

Auto-Ignition Temperature - ZPA 3 (automatic / semi-automatic)

DIN 51794, EN 14522, NF T20-036, NF T20-037, 79/831/EWG, CEI 79-4

Product group(s): Flash Point

User group(s): Fuel, Grease, Jet Fuel, Solid, Solvent

Scope: For the determination of liquids, in particular of mineral hydrocarbons and their mixtures, having an auto-ignition temperature between +75 °C and +650 °C.

The ZPA 3 is suitable for:

EN 14522 - with the included standard firmware

DIN 51794 - with an alternative firmware upon request

(Note: it is not possible to switch between DIN and EN, only by changing the firmware)

Inflammable liquids, like solvents, fuels or lubricants tend to auto-ignite if getting in contact with a hot surface.

The auto-ignition-temperature determination could happen to take 1 to 2 days and requires the continuous attention of experienced laboratory personal.

Since not only the lowest temperature at which auto-ignition of the sample occurs must be found stepwise but also the optimal sample volume for this type of flash (flame).

During the tests the ZPA 3 is working for many hours totally independent. Only for the final test the flasks have to be replaced by fresh ones.

The automatic process is reducing the total testtime by the periods before the sample injection. Due to this and the less attention payed by the user make this test more cost-effective.

The automatic ZPA 3 has a heated sample-feeding device equipped with a photocell controlled drop counter for liquid material and a peristaltic pump (VITON®-sampling hose).

Temperature control, air purging of the flask and the flame detection, however, will be automatic.

But even without the automatic sample-feeder the instrument can be used as semi-automatic ZPA 3. In this case the sample will be injected with a syringe after an acoustic signal. The quantity will be recommended on the instrument's display, as soon as the next temperature step is set. Temperature control, air purging of the flask and the flame detection, however, will be automatic.

- auto-ignition test is working automatically for hours
- 6 Programs for measuring and calibration
- auto-ignition temperature and parameter on LC-display
- detailed documentation with printer

The application of the ZPA 3 Auto-Ignition Tester is not limited to liquid substances.

A special program allows to examine pasty or solid matter on its inflammability. A special mounting device for specimen cubes is available.

Automatic Programs:

Pre-Test Program:

starts at ambient temperature with a temperature rise of 3 to 5 K/min and detects approachingly the ignition point in 20 K steps.

When a self-ignition is detected the program will switch to the Main-Program A1 automatically.

Main-Program A1:

detects out of a row of various drop-amounts the lowest self-ignition in 5 K steps. Then the program will go ahead to Main-Program A2.

Main-Program A2:

standardized ignition temperature detection in steps of 2 K with different amounts of drops, standardized determination with the lowest value of the 1st line of tests, re-start after cleaning of ignition chamber and re-test to finalize the lowest value.

Solid-Program:

to examine the inflammability of solid or pasty materials acc. European Community Act 79/831/CEE.

Calibration-Program:

for the automatic thermocouple calibration

Glow-Program:

to clean the Erlenmeyerflasks (Pyrolyse)



Auto-Ignition Temperature Test Equipment

to be composed of:

- **Auto-Ignition Tester - ZPA 3 (automatic or semi-automatic)**
including standard firmware acc. EN 14522

- **Solid Conversion Set**

Alternative firmware available upon request:

acc. DIN 51794 or acc. EN 14522 for ZPA's with DIN-firmware.

Technical Data

<u>Temperature Range:</u>	ambient to +650 °C (+1202 °F)
<u>Programs:</u>	- Pre-Test Program - Main Program A1 - Main Program A2 - Solid Program (acc. 79/831/EWG) - Calibration Program - Glow Program
<u>Ignition:</u>	auto-ignition
<u>Interface:</u>	RS232 (for printer) RS232 (for downloads on PC)
<u>Dimensions (WxDxH):</u>	
-Control Unit:	370 x 370 x 400 mm
-Printer:	420 x 300 x 200 mm
-Furnace:	300 x 300 x 620 mm
-Feeding Device:	280 x 320 x 520 mm
<u>Power Consumption:</u>	approx. 1200 Watts
<u>Power Supply:</u>	230/115 V, 50/60 Hz

Main Unit

12-1822 ZPA 3 - Automatic Auto-Ignition Tester with Heated Sample-Feeder

Liquids: EN 14 522 - CEI 79-4 - NF T20-037 (DIN 51 794 requires alternative firmware)

with further accessories for:
Solids: NF T20-036 - 79/831/EWG

Consisting of:

Furnace with safety cage:
adjustable up to +650 °C, with holder for temperature probe, indicator and sample syringe

Metal insert:
stainless steel with an additional fixture for temperature probe

Test insert:
complete with two-part (non-asbestos) insulation ring, ignition flask (200 ml) and thermocouple

Calibration block:
for automatic thermocouple testing, adjustment and calibration

Control unit:
with a three-step program for pre-tests, main tests and automatic calibration of thermocouples. Connections for compressed air (valve controlled air purge) and recorder to register temperature curves. Permanent display of furnace and sample temperatures as well as information about test run, heating and program sequence.

Automatic Sample feeding device:
with drop counting controlled by photocells, equipped with a peristaltic pump (VITON®-sampling hose). Further equipped with a heating device (required by samples of solid consistence at ambient temperatures) to heat up the sample by an air chamber. Due to special designed pump and tubing, the temperature will remain unchanged all the way up into the drip-tip of the feeder arm. Adjustable temperature range between ambient and +95 °C.

Printer:
documentation of each completed ignition attempt with sample no., program segment, pre-selected temperature, sample volume, ignition delay, flash intensity, code and program time lapse. For sample temperature curves the printer can be replaced by a single-line recorder (not included).

Supplied with:
1 ignition flask
1 cover for test insert
3 insulation ring for cover
1 ignition point indicator
1 temperature probe Pt-100
1 thermocouple for test flask

Note: Alternative firmware for DIN 51794 upon request.
A solid heating program is included but the required accessories are on separate order.

Power supply : 230 V, 50/60 Hz, 1200 W

12-1823	ZPA 3 - Automatic Auto-Ignition Tester with Heated Sample-Feeder Like 12-1822 but: Power supply : 115 V, 50/60 Hz
12-1800	ZPA 3 - Semi-Automatic Auto-Ignition Tester without Sample-Feeder Depending on the components only suitable for: Liquids: EN 14 522 - CEI 79-4 - NF T20-037 (DIN 51 794 requires alternative firmware) Like 12-1822 but: with sample syringe instead of Automatic Sample Feeding Device Power supply : 230 V, 50/60 Hz, 1200 W
12-1801	ZPA 3 - Semi-Automatic Auto-Ignition Tester without Sample-Feeder Like 12-1800 but: Power supply : 115 V, 50/60 Hz

Options & Accessories

12-0838	Solid Conversion Set 79/831/EWG Consisting of: 1 thermocouple (NiCr-Ni) 10 baskets
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Spare Parts

12-0819	Syringe, 1 ml for sample introduction <u>Note!</u> Required for sample introduction without automatic sample feeding device.
12-0816	Ignition Flask, 200 ml, made of glass (Erlenmeyer flask)
12-0850	Furnace with safety case
12-0854	Metal Insert for furnace, made of stainless steel
12-0855	Air Purging Device
12-0858	Cover for test insert
12-0859	Insulation Ring for cover
12-0863	Ignition Point Indicator
12-0864	Temperature Probe Pt-100 to measure the furnace temperature
12-0870	Baskets for testing solids (cube) made of metal, pack of 10
12-0871	Thermocouple for test flask (NiCr-Ni) with protective tubes to measure flask temperature
12-0872	Thermocouple for solids (NiCr-Ni)
12-0882	Sampling Hoses (VITON®), type D, pack of 10
12-0883	Sampling Hoses (EPDM/PP), pack of 10 resistant against acetone

12-0829 **Hose Connection for gas conversion set, 1 m**

12-0832 **Hand Pump for gas conversion set, 200 ml, made of glass**

Order Guideline

Minimum equipment: 1x 12-1822, 1x 12-1838 or 12-0831
Spares (approx. 1 year): 12-0816, 12-0870, 12-0878
Additional requirements: