

# TheOx<sup>®</sup> ADVANCED FUSION INSTRUMENT

Keeping ahead through expertise in  
sample preparation by fusion



# GET READY FOR HIGH PRODUCTIVITY!

TheOx Advanced fusion instrument has been designed by our experts in fusion to suit our customers' ever-changing needs. This instrument is powered by electricity and has six fusion positions. It is used to prepare glass disks for XRF analysis as well as borate and peroxide solutions for AA and ICP analysis. Its extra features that increase analytical performance and safety benefit all users, regardless of their skills.



## TheOx Advanced's value to sample preparation by fusion

- High productivity
- Withstands heavy workloads and harsh work environments
- High analytical performance



## MINING / MINERALS

TheOx Advanced is a great quality control tool leading to very high analytical performance and allowing the obtention of precise and accurate results.



## COSMETICS

The versatility of TheOx Advanced is convenient when it comes to analyzing cosmetic samples.



## RESEARCH

With this simple and low maintenance instrument, you can quickly switch from producing glass beads for XRF to producing solutions for ICP analysis. It then facilitates your experiments.



## FOOD

The safety door of the instrument prevents spills and allows a clean and safe preparation of food samples.



## BUILDING MATERIALS

TheOx Advanced is a great quality control tool leading to very high analytical performance and allowing the obtention of precise and accurate results.



## ACADEMIA

TheOx Advanced is a versatile fusion instrument that is easy to use and that requires low maintenance. It's therefore a great choice for universities.



## PHARMACEUTICALS

In addition to providing excellent reproducibility, TheOx Advanced instrument is very helpful in analyzing pharmaceutical samples.

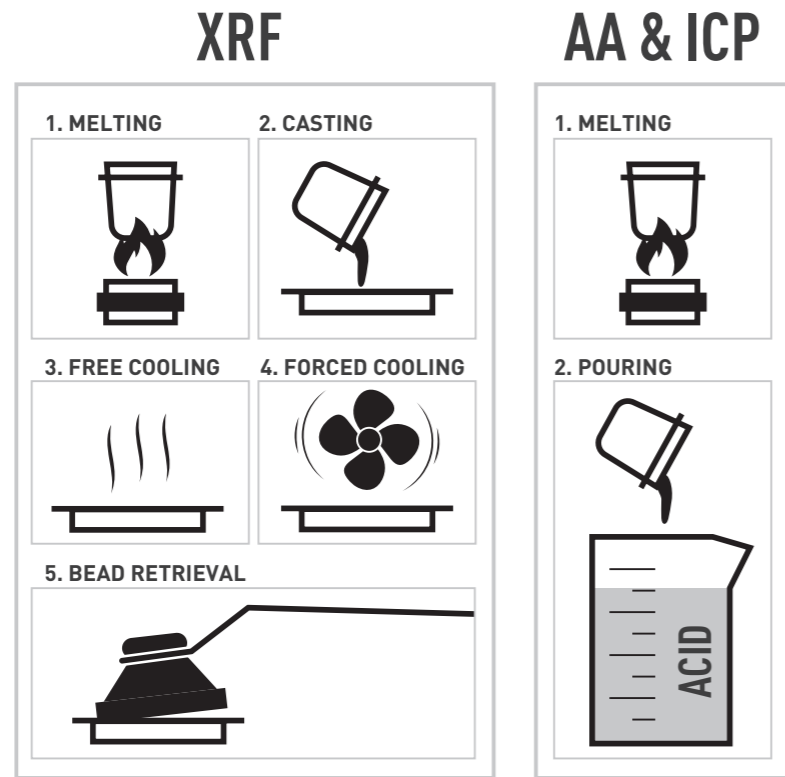


## ENVIRONMENTAL

TheOx Advanced instrument is very useful for the preparation of soil and sediments since it leads to high-quality analytical results.

# WHAT IS FUSION?

Fusion is a sample preparation method developed in the mid 50s. It consists of dissolving at high temperatures a fully oxidized sample in a suitable solvent (a flux) in a platinum, zirconium or graphite crucible. The melted mixture is agitated and poured into a mold to create a glass disk for XRF analysis. It can be poured into a beaker to create a solution for AA or ICP analysis.



## Why should I use fusion in my laboratory?

This universal technique has numerous benefits when you compare it with other sample preparation methods such as pressed pellets or acid digestion.

|   | Fusion        | Pressed pellet   |
|---|---------------|------------------|
| Affected by mineralogy                    | No            | Yes              |
| Affected by particle size                 | No            | Yes              |
| Desirable size of powder (microns)        | 50-100 (easy) | 5-30 (difficult) |
| Accuracy                                  | ≤1%           | ≤10%             |
| Easy calibration with synthetic standards | Yes           | No               |
| Application of matrix correction          | Yes           | No               |

# WHY INVEST IN TheOx ADVANCED FUSION INSTRUMENT?

## Outstanding analytical performance

This high-accuracy instrument allows absolute control of the fusion temperature and superior homogenization of the melt. Its sturdy single motor system guarantees optimal crucible rocking. This instrument gives repeatable inter-position results at each fusion cycle. It also has a controlled or maximum heating rate to optimize oxidation and fusion success rate.

## Programmable fusion parameters

Parameters such as temperature, duration, crucible rocking speed and amplitude, cooling airflow and pouring modes can all be changed depending on your needs.

## Easy to use

TheOx Advanced is fully automatic and has a library of predefined fusion methods to facilitate its use in the laboratory. Its touch-screen interface is available in many languages for the customer's convenience. Crucibles, molds and beakers are easy to install on the instrument.

## Productive, powerful and durable

TheOx Advanced can process from 24 to 30 fusions per hour and has fast temperature ramp ups that ensure shorter fusion cycles. Its heating elements are located behind the crucibles so they are protected against flux spills, and they can be replaced one at a time to maintain productivity. This product has long-lasting components: it has sturdy industrial grade motors and it is made of stainless steel and aluminium for high durability. The fumes are evacuated through the heating chamber's chimneys, thus increasing the durability of the heating chamber components.

## Ultimate safety

TheOx Advanced has fully automated pouring and a safety door that automatically locks during the entire fusion process. The user does not have to manipulate hot vessels (cold-to-cold operation) and must confirm the emplacement of molds before starting a fusion cycle.

# QUICK RETURN ON INVESTMENT (ROI)

## Low cost of ownership

- 3 preparation modes in 1 instrument
- 3 different layers of refractory materials for maximal heat retention and energy saving
- Quick replacement of refractory layers, mold holders and alumina rods.

## Minimal infrastructure required

- Simple electrical connection (single phase)
- No O<sub>2</sub>, compressed air or water cooling system needed.



# TECHNICAL SPECIFICATIONS

## Tailored solutions through expertise

Malvern Panalytical experts are the reference for all steps of the fusion process or development of new applications. Their personalised solutions allow customers to properly manage risks, reach a quick ROI, and benefit from a large database of preparation methods for a broad range of samples.

### Productivity

- 6 fusion positions
- Prepares glass disks for XRF analysis
- Prepares borate and peroxide solutions for AA and ICP analysis

### Heating

- Heating chamber temperature up to 1200°C
- Temperature monitored by a type R thermocouple located inside the heating chamber
- Heating chamber stability monitored by a type N thermocouple located between the refractory layers
- Resistance-based heating system

### Electrical

- |            |  |
|------------|--|
| Electrical | <ul style="list-style-type: none"> <li>• Voltage: 208-240 V</li> <li>• Current: 30 A</li> <li>• Frequency: 50/60 Hz</li> </ul> |
|------------|--|

### Dimensions

- |                       |   |
|-----------------------|---|
| TheOx Advanced        | <ul style="list-style-type: none"> <li>• Height: 56 cm (22.0 in.)</li> <li>• Depth: 62 cm (24.5 in.)</li> <li>• Width: 110 cm (43 in.)</li> <li>• Weight: 90 kg (200 lb.)</li> </ul>  |
| External power supply | <ul style="list-style-type: none"> <li>• Height: 41.5 cm (16.0 in.)</li> <li>• Depth: 50 cm (19.5 in.)</li> <li>• Width: 20.5 cm (8 in.)</li> <li>• Weight: 21 kg (46 lb.)</li> </ul> |

### Control and Operation

- One-touch operation
- Touch screen interface
- Precise temperature display

### Programmable Fusion Parameters

- Temperature
- Duration
- Heating rate
- Crucible rocking speed
- Cooling air flow
- Magnetic stirring speed for solutions
- 4 pouring modes

### Software and Communication

- Sample monitoring option: ID and success rate tracking
- Library of 10 predefined methods
- Programmable preheat and heat shut-off timers
- Remote troubleshooting
- Limitless program storage 8G Compact Flash
- Ethernet external communication link
- 1 USB port

### Safety

- User operation levels are protected by a password
- Safety door that automatically locks during the entire fusion process
- Certified CE and CSA
- Conformal coated PCB for high corrosion resistance
- Meets the UL 94-VO flammability standard
- Meets RoHS requirements



## WHY CHOOSE MALVERN PANALYTICAL?

We are global leaders in materials characterization, creating superior, customer-focused solutions and services which supply tangible economic impact through chemical, physical and structural analysis.

Our aim is to help you develop better quality products and get them to market faster. Our solutions support excellence in research, and help maximize productivity and process efficiency.

Malvern Panalytical is part of Spectris, the productivity-enhancing instrumentation and controls company.

[www.spectris.com](http://www.spectris.com)

## SERVICE & SUPPORT

Malvern Panalytical provides the global training, service and support you need to continuously drive your analytical processes at the highest level. We help you increase the return on your investment with us, and ensure that as your laboratory and analytical needs grow, we are there to support you.

Our worldwide team of specialists adds value to your business processes by ensuring applications expertise, rapid response and maximum instrument uptime.

- Local and remote support
- Full and flexible range of support agreements
- Compliance and validation support
- Onsite or classroom-based training courses
- e-Learning training courses and web seminars
- Sample and application consultancy



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