

# THERMOSAFE



## DRUM & PROCESS INDUCTION HEATER



THORNE &  
**DERRICK**  
INTERNATIONAL

Thorne & Derrick

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

**MELTS SOLIDS • HEATS LIQUIDS • TOTALLY SAFE**

DESIGNED TO HEAT 205 LITRE DRUMS OR SMALLER STEEL VESSELS.

THERMOSAFE IS A PROVEN ALTERNATIVE TO MULTI-DRUM OVENS AND THE SOLUTION TO A HOST OF PROCESS HEATING PROBLEMS, EVEN IN HAZARDOUS AREAS.

**SAFE**

**EFFICIENT**

**FAST**

**CLEAN**

**SIMPLE**

**FLEXIBLE**

**CLOSE CONTROL**

**MAINTENANCE FREE**



IN USE SINCE 1985 IN MORE THAN 40 COUNTRIES



## SIMPLE PRINCIPLE

THERMOSAFE is a single induction coil, wholly encapsulated in a cylinder made from a glass reinforced resin specifically developed for chemical plant. The cylinder is simply placed over the drum. Contact is not required.

The coil is connected to a single phase AC mains supply and generates heat directly and uniformly in the drum wall. Energy transfer is by alternating magnetic field and thus there is no heat transfer by the conventional and inefficient means of radiation or convection. As there are no hot elements, the heater remains substantially cooler than the drum being heated.



## SAFETY

The complete absence of hot elements and the encapsulation of all electrical components enables unattended use, overnight if required. THERMOSAFE can even be used in hazardous areas Zones 1 and 2, as the heater is unique in possessing full BASEEFA certification. Uniform heating without hot spots reduces the risk of product degradation. Accidental spillage does not present a fire hazard and personnel can work comfortably in close proximity. Together, these features allow material to be heated at point-of-use, thus eliminating the transport of hot drums.



## EFFICIENCY

The low system temperature and lack of heat transfer contribute to the high efficiency of the induction heater. Power usage is extremely low at only 2.25kW. Although originally designed with safety in mind, the heaters have won several awards for efficiency and productivity. Independent figures indicate energy savings of over 50% when compared with conventional radiant drum heaters, and more than 90% in comparison with drum ovens.

## SPEED

By using the entire drum wall to input energy, the fastest practical heating rate can be achieved without product degradation. Heating times will depend on the contents of the drum but, to give a rough idea, the rate of temperature rise of a typical viscous organic liquid will be about 15°C per hour. The speed is further improved by the instant initial response of induction heating. Typically, THERMOSAFE has proved to be 2-4 times faster than ovens.



## CLEANLINESS

With ingress protection to IP66, simple smooth surfaces and no moving parts, the induction heaters are ideal for use in clean environments. They can even be hosed down during use.

OPENS UP APPLICATIONS BEYOND



## FLEXIBILITY

### SINGLE OR MULTI-DRUM "OVEN" APPLICATIONS

In addition to being operated at point-of-use and integrated into the process, the heaters are used extensively as replacements for, and alternatives to, drum ovens. A key point to note is that far fewer individual heaters are required than the drum



capacity of an oven. For example, one particular award winning installation of 3 THERMOSAFE units heats 20 drums per day. The ease at which capacity can be adjusted, to meet varying throughput demands and the varying heating requirements of different materials, is in stark contrast to the fixed facility of an oven.



## MULTI-PURPOSE

The induction heater's unique features enable the same piece of equipment to be used in a wide range of applications to heat drums and a variety of other metal items, including gas bottles, small-scale reactors and process vessels.



Complete access to the drum while heating enables pumps and stirrers to be employed. The drum and heater can be integrated into the system, often eliminating the first process vessel, and continuous feeding of material, at regulated temperature and flow rate, can easily be achieved.

Re-working and sampling of solidified or suspect material, even if heat sensitive, is a common task for THERMOSAFE. The lack of contact with the drum surface makes this possible even when the material is in its final packing.



Uniform heating and instant response makes the heater ideal for removing residues from drums, significantly reducing wastage. With full drums, these same features enable very rapid removal of solid drum contents by melting the outer layer of material.

## MAINTENANCE

Since 1985, THERMOSAFE heaters have been supplied to more than 40 countries. With no heating elements and no moving parts, experience so far suggests a seemingly unlimited life, with literally no maintenance.



## CONTROL



THERMOSAFE heats by induction and therefore has no heating elements. The maximum temperature is self-limiting, and the drum wall temperature is governed by the material inside the drum. In the vast majority of applications additional control is not required.

THERMOSAFE remains much cooler than the vessel being heated. The consequent lack of retained heat after switching off allows for very close temperature control using simple on-off devices. The choice of control will depend on your specific requirements, and might include temperature controllers, timers, energy regulators or any combination of these or other components.



## HANDLING

THERMOSAFE is simply an encapsulated induction coil. Both ends of the cylinder are open, allowing the heater to be lowered over the drum or vessel. Alternatively, the drum can be lowered into the heater but, as THERMOSAFE weighs less than 50kg, this is unlikely to be the most convenient arrangement.



Top, bottom or side flanges may be used to attach handling equipment, if preferred to manual lifting. A range of dedicated products is available but many standard forms of handling device are suitable.



## SPECIFICATION

### THERMOSAFE Induction Heater Type A

Single phase 240V, 50Hz a.c.

Current/power consumption  
(Note. Inductive power factor)

Switch-on 21A, 2750W  
Running 18A, 2250W

Overall dia. 743mm  
Internal dia. 613mm  
Height 711mm  
Weight 48kg

Class II Appliance ☐

Certification Nos. SIRA08ATEX3101X  
IECEX SIR08.0037X

Ex II 2GD Exe II 170oC (T3) Ex tD II A21 T 170oC.

Degree of enclosure protection: IP66  
(Complete protection from the ingress of dust, and protection against powerful jets of water)

Certified to IEC Standards 60079-0, 60079-7, 61241-0, 61241-1.  
For use in Zones 1 and 2. Certified to Increased Safety Exe

Patent Nos. GB2425447  
International Patents Pending



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