



# TEST KIT SEWAGE EFFLUENT

Water testing made easy.

## INTRODUCTION

Environmental concerns about the ecosystem and pollution of the seas are still an important issue within the shipping community.

In this market where low freight rates, new rules regulations and a higher customer demand are pressuring our business, we still desire to comply but preferably in a cost-effective and efficient way.

VECOM MARINE, in line with IMO / MARPOL regulations, has produced a simple and effective way to test sewage water on board: TEST KIT SEWAGE EFFLUENT. The test is a compulsory requirement performed prior to port entry across the globe. The VECOM MARINE TEST KIT SEWAGE EFFLUENT is simple and very user-friendly with acceptable results to the authorities involved.



The tests that are included in the TEST KIT SEWAGE EFFLUENT are the following:

- Permanganate value
- pH
- Turbidity
- Suspended solids and BOD, COD, TOC values

The above mentioned tests 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:

- Three sample containers in the set must be filled with 100 ml of sewage effluent.
- Add two acidifying SE tablets per sample container and shake it to mix well.
- 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 all of them are mixed and dissolved.
- 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 also find instructions for the testing of crude waste, the same is valid for settled sewage.

For product characteristics and for the nature of special risks and safety advice consult our MSDS.  
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## 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 off 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:



	<b>Sewage</b>	<b>Effluent</b>
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

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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:

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

BOD-values can be cross checked that way with the PV test. Recommendation for effluent is not more than 20 mg/l.

## 5. TEMPERATURE

The test kit also contains a thermometer measuring 0 to 50 degrees 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 MARINE 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:

- It cleans the system
- It eliminates odours
- It prevents clogging of drain systems

## CONCLUSION

In this tough and competitive market we want to save money and comply to rules and regulations and the TEST KIT SEWAGE EFFLUENT 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.

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