



armfield

TRAY DRIER

UOP8
issue 8



The UOP8 Tray Drier with operator using psychrometer downstream of sample trays.

This small scale tray drier dries solids by passing a stream of hot air over trays of wet material, a method commonly used in industry .

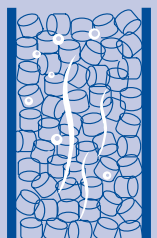
The unit is applicable to the Unit Operations laboratory of educational establishments and also to Food Technology education and research.

DEMONSTRATION CAPABILITIES

- *demonstration of drying rate regimes*
- *heat and mass transfer analogies*
- *drying tests on solids for industrial use*
- *effect of temperature and air velocity on drying rate*
- *use of psychrometric charts*
- *mass balances (water)*

Heat and Mass Transfer Unit Operations

UOP



DESCRIPTION

The unit consists of a floor standing tunnel in one end of which is mounted an axial flow fan. Downstream of the fan a bank of electrically heated elements heat the air flowing to the drying chamber. The chamber with transparent access door, contains a rack of trays suspended from a balance mounted on top of the drier. The total capacity of the trays is approximately 3kg of solids.

Ducting upstream and downstream of the drier is designed to provide a uniform airflow over the trays.

Controls mounted on a panel at the fan end of the tunnel permit variation of air speed and heater power to vary temperature through the drier.

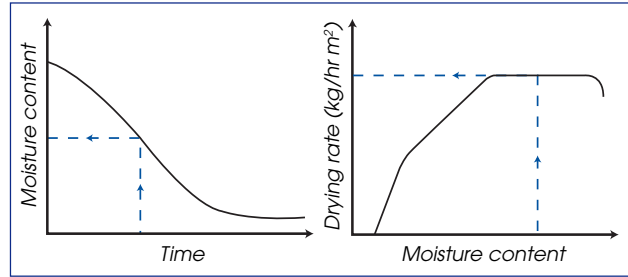
Measurements of temperature and humidity (with an aspirated wet and dry bulb psychrometer) may be made before and after the drier chamber.

The heating elements are fully protected against overheating by the use of bi-metal thermostats and the heating circuits may only be switched on when the fan is running. The fan minimum speed is preset.

Operator safety is provided by means of a residual current device (RCD)

Operating parameters may be varied to provide data demonstrating theoretical and practical aspects of industrial drying practice and an instruction manual is included with exercise sheets for student experiments.

NOTE: Sample material is not included in the supply.



ORDERING SPECIFICATION

- A floor standing tray drier with tunnel, axial fan and heating elements providing hot air to a compartment measuring 300x300x400mm.
- Fan adjustable to give air velocities of 0.3-1.8m/s.
- Four sample trays with a capacity of approx 3kg wet solids are suspended from a digital balance mounted on the drier top.
- Heater power adjustable up to 3kW
- An anemometer and aspirated psychrometer permit measurement of air speed and humidity.
- Capabilities include: demonstration of drying rate regimes, effect of temperature and air flow rate on drying rate. Mass and energy balancing and the use of psychrometric charts.

RECOMMENDED ACCESSORIES

Stop clock

SERVICES REQUIRED

Electrical supply:

UOP8-A: 220-240V/1ph/50Hz

UOP8-B: 120V/1ph/60Hz

UOP8-G: 220V/1ph/60Hz

OVERALL DIMENSIONS

Height: 1.40m

Length: 2.95m

Depth: 0.73m

SHIPPING SPECIFICATION

Volume: 1.4m³

Gross weight: 220kg

Armfield Limited
Bridge House West Street Ringwood
Hampshire England BH24 1DY

Tel: +44 (0)1425 478781

Fax: +44 (0)1425 470916

E mail: sales@armfield.co.uk

URL: <http://www.armfield.co.uk>

USA Office:

Armfield Inc.

436 West Commodore Blvd (#2)

Jackson NJ 08527

Tel: (732) 928-3332

Fax: (732) 928-3542

E mail: armfield@optonline.net