

# COMBUSTION APPARATUS WICKBOLD



## ACCORDING STANDARDS

ASTM D2784 / ASTM D2747  
ASTM D2384  
ISO 4260  
IP 243



COMBUSTION APPARATUS  
OXY-HYDROGEN BURNER  
FOR SULFUR, CHLORINE AND FLUORINE.



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## WICKBOLD METHOD - For Sulphur, Chlorine, Fluorine

The WICKBOLD Method consists of burning a sample with a stainless steel burner with an oxyhydrogen blowpipe, to then measure the Sulfur and/or Chlorine and/or Fluorine contained in the product resulting from this combustion.

It is used to measure Total Sulfur in LPG, as well as in liquid petroleum products. With the use of solvent it also allows to dose Total Sulfur in viscous samples, aromatic compounds, and high-grade samples. After combustion, sulfur is measured by turbidimetry or any other appropriate technique

This method is also used for the determination of chlorine (from 0.5 ppm) in lubricants, butane-butene mixtures, ethylene, propylene..... By combustion, the organically bound chlorine is completely converted to free chlorine, which will be measured by conductimetry or any other technique.

## HIGHLY SECURE EQUIPMENT:

The use of hydrogen to make combustions requires a rigorous approach to safety. Concerned about complying with the safety standards, our device is the most secure of the market.

- By using a stainless-steel burner / Sintered Flame arrester (F) / Glassware covered by protection caps, to protect the user from any possible explosion.
- By "Safety" functions that automatically shuts off the Hydrogen by closing solenoid valves (EV) in case of:
  - a) Opening of the protective cover during combustion,
  - b) Reduced cooling water pressure,
  - c) Decrease of the Depression of the vacuum in the fluid circuit,
  - d) Decrease of oxygen pressure.

## ADVANTAGES OF WICKBOLD METHOD:

A very high combustion temperature in very large excess of oxygen, guaranteeing a perfect combustion. Possibility of large sample quantity (several tens of ml) allowing very low measurement thresholds ( $\approx 1$  ppm Sulfur).

A device for measuring Sulfur, Chlorine, Fluorine at a low price.

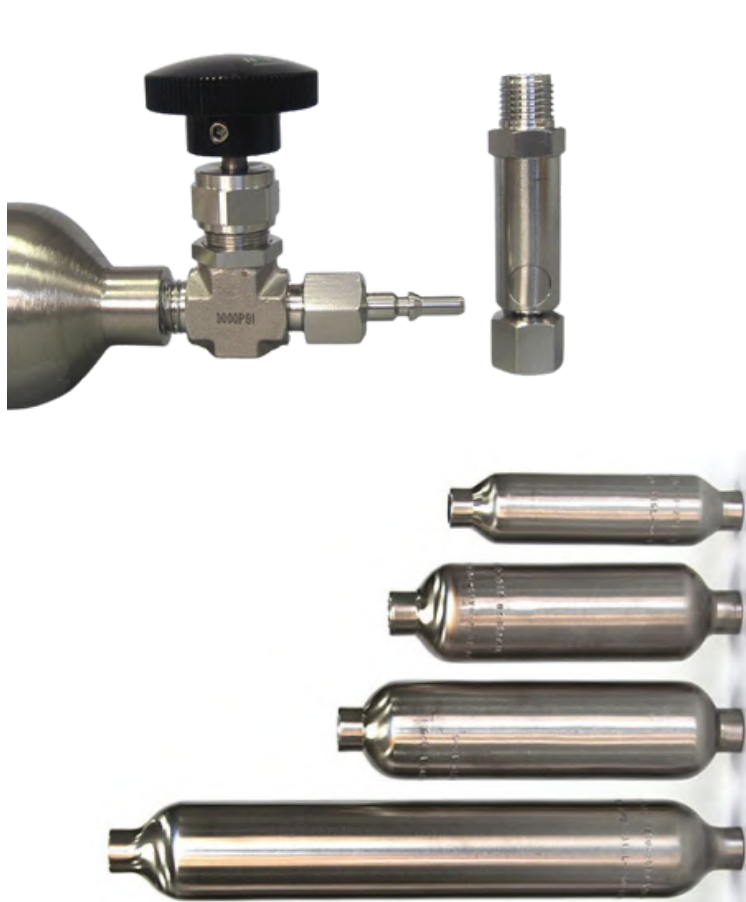
## WICKBOLD - COMBUSTION PRINCIPLE



The sample is aspirated and burnt in the flame of an oxyhydrogen blowpipe. The resulting gas is led to the absorber where it is mixed with a reagent (solution). The reagent is choosed according the desired analysis.

The mixture, liquid, is then collected/recovered via a sintered and analyzed with a method suitable for the purpose.

For gas & LPG samples, it is necessary and higly recommended to use Sampling Reservoir. We offer classic sampling reservoir in Stainless Steel. For very low level sulfur (traces), to be more accurate and reliable, we offer Sulfinert Coating samplig reservoir.



**Depending on your needs, you can use standard or customized sampling cylinder.**

## ACCESSORIES



- **Burner:** made of stainless steel to reach a temperature of about 2 000 ° C. A quartz burner can be supplied on request.
- **Combustion Chamber:** quartz refrigerated by circulation of water.
- **Pyrex Absorber:** also refrigerated, with a sintered as well a 3-way faucet at the base (absorber with vigreux, available on request).
- **Glass Ball:** intended to retain the vapors of the absorbent.
- **Vacuum Pump:** with a flow rate of approximately 3,000 l / h integrated into the device (graphite pallet pump).
- **Glassware:** Beaker, vial, and flasks for liquid samples.
- **Sampling Reservoir:** For LPG samples and natural gas as well as refining gas.

<b>Dimensions</b>	Height 65 + (20 glassware) x Width 68 x Depth 48 cm / weight ≈ 40 kg
<b>Electric</b>	The device requires connection to the 230 V - 50 Hz Single-phase mains 110 V - 60 Hz, Power consumption 500 W.
<b>Gas</b>	The apparatus requires 2 gas supplies which must be: -Oxygen - technical grade sulfur-free -Hydrogen - technical grade sulfur-free <u>Consumption:</u> -Oxygen ≈ 270 l/h -Hydrogen ≈ 30 l/h Supply pressures must be between 1 bar to 3 bar maximum.
<b>Water</b>	For cooling glassware Inlet pressure between 1 and 2 bar with tap for flow adjustment. Free evacuation.

**Viscous and very viscous sample must be diluted before combustion.**