  $300^{\circ}\text{C}$ )

Syringe

**Dimensions:** l x w x h, in. (cm)

15 x 23.4 x 6.3 (38.1 x 8.6 x 16.2)

Net Weight: 10 lbs (4.6kg)

#### Shipping Information

Shipping Weight: 16 lbs (7.26kg)

Dimensions: 2.3 Cu. ft.

### Ordering Information

#### Catalog No.

<b>K16500</b>	Rapid Flash Tester, Closed Cup, 115V Aluminum Test Cup/Brass Lid & Shutter
<b>K16591</b>	Rapid Flash Tester, Closed Cup, 220-240V Aluminum Test Cup/Brass Lid & Shutter
<b>K16502</b>	Rapid Flash Tester, Closed Cup, 115V Stainless Steel Test Cup, Lid & Shutter
<b>K16592</b>	Rapid Tester, Closed Cup, 220-240V Stainless Steel Test Cup, Lid & Shutter
<b>K16503</b>	Rapid Flash Tester, Open-Cup, 115V Aluminum Test Cup
<b>K16593</b>	Rapid Flash Tester, Open-Cup, 220-240V Aluminum Test Cup
<b>K16504</b>	Rapid Flash Tester, Open-Cup, 115V Stainless Steel Test Cup
<b>K16594</b>	Rapid Flash Tester, Open-Cup, 220-240V Stainless Steel Test Cup

#### Accessories

<b>K16506</b>	Fuel Cylinder Valve
<b>K16507</b>	Heat Transfer Compound for thermometer
<b>K16508</b>	Metal Cooling Block to facilitate cooling of the sample cup between tests
<b>K16509</b>	Refrigerant Charged Cooling Block to hold cooling mixture for subambient testing
<b>K16510</b>	Syringe 2mL/4mL
<b>K16511</b>	Thermometer, range $32$ to $572^{\circ}\text{F}$ / $0$ to $300^{\circ}\text{C}$
<b>K16512</b>	Thermometer, range $32$ to $230^{\circ}\text{F}$
<b>K16513</b>	Thermometer, range $212$ to $572^{\circ}\text{F}$
<b>K16514</b>	Thermometer, range $0$ to $110^{\circ}\text{C}$
<b>K16515</b>	Thermometer, range $100$ to $300^{\circ}\text{C}$
<b>K16516</b>	Thermometer, range $-36$ to $+105^{\circ}\text{F}$
<b>K16517</b>	Thermometer, range $-38$ to $+40^{\circ}\text{C}$



# AUTOIGNITION TEMPERATURE OF LIQUID CHEMICALS

## Test Method

Determines the lowest temperature at which the vapors of a liquid or solid chemical sample will self-ignite under prescribed laboratory conditions. The temperatures at which 'cool flame' and 'hot flame' ignitions occur, as evidenced by sudden temperature increases in the sample flask, are measured and recorded, and the delay time between introduction of the sample and ignition is timed.

## Autoignition Apparatus

- Conforms to ASTM E659 specifications
- Digital furnace temperature control
- Digital flask temperature display

Modified crucible furnace with digital thermocouple readout of flask temperature at prescribed points per ASTM specifications. Linearized analog output permits connection to a strip chart recorder or datalogging instrument. Furnace provides rapid response and  $\pm 1^\circ\text{C}$  stability throughout the operating range from Ambient to  $750^\circ\text{C}$ . Cylindrical heating chamber provides excellent radial temperature uniformity. Furnace cover has ports for flask exterior thermocouples, and a borosilicate glass thermocouple tube is provided to assure correct positioning of the gas temperature thermocouple inside the test flask. Thermocouples plug directly into the furnace control unit for quick disconnection when removing the flask. A hinged holder in the cover facilitates handling of the test flask. Adjustable mirror permits safe viewing of the flask interior during testing. Control panel has temperature controls and digital thermocouple readout with four-position selector switch.

## Specifications

Conforms to the specifications of:

ASTM E659

Temperature Range: Ambient to  $750^\circ\text{C}$

Temperature Control: digital setpoint solid state controller  
accurate to within  $\pm 1^\circ\text{C}$

Flask Temperature Display:  $0-750^\circ\text{C}$ , with four position selector switch

Electrical Requirements: 220-240V 50/60Hz, Single Phase, 7.7A  $\text{C}\ \text{E}$

## Included Accessories

Borosilicate Test Flask, 500mL

Thermocouples (4)

## Dimensions lwxh,in.(cm)

Furnace: 15x15x22 (38x38x56)

Control Cabinet: 22x10x14 (56x25x36)

Net Weight: 72 lbs (32.8kg)

## Shipping Information

Shipping Weight: 98 lbs (44.5kg)

Dimensions: 16.3 Cu. ft.



K47000 Autoignition Apparatus

**Special apparatus for performing the Autoignition Test according to the ASTM D2155 test method is available. Please contact Koehler Customer Service for additional and ordering information.**

## Ordering Information

Ordering Information		
<b>Catalog No.</b>		
<b>K47000</b>	Autoignition Apparatus, 220-240V 50/60Hz	1
<b>Accessories</b>		
<b>362-001-000</b>	Syringe, 1mL	1
<b>K470-0-1-14</b>	Needle, 6", stainless steel	1
<b>K70015-1A</b>	Recorder, 115V/230V 50/60Hz	1
<b>374-115-001</b>	Hot Air Gun, 115V 60Hz	1
	For purging product gases between tests	
<b>374-230-001</b>	Hot Air Gun, 220-240 50/60Hz	1
	For purging product gases between tests	
<b>332-003-008</b>	Quartz Test Flask, 500mL	1
	For high temperature testing over $600^\circ\text{C}$	
<b>K470-0-1-8</b>	Quartz Thermocouple Guide	1

## ADDITIONAL ACCESSORIES

Additional equipment, materials and/or reagents are required to perform some of the test procedures in the preceding pages. Please refer to the applicable test method for further information, or contact Koehler for assistance.

### **Flash Point by Pensky-Martens Closed Tester.....Pages 32, 34**

ASTM D93, AASHTO T73-811, IP 34, ISO 2719, DIN 51758, FTM 791-1102

Propane  
Toluene  
Acetone  
Calcium Chloride  
Barometer

### **Flash Point by Tag Closed Tester .....Pages 33, 35**

ASTM D56, IP 304, FTM 791-1101

Ethylene Glycol  
Propane  
Barometer  
Water

### **Flash and Fire Points by Cleveland Open-Cup .....Pages 33, 36**

ASTM D92, AASHTO T48, ANS Z-11.6. IP 36, ISO 2592, DIN 51376,  
FTM 791-1103, FTM 141-4294

Barometer

### **Flash Point of Cutback Asphalt with Tag Open-Cup Apparatus .....Page 33**

ASTM D3143

Ethylene Glycol  
Distilled Water

### **Flash Point and Fire Point of Liquids by Tag Open-Cup Apparatus .....Page 37**

ASTM D1310

Flasks, 500mL (2)  
Distilled Water  
Solid Carbon Dioxide  
Acetone  
n-Heptane  
p-Xylenol  
Isopropanol  
Diethylene Glycol

### **Autoignition Temperature of Liquid Chemicals.....Page 39**

ASTM E659

Laboratory Balance  
Powder Funnel