



### Scope of Application

The TAG method describes the flash-point determination of liquids with a viscosity below 5.5 mm<sup>2</sup>/s (cSt) at +40°C (104°F) or below 9.5 mm<sup>2</sup>/s (cSt) at +25°C (77°F) and a flash-point below +93°C (200°F).

This method can indicate the possible presence of highly volatile and flammable materials in a relatively nonvolatile or nonflammable material.

For example, an abnormally low flash-point on a sample of kerosene can indicate gasoline contamination.

### Summary of Method

A brass test cup is filled to the inside mark with test specimen, fitted with a cover and heated. An ignition source is directed into the test cup at regular intervals until a flash is detected.

For the **FLASH / NO FLASH** determination ignition source is applied to a tempered sample to observe whether or not a flash occurs. Used to detect the ability to yield flammable vapors.

The **FLASH-POINT** is the lowest temperature at which the application of an ignition source causes the specimen vapors to ignite.

It measures the tendency of the specimen to form a flammable mixture with air and is only one of a number of properties that shall be considered in assessing the overall flammability hazard of a material.

#### Temperature Range:

With Air Cooling:  
**0°C ... +110°C**

With Liquid Cooling:  
**-30°C ... +110°C**

### User Groups:

Fuel, Gasoline, Jet Fuel, Kerosene, Mastics, Paint, Regulatory Authorities, Solvent, Turbine Fuel, Varnish

### Flash-Point Testing with Closed Cup acc. TAG - TAG 4 (automatic)

#### TAG Method:

**ASTM D 56 - FTM 791-1101 - JIS K2265-1**

#### Equilibrium Method (Flashpoint):

**ISO 1523 - IP 492 (IP 304-1) - EN 924**

**ASTM D 3941**

#### Equilibrium Method (Flash/no Flash):

**ISO 1516 - IP 491 (IP 304-2)**

**ASTM D 3934**

#### Rapid Equilibrium-Simulation (Flashpoint):

**ISO 3679 (BS 6664-4, EN 456, NF T60-616)**

#### Rapid Equilibrium-Simulation (Flash/no Flash):

**ISO 3680 (BS 6664-3, DIN 55 680, NF T60-617)**

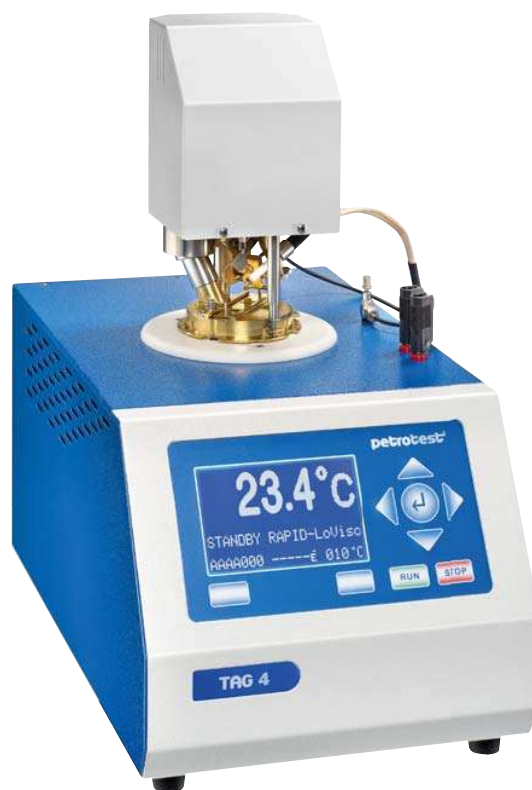
**TAG 4** is a fully automatic closed cup flash-point tester which, in its **Standard Version**, covers a measuring range of 0 to +110°C.

A **Low Temperature Version** is available for lower flash-points, extending the operating span down to approx. -30°C.

The instrument uses **solid state cooling elements**. This avoids any external cooling and messy tubing.

The result is a **compact design** with a bench space of 23 by 47 cm - a serious consideration when the TAG 4 shall be placed in a fume hood.

Only the Low Temperature Version needs a small cooling circulator.



### TAG 4 - easy to operate:

Shift the patented **multi-function-head - ONE TWIST** with one hand in its operating position and all connections are made: assembly of igniter, temperature- and flash-point indicator.

A **touch key panel** and a **large LC-display** allow comfortable setting of the estimated flash-point, selection of the test program, indicates whether the flash-point is valid and shows error messages (e.g. igniter failure).

Temperature indication, choice in either °C or °F.

**Automatic barometric pressure correction** of the measured flash-point.

Strike a key to make the choice between the:

- **ASTM Standard Program, Search Mode** (to find the approximate flash-point of unknown samples faster)
- **Rapid Heating Mode** (for samples with a high flash-point)
- **IP Equilibrium Method**
- **USER Definable Program** in order to customize your very particular test procedure.

To check the proper function of the temperature probe, a **Probe Verification Program** (in conjunction with a special test lid and a certified thermometer) can be applied.

### TAG 4 - supplied with 2 igniter systems:

**Gas flame** with automatic re-lighting and shut-off in case of repeated malfunction and an **electrical igniter** with a permanent check and control of its electrical values. This ensures a better reproducibility and a longer life. Further, this control signals when the igniter is to be changed, possibly due to excessive aging or damage.

There are two **RS232 interfaces**:

one for direct connection of a measurement printer and a second one for bi-directional PC connection, as requirement for the most advantageous use of the **FPPnet-Software**, which allows remote control of the TAG 4 and the storage of all test.

Additional **safety features** are:

a special sensor that monitors if there is a flame outside the test cup (e.g. samples with no conventional flash-point due to flame inhibiting components), and the automatic shut-off in case of excessive sample heating.



## Main Units

### TAG 4 - Automatic Flash-Point Tester, TAG Method (air cooled)

TAG Method: ASTM D 56 - FTM 791-1101 - JIS K2265-1  
 Equilibrium Method: ASTM D 3941 - ISO 1523 - IP 492 - EN 924  
 (flash/no flash) ASTM D 3934 - ISO 1516 - IP 491

with further accessories for:

Rapid Equilibrium-Simulation: ISO 3679 - ISO 3680

#### Features:

- swivel-around multi-function-head - ONE TWIST
- automatic barometric pressure correction
- automatic overheat protection
- Peltier element system
- flash-point control, also for external ignition
- rapid heating mode
- PC-software

#### Consisting of:

stainless steel housing with two-color powder coating, touch-key panel with large LC-display (visible in up to 10 m distance) swivel-mounted multi-function-head - ONE-TWIST, two RS232-interfaces for data printer and computer connection, different test-programs, data-transfer and software upgrading through bi-directional interface, Peltier element system, automatic barometric pressure correction, automatic overheat protection, power controlled & monitored electric igniter, gas igniter with auto-relighting and safety shut-off, re-cooling fan.

#### PC-Software "FPPnet" (Windows® compatible, see page 34):

A control & analysis program for easy handling, data storage and program transfer. Providing online display of sample & heater block temperature, gradient (also in an XY-diagram) and test status. Easy to read tableau indicating: sample no., sample name, °C/°F, expected flash point, program, status, found flash point, corrected flash point, corrected rounded flash point. Test results are stored together with all program and device parameters in one file. The simultaneous connection of different petrotest® flash point devices is possible. To simplify the device management they can be named individually.

#### Supplied with:

- 1 cup "TAG"
- 1 cover "TAG"
- 1 multi-detector "TAG"
- 1 gas igniter
- 1 electric igniter
- 1 stopper
- 1 tong for cup
- 1 tray for cup and multi-detector
- 1 PC-software "FPPnet"

Temperature Range: 0 to +110 °C (+32 to +230 °F)

12-0540

Power supply: 115/230 V, 50/60 Hz, EU-Plug

12-0541

Power supply: 115/230 V, 50/60 Hz, US-Plug

### TAG 4 - Automatic Flash-Point Tester, TAG Method (liquid cooled)

TAG Method: ASTM D 56 - FTM 791-1101 - JIS K2265-1  
 Equilibrium Method: ASTM D 3941 - ISO 1523 - IP 492 - EN 924  
 (flash/no flash) ASTM D 3934 - ISO 1516 - IP 491

with further accessories for:

Rapid Equilibrium-Simulation: ISO 3679 - ISO 3680

#### Consisting of:

see Standard Unit (12-0540), but with cooler connections for external liquid cooling.

Software (Windows®): see Standard Unit (12-0540)

Supplied with: see Standard Unit (12-0540)

Note: Circulation cooler (e.g. 25-0382) is required.

Temperature Range: -30 to +110 °C (-22 to +230 °F)

12-0542

Power supply: 230 V, 50/60 Hz, EU-plug

12-0543

Power supply: 115 V, 60 Hz, US-plug



gas igniter &  
electric auto-ignition device

## Technical Data

### Temperature Range:

- 0 to +110°C (air cooled)
- 30 to +110°C (liquid cooled)

### Programs: (acc. to international standards)

- 2x ASTM Standards
- 2x Rapid-Heating
- 2x Search Run
- 2x Equilibrium
- 2x Rapid-Test Simulation
- 2x User Defined

### Ignition Type: (included)

- gas & electric

### Stirring Speed: --

### Sensing System:

- differential-thermocouple

### Barometric

### Pressure Sensor:

- automatic correction of the measured values

### Safety:

- overheat protection
- automatic shut-off

### Hardware Clock: included

### Interface:

- RS232 (for printer)
- RS232 (for computer download)
- (USB-converter available)

### Gas Connection:

- for propane/butane or natural gas (max. 50 mbar)

### Display: °C / °F (selectable)

- high x wide: 56 x 90 mm
- digit size : 25 mm

### Dimensions:

- Width 230 mm
- Depth 470 mm
- Height 460 mm
- Weight 8 kg

### Power Consumption:

- 180 Watts

### Power Supply: (selectable)

- 230/115 V, 50/60 Hz



Connections: Air Cooled



Connections: Liquid Cooled