FOSS

DT 208 & 220 digestor

Labtec™ Line Digestion Systems

Labtec™ Line digestion systems are based on a digestion unit and tube rack, allowing digestion for safe and flexible Kjeldahl analysis. These versatile digestion systems are capable of handling eight or twenty tubes in volumes of 100 ml, 250 ml or 400 ml. depending on the chosen configuration.

Efficient and cost-effective operations
Smooth operations save chemicals, energy, labour, space and time. Efficient fume containment is provided through an optional exhaust and fumes can be removed via the optional scrubber.

Safe and simple routine analysis
The Labtec Line Digestors have a built in, user definable, time and temperature controller and display. Various accessories are available to make routine analysis safe and simple. They include a range of test tubes, tube racks, retainer plates for washing, fume removal systems, boiling rods and catalyst tablets.

Application support
The systems come with extensive application support and are compatible with FOSS Kjeldahl distillation units as well as other distillation units.

Sample types
Raw materials and finished products in food, feed, agriculture and related matrices
Water and wastewater and a wide range of industrial compounds

Parameters
Kjeldahl digestions, chemical oxygen demand and other reflux chemistries, trace metal analysis by AAS or ICP instruments

Accessories
Lift and racking system, exhaust manifolds and scrubber

Consumables
Kjeltabs, 100 ml, 250 ml and 400 ml tubes

ANALYTICS BEYOND MEASURE

Technology

The digestion units are insulated to minimise heat transfer to the surroundings and allow fast, even heating, thus giving good working conditions as well as saving energy. They are designed for batches of either eight or twenty test tubes.

The temperature and time for the digestion are selected on the front panel. All other procedures, including operation of a connected scrubber, are then performed by the operator once the digestion unit has reached the selected temperature.

Audible alerts
Audible ''ready'' or ''cycle over'' alerts advise the user when the digestion application is completed.
Audible ''alarm'' alerts advise the user when errors/interruptions occur within the running application program. Alerts can be adjusted High, Low or Off.

Accessories

Fume Removal and Containment Systems Exhaust Manifolds

Many digestion applications, e.g. Kjeldahl, produce fumes that are unpleasant and corrosive. Exhaust manifolds designed for each digestion unit facilitate fume removal and containment and are strongly recommended for use with all digestion procedures. The cost of replacement of a fume cupboard which has been corroded by inefficient fume handling is very much greater than the relatively low cost of an approved exhaust.
The exhaust manifolds should be connected to the water aspirator supplied, or to a suitable scrubber unit.

SR 210 Scrubber

The compact bench top Labtec™ Line SR 210 Scrubber Unit is self contained and is therefore unaffected by water supply issues. During digestion moist, acidic fumes from the connected exhaust are drawn through the scrubber unit. Acid vapours are first condensed and diluted in a large acid trap.
Any residual fumes are collected, washed and neutralised before passing through a second small acid trap which protects the vacuum pump in the event that the scrubbing agents are exhausted. The cleaned air is then vented via a tubing outlet. In the interest of GLP and H&S this venting tube should be directed into a fume cupboard.

Reflux Heads

When a digestion unit is used for reflux chemistries, such as Chemical Oxygen Demand (COD), a reflux head connected to a suitable cold water supply should be used in place of the exhaust manifold. Reflux heads are conveniently mounted in handling racks which match the tube rack in the digestion unit. The ball jointed condensers are designed for use with ball jointed digestion tubes.

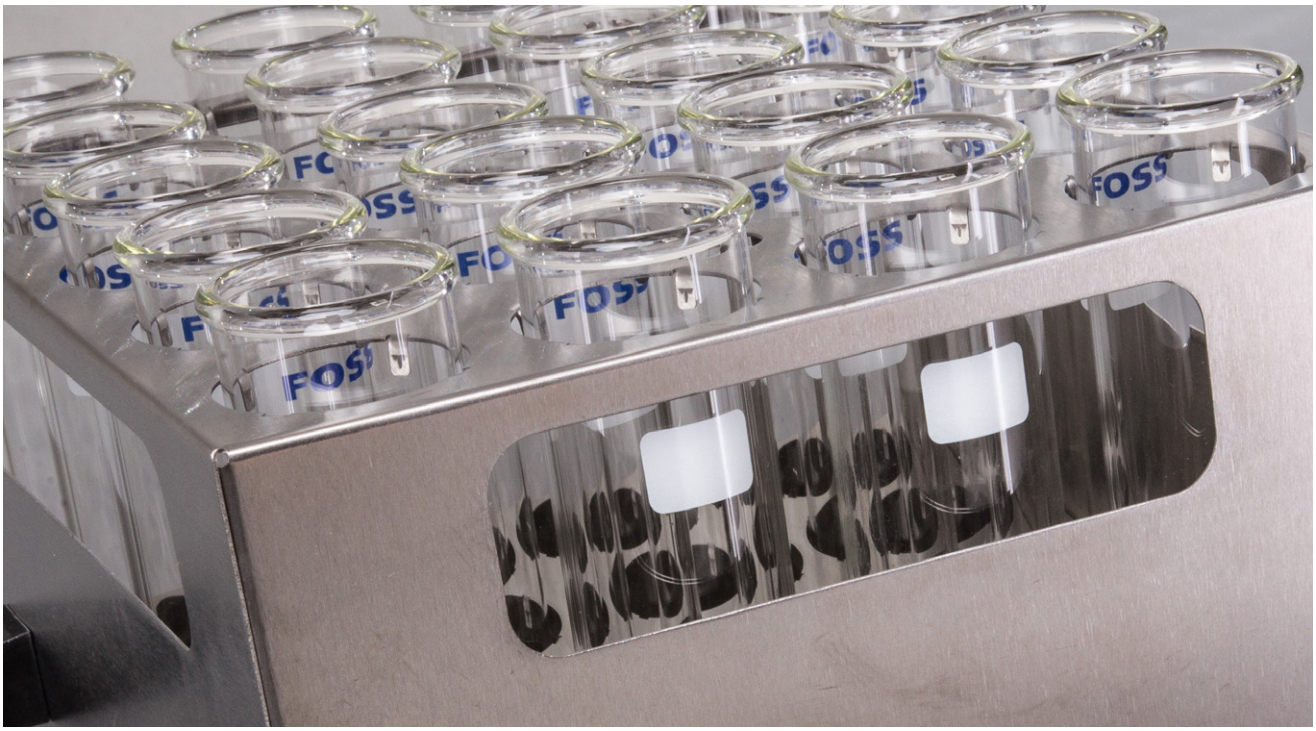
Digestion Tubes

To suit different applications and manual/automatic handling systems, tubes for the digestion units are available in three sizes (400 ml, 250 ml and 100 ml) and three shapes. Straight sided tubes are recommended for the majority of digestion applications. Volumetric tubes with a constriction at the neck are recommended for applications where the digestate requires dilution to a fixed volume before analyses such as FIA, SFA, and AA etc.

Ball jointed tubes, available in 250 ml size only, are required for reflux chemistries using the reflux condenser heads. The larger 250 ml straight sided tubes are recommended for Kjeldahl, as they can hold samples of widely varying sizes. Samples of heterogeneous material often need to be fairly large to ensure that they are representative. There is no lower limit of sample size in the 250 ml tubes; they simply allow greater flexibility for most types of samples. The 100 ml straight sided tubes can be used where the material is homogeneous and small samples are fully representative or where they are specified by the approved method. A special 400 ml tube which fits in 250 ml systems is designed for handling large liquid volumes, typically 50 or 100 ml in water and beer applications.

Kjeltabs

A salt, to increase the boiling point, and a catalyst, to increase the speed of reaction, are used for Kjeldahl digestions. As a convenient way to obtain the correct dosage, FOSS supplies Kjeltabs – tablets containing potassium sulphate and a catalyst (copper, selenium, or copper/titanium). Digestion time may depend on the catalyst used. Historically mercury has been used as the most efficient catalyst. Today it has been replaced largely by copper, or other metals, due to safety and environmental considerations.
Kjeltabs are supplied in several weights, typically 3.5 g and 1.5 g for different demands. One or more tablets are combined with the acid to obtain an optimal salt/acid ratio. The smaller 1.5 g size is designed for the 100 ml tubes.



Specifications

Performance data	DT 208 Digestor	DT 220 Digestor
Temperature range	Ambient - 440°C	Ambient - 440°C
Temperature setting repeatability	1°C	1°C
Temperature readout	Digital	Digital
Heater indication	LED	LED
Heater warning	Text in display	Text in display
Over temperature protection	Yes	Yes
Temperature stability at 100°C	± 2°C	± 2°C
Temperature stability at 400°C	± 1°C	± 1°C
Heating time 20 to 400°C at 230 V	~35 min	~40 min
Time setting per step	1 - 999 min	1 - 999 min
Tubes / batch	8	20
Typical sample capacity		
Tube size	250 ml	250 ml
Sample size solids	up to 5 g	up to 5 g
Sample size liquids	up to 15 ml	up to 15 ml
Tube size	100 ml	-
Sample size solids	up to 1 g	-
Sample size liquids	up to 3 ml	-

Installation requirement:

	SR 210 Scrubber	DT 208 Digestor	DT 220 Digestor
Power supply	220-240 V, 50Hz	200-240 V or 100-115 V, 50-60 Hz	200-240 V or 100-115 V, 50-60 Hz
Power Consumption	50 W	1100 W	2300 W
Water supply	-	See Exhaust manifolds. If Scrubber connected - None	See Exhaust manifolds. If Scrubber connected - None
Weight	19 kg (incl. 2 flasks 1.1 kg)	10 kg	18 kg
Dimension, W x D x H	335 x 485 x 395 mm	300 x 440 x 140 mm	300 x 600 x 140 mm
Ambient temperature	5 - 40 °C	max 40 °C	max 40 °C
Ventilation requirement	Recommended	Exhaust system and Fume hood	Exhaust system and Fume hood
Recommended bench space	-	1m, or 0.4m if a Racking system is used	1m, or 0.4m if a Racking system is used

	EM 2508 Exhaust Manifold	EM 2520 Exhaust Manifold
Water supply	3 - 5 l/min for 5 minutes, then 1 l/min	10 - 12 l/min for 5 minutes, then 3 - 5 l/min

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