

### Cold Soak Filtration Test (CSFT) of Biodiesel

ASTM D7501 - IP PM EA - CEN N 403 - CGSB 3.0 No. 142



- ⊕ Completely stainless steel
- ⊕ Drain to empty bath
- ⊕ Overflow protection
- ⊕ Large bath
- ⊕ Very quiet
- ⊕ Smart rack to position flasks
- ⊕ Up to 12 x 500 mL jars
- ⊕ Optional alarm

#### General

In this test method, 300 mL of biodiesel (B100) is stored at  $4.5 \pm 0.5^{\circ}\text{C}$  ( $40 \pm 1^{\circ}\text{F}$ ) for 16 hours, allowed to warm to  $25 \pm 1^{\circ}\text{C}$  ( $77 \pm 2^{\circ}\text{F}$ ), and vacuum filtered through a single  $0.7 \mu\text{m}$  glass fiber filter at controlled vacuum levels of  $\sim 70\text{--}85 \text{ kPa}$  ( $21\text{--}25 \text{ in. of Hg}$ ).

#### Construction

TLB50 bath (please see also TLB50 specification sheet) is specially designed to condition the biodiesel samples in 500 mL jars at  $4.5^{\circ}\text{C}$  for sixteen hours. TLB50 bath can be used to maintain the samples at  $+25^{\circ}\text{C}$  after the cold soak test. From  $4.5^{\circ}\text{C}$ , the TLB50 can reach  $25^{\circ}\text{C}$  within 30 minutes. A separate laptop with TamCom software can be used to control the setpoint temperature.

Filtration kit for ASTM D7501 (P/N 31T2000) consists of 0.7 micron filters (100 pcs), glass filter funnel and clamp, filter forceps, one litre safety flask, one litre receiving flask, 500 mL cylinder, graduated in 5 mL increments, petri dishes (ten pieces), watch glasses (ten pieces), glass piece with earth lead, stopper with hole (two pieces), stopwatch, and tubing.

Item	Unit	TLB50
Range		$-5..+80^{\circ}\text{C}$ $14..+176^{\circ}\text{F}$
P/N 230V/50Hz		<b>00T0082</b>
P/N 115V/60Hz		<b>00T0081</b>
P/N 230V/60Hz		<b>00T0083</b>
Reading	$^{\circ}\text{C}$ or $^{\circ}\text{F}$	menu selectable
Interface		RS232
Setting	$[^{\circ}\text{C}/\text{F}]$	0.01
Stability* $\pm$	$[^{\circ}\text{C}]$	0.02
Uniformity* $\pm$	$[^{\circ}\text{C}]$	0.02
Heating 230V	[kW]	2.8 (2 1400W heaters)
Heating 115V	[kW]	1.4 (1 heater)
Bath volume	[L]	50
Opening bath	[mm]	400 x 314
Depth	[mm]	280
Length	[mm]	430
Width	[mm]	710
Height	[mm]	720
Weight	[kg]	65
Power	[kW]	Nominal 0.8 Maximum 3
Ambient condition	$[^{\circ}\text{C}]$	18 .. 23
CE		All models conform to CE regulation
* Measured @ $20^{\circ}\text{C}$ in water.		

The TLB50 cold soak bath is a specially designed bench top unit with digital temperature control suitable for cooling and heating samples in accordance with IP PM EA, CEN N 403, ASTM D7501, and CGSB 3.0 No. 142.

#### Accuracy

The insulation of the bath and electronic design result in an very stable working temperature of  $\pm 0.02^{\circ}\text{C}$ . The set point can be set in steps of  $0.01^{\circ}$  in the range of  $-5^{\circ}\text{C}$  up to  $+80^{\circ}\text{C}$  ( $-14..176^{\circ}\text{F}$ ). Display readout is in two decimals ( $0.00^{\circ}\text{C}$ ). The TLB50 is equipped with an integrated compressor.

#### Temperature readout

Standard available in  $^{\circ}\text{C}$ , on request in  $^{\circ}\text{F}$ .

#### Cooling medium


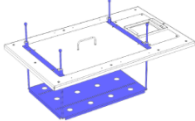
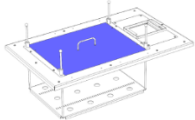
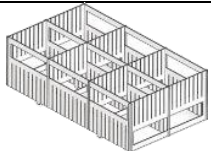
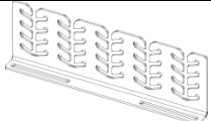

The used cooling system is ozone friendly and doesn't contain any CFK/HCFC gas.

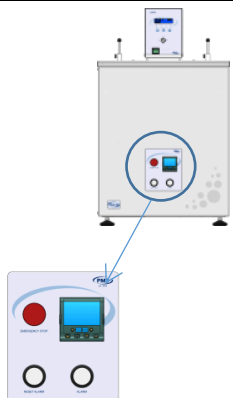
#### Safety

The bath conforms to CE regulation. It is further equipped with a mechanical resettable safety thermostat.

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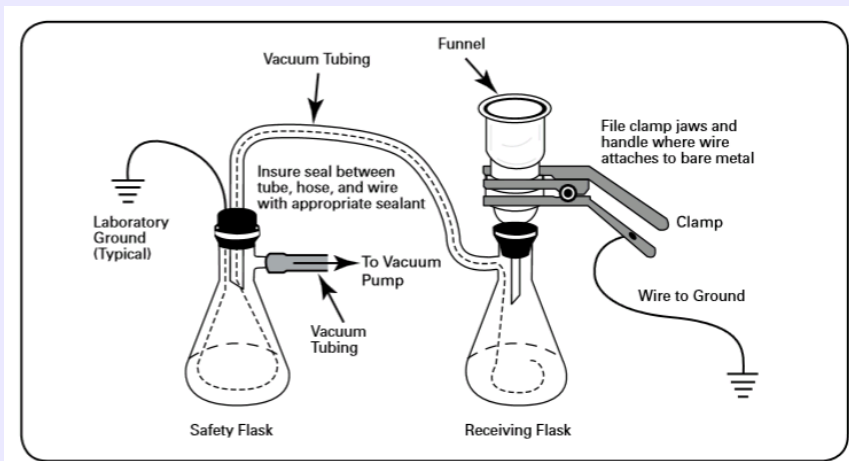
Options and accessories

TLB50 Cold Soak Bath (P/N 00T0082, 00T0081 and 00T0083) consists of:			
P/N	Picture	Quantity	Description
00T0072		1	TLB50 230V/50Hz
00T0071			TLB50 115V/60Hz
00T0073			TLB50 230V/60Hz
03T0071		1	Single levelling platform - Adjustable - One platform - Without lid P/N 03T0080
03T0080		1	Top lid with handle for single levelling platform (P/N 03T0071).
03T1049		2	Rack to hold bottles or glassware P/N 03T1049 comes with: - Three long spacers - Four small spacers
03T1040		4	Rail to hold bottle bracket(s) preventing bottles from floating. Four pieces are needed for P/N 03T0071.
03T1041		4	Bottle holder

Optional accessory for Cold Soak Bath			
P/N	Picture	Suggested quantity	Description
11T0040		1	Optional alarm to operate within temperature band. Three temperatures are pre set for operation: - Set point temperature, - Minimum allowed bath temperature, - Maximum allowed bath temperature.  After reaching the set point temperature, minimum and maximum temperatures are monitored. When the bath temperature exceeds the pre set values following options are available: - Audible alarm, - Potential free external contact, - Switching-off the bath, - A combination of the above. Please contact sales for more specific details.

### Cold Soak Filtration Test (CSFT) of Biodiesel

#### Consumables











Necessary accessories for ASTM D7501			
P/N	Picture	Suggested quantity	Description
31T2000**	Please see picture above	1	Filtration kit for ASTM D7501: 0.7 micron filters (100 pieces), glass filter funnel and clamp, filter forceps, 1 litre safety flask, 1 litre receiving flask, 500 mL cylinder, graduated in 5 mL increments, petri dishes (10 pieces), watch glasses ( 10 pieces), glass piece with earth lead, stopper with hole ( 2 pieces), stopwatch, and tubing. **
11T0031		1	Vacuum Pump (230V/50-60Hz), capable of maintaining -80 kPa during filtering.
11T0032			Vacuum Pump (115V/60Hz), capable of maintaining -80 kPa during filtering.
19T4023		1	E20 digital contact thermometer two decimal reading, precision $\pm 0.02^{\circ}\text{C}$ , short PT-100 probe with range $+20 \dots +120^{\circ}\text{C}$ including a works calibration certificate. (Please see specification sheet "E20 thermometer")
14T0303		1	Adapter to insert an E20 thermometer into the TLB50.
31T0018		1	500 mL bottle (set of 10 bottles).
13T8044		2	Tripod complete with clamps.

\*\* Please see final page for automated alternative, conforming to IP PM EA.

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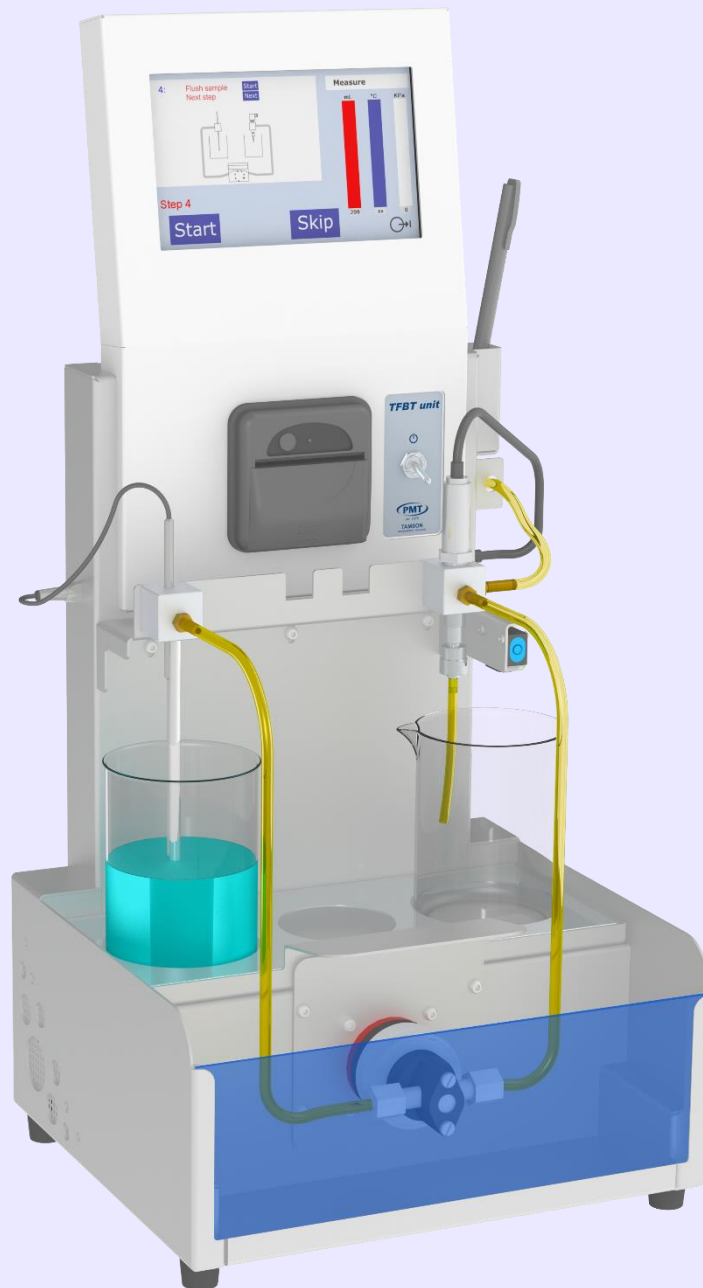
#### Consumables

Consumables for ASTM D7501		
P/N	Picture	Description
31T0019		Box with 100 glass fiber filters (GF/F), 3 plain, 47-mm diameter, nominal pore size 0.7-µm.
31T0020		Glass funnel and glass filter support with a stainless steel filter screen for a 47-mm diameter glass fiber filter, and locking clamp and stopper, capable of receiving 300 mL.
31T0405		Vacuum filtering flask 1000 mL, Erlenmeyer shape.
31T0023		Glass piece with ground wire
31T0024		Forceps
31T0025		500 mL cylinder, graduated in 5 mL increments.
31T0026		Petri dishes (ten pieces), approximately 120 Ø mm x 20 mm (height).
31T0027		Small watch glasses (ten pieces), approximately 60 Ø mm.

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Tamson Filter Blocking Tendency tester

\*\* This manual set-up can be replaced by automated Tamson Filter Blocking Tendency tester. Fully conforms to the latest 'Cold Soak' filterability test requirements for FAME and bio diesel to be used with the TLB50 for IP PM EA. Please see specification sheet "TFBT".



# D7501