

IRF

behr IRF 10: The Programmable Infra-red Furnace



The behr IRF 10



Versatility in Application

The programmable behr infrared furnace model IRF 10 provides an optimal solution for numerous laboratory tasks.

- Thermal oxidative or reductive decomposition of a wide range of sample materials for sample weights from 10 mg to 1 g, depending on the properties of the sample.
- Thermal analysis
- Specific temperature dependent fractional desorption of organic compounds

- Pyrolysis
- Drying
- Specific fractional vaporisation of components and sample materials

The effluent combustion gases can be subject to subsequent analysis (e.g. ion chromatography or coulometry) after absorbing the analytes in a suitable liquid. Alternatively, the combustion gases may be input into an on-line analyser (e.g. IR-analyser).

The Principle

The *behr IRF 10* utilises radiant heat.

There is an infra-red source rod located in one focal line of an elliptical reflector. This gold plated reflector focuses the infra-red radiation onto a quartz combustion tube, which is located along the second focal line of the elliptical cylinder.

The user manually introduces the sample into the combustion tube, using sample boats made of quartz, ceramic or other inert material.

A Ni-CrNi thermocouple element, located on the outer surface of the quartz combustion tube within the elliptical reflective furnace, generates a potential signal used to determine the temperature.

Many Advantages

- Temperatures up to 1150 °C.
- Extremely rapid heating rate (room temperature to 1000 °C in approx. 10 sec.).
- Programmable temperature gradients and plateaux. Execution of time-temperature program is microprocessor-regulated, assuring reproducibility of determinations. Repositioning sample boat to different temperature zones is not necessary.
- The furnace requires no connection to a water supply for cooling. "Heat pipes" & the retractable upper furnace-half enable rapid cooling after use.
- The upper furnace-half retracts on bearings for viewing the combustion region.
- Various diameter combustion tubes allow optimisation for various different applications, sample materials and amounts of sample.
- Two flow meters for control of two different gases, e.g. O₂ and Ar.
- Programming and operation via RS 232 port and (remote) PC also possible.



...and yet many more advantages:

Temperature-Time Programmability for Combustion in an Oxygen Stream

- Control of combustion through user-programmable temperature profile
- Even petrochemicals & plastics combust completely without soot formation.
- Controlled drying of liquid or moist samples prior to oxidation.

The behr IRF 10 for Elemental Analysis

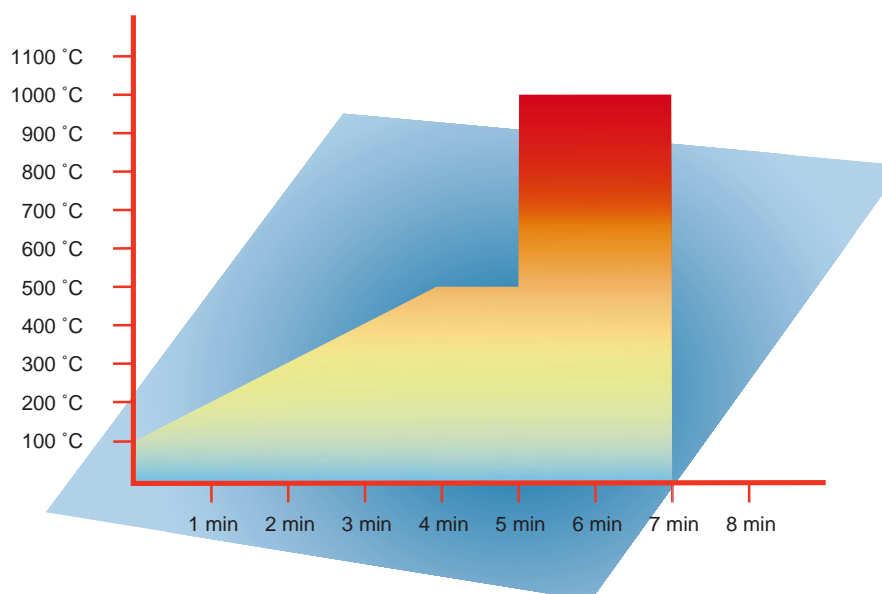
Using the behr IRF 10, samples may be combusted in an oxygen flow for the determination of:

- Carbon content,
- Sulphur content,
- Hydrogen content,
- Nitrogen content,
- Halogen content.

Up to 5 temperature gradients and 5 plateaux specifiable. Time-temperature profiles can be optimised, even for difficult materials, such as plastics or oils by gradual heating followed by a complete

mineralisation. Flexibility in adapting temperature profiles to the sample type helps in avoiding soot formation, uncontrolled deflagration and incomplete combustion.

Illustration: Time-temperature profile suitable for combustion of rubber samples (20 – 50 mg) in an oxygen stream.



Technical Data

Maximal temperature along the focal length: 1150 °C

Combustion tube inside diameter: std. 15 mm, optional max. 29 mm

Heated length: std. 200 mm, other lengths optional

Dimensions (W x H x D): 360 x 440 x 420 mm

Power requirements: 230 V/50 Hz, 1.5 kW



behr Labor-Technik GmbH • Spangerstraße 8 • D – 40599 Düsseldorf
Tel.: (+49) (0) 211 – 7 48 47 51 • Fax: (+49) (0) 211 – 7 48 47 48 • E-mail: info@behr-labor.de

We reserve the right to make technical modifications.

Although this brochure has been prepared with the greatest of care, we cannot completely exclude the possibility of errors.