Technical Bulletin

Sewage effluent test on Board - Vecom solution

The easy way of testing

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Introduction

Environmental issues are still a hot topic these days. The shipping community expresses its concern about the ecosystem and the pollution of the seas. In this market where low freight rates, new rules and regulations and a higher customer demand are pressuring our business-results, we still desire to comply with new rules and regulations but preferably in a cost-effective and efficient way.

Vecom Marine truly believes its slogan: “Clean Ships, Clean Seas”. Therefore we have already, ahead of the competition AND in line with new IMO / MARPOL regulations, produced a simple and effective way to test sewage water onboard: Sewage Effluent Test Kit. The test is a requirement to be executed before you are allowed to enter many ports today, also it will be compulsory across the whole globe within the rest of 2012.

Nowadays tests in the market are complicated and comprehensively. The Chief-Engineers almost need to have a chemist-degree in order to understand and execute the time consuming tests. The Vecom Sewage Effluent Test Kit is simple and very user-friendly. It speaks for itself that the Kits and the results are acceptable to the Department of Environment (UK) and Water Research Centre (UK) and other authorities involved.

The tests that are included in the Sewage Effluent Test Kits are the following:
- Permanganate Value
- pH
- Turbidity
- Suspended Solids and BOD. COD. TOC values

The above mentioned test are further explained in following paragraphs.

1. Permanganate Value

The permanganate Value is determining the general quality of Final Effluents in sewage. Based on the results it will give the OK for the discharge of Sewage water. The test procedure is relatively easy and consists of 4 steps:

1) Three sample containers in the set must be filled with 100ml of Sewage Effluent.
2) Add two acidifying SE Tablets per sample container and shake it to mix well
3) Add One permanganate value tablet to the first sample container, then add Two permanganate tablets to the second and Three tablets to the third, and again shake them well until it all of them are mixed and dissolved.
4) Wait 30 minutes! Then check how many tubes have remained pink and read the result from the following table:

Container Pink	Permanganate Value	Grading
3	0-10	Perfect
2	10-20	Satisfactory
1	20-30	Dubious
None	30 or more	Not allowed to discharge

In the Test Kit you will find instructions also for when Crude waste is tested, the same counts for Settled sewage

2. pH test

Chemical and biological reactions at sewage works are profoundly influenced by pH. A regular check of the pH is therefore essential. The included test covers the pH range 4-10. The expected pH range for raw sewage is 6-8, the final effluent has the same limits.

3. Turbidity

With this test you measure the suspended solids content of the final effluent. In this way you can check the variation of the day by day quality of sewage and effluent on board. The Turbidity test has a special calibrated plastic tube. This provides the simplest possible method of performing this important test. The test is performed in three simple steps:

1) Hold the tube vertically over a white surface and view downwards
2) Gradually pour in the effluent sample until the black cross is just no longer visual
3) Read of the graduation corresponding to the height of the sample in the tube. This represents the turbidity of the effluent.

4. BOD, COD & TOC

BOD = Biochemical Oxygen Demand
COD = Chemical Oxygen Demand
TOC = Total Organic Carbon

The results from this test are in connection with the Permanganate Value (PV) as done in paragraph 1. To convert the PV for domestic sewage and effluent to probable BOD, COD and TOC values multiply by the following factors:

	Sewage	Effluent
Probable BOD	PV x 5	PV x 1,5
Probable COD	PV x 10	PV x 7
Probable TOC	PV x 3	PV x 2

In general there is a connection between the Turbidity and the BOD-value of settled sewage and effluent.
The BOD can also be calculated from the result of the turbidity test (paragraph 2) using the formula underneath.

$$\text{Probable BOD} = \frac{\text{Turbidity}}{2} + 5$$

You can cross check the BOD-values that way with the PV test.
Recommendations for Effluent is not more than 20mg/l.

5. Temperature
A thermometer is in test kit as well measuring 0 to 50 Celsius. Temperatures should be close to ambient temperatures when the effluent discharge takes place. It is important to measure temperatures especially when heating process took place before through the same Sewage system.

Vecom has a unique product for sewage treatment based on liquid and living aerobic Bacteria, especially selected for the unique ability to produce enzymes which are for the degradation of sanitation wastes. This product is called: Microzyme Sewage. It is an environmentally superior sanitation treatment and cleaner. It is fully biodegradable and it has been approved by the United States Department of Agriculture (USDA). It is non-caustic and non-toxic and basically does three jobs:

1) It cleans the system
2) It Eliminates odours
3) It prevents clogging of drain systems

For cleaning existing blocked sewage systems we suggest you use the Veclean Eco. This biodegradable and unique product for use on board replaces acids that are still being used today.

Conclusion
In this tough and competitive market we want to save money and comply to rules and regulations and the Sewage Effluent Test Kit is the right way and the smart way to achieve this. The tests involved are simple to work with and contain all the right equipment with proper approvals.

You are invited to visit our website to see these products anytime.
www.vecom-marine.com

For more information: please contact your nearest Vecom Marine Office / Agent.

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