

Lovibond® Water Analysis

Tintometer® Group



Sewage Effluent Test Kit

Perfect systems for the control and optimisation of water quality

Marpol Annex IV Compliant

- Full Suite of Tests to MEPC.159(55) Annex 26
- Reduce the Risk of Inspection Failure
- Simple Step by Step Procedures
- Rapid Results while at Sea
- Enables On-Board Diagnostics to Maintain Water Quality
- DI 10 Portable Incubator
- No Refrigeration Required

Chemical Tests

- BOD (Probable)
- Chemical Oxygen Demand (COD)
- Chlorine
- Coliform and *E.coli*
- pH Value
- Turbidity (Suspended Solids)

Logbook & Record Keeping

- Step by Step Method Book
- Video Training Guide

www.lovibondwater.com

Effluent Discharge at Sea

The environmental impact of the global economy is of ever growing concern. International and local regulations on industrial effluent discharge into our rivers and oceans are essential if we are to protect our natural environment for future generations.

The IMO MARPOL regulates the impact of ocean-going vessels and has set clearly defined performance criteria for effluent treatment systems as part of MEPC.159(55) Annex 26. Vessels sailing into many "sensitive ecosystems" around the world are being closely monitored for effluent quality.

Polluting vessels can expect fines and experience lengthy delays at port. The Lovibond® Sewage Effluent Test Kit contains all of the tests required under MEPC.159(55) Annex 26: rapid, simple-to-use test equipment, purposely designed for the marine industry. Routine on-board monitoring of both the treatment system and effluent quality will provide crucial, real time data to enable correct process adjustment under the varying load conditions experienced while at sea.

Coliform and E.Coli

MEPC.159(55) Annex 26 stipulates effluent discharged into the ocean should have a thermo-tolerant Coliform count of less than 100cfu/100ml. Treatment systems achieve this with a combination of heat and disinfection (eg Chlorine). The Lovibond® Sewage Effluent Test Kit includes a simple test for enumerating Coliforms in effluent.

The method works by pouring a reagent sachet into a 100ml sample of water, dividing this into 10 jars and incubating for 24 hours. The portions that change colour are then counted and compared to the results chart for the concentration in cfu/100ml.



DI 10 Portable Incubator

The coliform and E.coli tests require incubation at 35°C to give an accurate result. The Lovibond® DI 10 unit is a compact, robust, digital device that operates at 12V and is supplied with universal power connectivity (UK, EU, USA). Excellent temperature stability is achieved with fan-assisted heating.

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Chemical Oxygen Demand & Biochemical Oxygen Demand

Effluent discharge globally is routinely monitored for Chemical Oxygen Demand (COD) and Biochemical Oxygen Demand (BOD) as these give a direct indication on the ability of the treated water to allow flora and fauna to survive. COD and BOD consent under MEPC 159(55) Annex 26 are 125mg/l and 25mg/l respectively.



The COD equipment in the Lovibond® Kit conforms to ISO 15705:2002. The method involves adding a 2ml portion of sample to a pre-filled COD tube and heating it in the COD digester for 2 hours. Then the sample is cooled and placed in the MD 100 instrument, where the results can be read off directly in mg/l.

Suspended Solids and BOD

A graduated turbidity tube is included for the estimation of effluent BOD and Total Suspended Solids as laboratory-based procedures for determining these parameters are not practical at sea. Land-based studies on effluent waters have shown good correlation to laboratory methods using this simple device.

Tests are carried out by filling the tube with effluent whilst looking down through the unit. When the cross on the base disappears from view, the value that corresponds to the fill level of the tube is recorded. BOD can be determined by using a calculation from the Suspended Solids measurement:

Suspended Solids Consent = 35mg/l
BOD Consent = 25mg/l



Chlorine and pH

Chlorine is extensively used for disinfection of effluent as part of the full processing. Chlorine consent is 0.5mg/l in final effluent with a pH range of pH 6-8.5. Tests are included to monitor both parameters. Low and high range Chlorine procedures are included to monitor levels throughout the process.

Technical Data

Coliform/E.Coli	
Method	Most Probable Number
Sample Size	100ml (10 x 10ml)
Sensitivity	5.5-115 CFU / 100ml
Incubation	35°C / 24 Hours
Coliform	Colourless to Yellow
E.coli Test	Fluorescence in UV

Incubator	
Range	5°C > Ambient to 40°C
Resolution	± 0.5°C
Operation	12V DC, 3 Amps
Power Adaptors	12V (in-car) + 100-240V Universal (UK, EU, USA)
Weight	1.7 kg
Size	246 x 215 x 162 mm
CE Conformity	Yes

Chemical Oxygen Demand (COD)	
Method	Pre-dispensed Tube
Sample Size	2ml
Sensitivity	0-150mg/l ± 3.5%
Incubation	148°C / 2 Hours

Suspended Solids (BOD)	
Method	Turbidity Tube
Sample Size	up to 250ml
Sensitivity SS	5-500mg/l ± 10%
Sensitivity BOD	7.5-255mg/l ± 10%

Disinfectant (Chlorine)	
Method	CHECKIT® Comparator 0-1.0mg/l Drop Test 0-30mg/l
Sample Size	10ml - instant result
Sensitivity	0-1.0mg/l Cl ₂ ± 0.1mg/l 0-30mg/l Cl ₂ ± 1.0mg/l

pH Value	
Method	Test Strip
Sample Size	5ml
Resolution	pH 4.5 - 10 ± 0.5

Ordering Information

P/N	Description
56K025201	Sewage Effluent Test Kit
Accessories	
56B001425	Coliform/E.coli Test Pack
56M000701	DI 10 Incubator
276120	MD 100 COD Photometer
2420720	COD Vials (pk25)
56A010801	Turbidity Tube
56R005290	Chlorine Test Pack
56S001090	pH Test Strips

References

The Marine Environment Protection Committee:
MEPC.2 Annex VI
MEPC.159(55) Annex 26
International Organisation for Standardisation, ISO15705:2002