



# MARINE TESTING SOLUTIONS

## Ballast Water Test Kits

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## **Introduction**

The Ballast Water Management Convention was adopted on the 13th February 2004 and ratified on the 8th September 2016. The aim of this convention was to prevent the spread of invasive aquatic species and pathogens, carried in the ballast water and sediments of ships, being discharged into the sea where they could harm local species and human health. This convention will enter into force on the 8th September 2019.

Under the convention, all ships in international traffic are to manage their ballast water and sediments to a certain standard, according to the ship-specific ballast water management plan. All ships will also have to carry a ballast water record book and an International Ballast Water Management Certificate (IBWMC). The convention will apply to the following ships:

Ships constructed before 2009 with a ballast water capacity of between 1500 and 5000 cubic metres must conduct ballast water management that at least meets the ballast water exchange standards or the ballast water performance standards until 2014, after which time it shall at least meet the ballast water performance standard.

Ships constructed before 2009 with a ballast water capacity of less than 1500 or greater than 5000 cubic metres must conduct ballast water management that at least meets the ballast water exchange standards or the ballast water performance standards until 2016, after which time it shall at least meet the ballast water performance standard.

Ships constructed in or after 2009 with a ballast water capacity of less than 5000 cubic metres must conduct ballast water management that at least meets the ballast water performance standard.

Ships constructed in or after 2009 but before 2012, with a ballast water capacity of 5000 cubic metres or more shall conduct ballast water management that at least meets the standard described in regulation D-1 or D-2 until 2016 and at least the ballast water performance standard after 2016.

Ships constructed in or after 2012, with a ballast water capacity of 5000 cubic metres or more shall conduct ballast water management that at least meets the ballast water performance standard.

## **Regulations**

### **D1 – Exchange Standards:**

Ships performing ballast-water exchange shall do so with an efficiency of 95% volumetric exchange of ballast water. The exchange procedure shall be carried out in an 'open ocean condition' at least 200 nautical miles from the nearest land and in waters at least 200 meters in depth.

### **D2 – Performance Standards:**

50 µm or above – less than 10 living organisms per cubic metre (1000 litres)

10 µm – 50 µm – less than 10 living organisms per millilitre

### **D2 – Human Health Standards:**

Total Heterotrophic Bacteria: less than 1000 CFU/100ml

E.coli: less than 250 CFU/100ml

Enterococci: less than 100 CFU/100ml

Vibrio Cholera (O1 & O139) – Zero/100ml

## **VGP 2013 US Coastguard BWTS Requirements**

The majority of Flag States are following the VGP 2013 US Coastguard BWTS requirements which are as follows:

## **Ballast Water System Functionality Monitoring**

Ballast water treatment systems use physical and/or chemical processes to achieve reductions in living organisms (i.e. filters, chlorine dioxide, cavitation, UV & hypochlorite). To assess the BWTS functionality, monitoring of the BWTS functionality is required at least once per month for specific parameters that are applicable to your system. Most ballast water treatment systems have control and self-diagnostic equipment such as sensors that continuously measure treatment parameters to verify performance.

## **Ballast Water Monitoring Equipment Sensor Calibration**

All applicable sensors and other equipment must be calibrated annually

## **Effluent Biological Organism Monitoring**

This must be conducted 6 times during the first year the system is installed or used. If the sampling results are within the below parameters for two consecutive events, the vessel may reduce monitoring to 1 time per year after the first year. However if the vessel exceeds the parameters below on any sampling event, they must return to 6 times per year. Monitoring must be conducted at least 14 days apart from different discharge events and records of the sampling/testing results must be retained onboard for a period of 3 years.

## **Parameters & Limits**

Total Heterotrophic Bacteria: less than 1000 CFU/100ml

E.coli: less than 250 CFU/100ml

Enterococci: less than 100 CFU/100ml

## **Residual Biocide Monitoring**

You must conduct monitoring of the vessel ballast water discharge for any residual biocide used in the treatment process. Initial monitoring is 3 times in the first 10 discharge events (not exceeding a 180 day period), thereafter under maintenance monitoring 2 times per year.

## **Parameters & Limits**

Chlorine Dioxide: maximum 0.2 mg/l or ppm

Chlorine: maximum 0.1 mg/l or ppm

Ozone: maximum 0.1 mg/l or ppm

Peracetic Acid: maximum 0.5 mg/l or ppm

Hydrogen Peroxide: maximum 1 mg/l or ppm



**MTS-K100780 MTS Ballast Water Test Kit 1****(VGP 2013 US Coastguard BWTS Requirements)****Contents:**

Marine Heavy Duty Case & Foam Set	1
Heterotrophic Bacteria Test (0 – 1400 CFU/100ml)	10
Enterococci Test (0 – 115 CFU/100ml)	10
E.coli Bacteria Test (0 – 2424 CFU/ml)	10
Vibrio Cholera (O1 & O139) Presence/Absence CFU/100ml	10
UV Lamp	1
Digital Incubator (110v/240v)	1

**MTS-K100781 MTS Ballast Water Test Kit 2****Contents:**

Marine Heavy Duty Case & Foam Set	1
Heterotrophic Bacteria Test (0 – 1400 CFU/100ml)	10
Enterococci Test (0 – 115 CFU/100ml)	10
E.coli Bacteria Test (0 – 2424 CFU/ml)	10
Vibrio Cholera (O1 & O139) Presence/Absence CFU/100ml	10
UV Lamp	1
Digital Incubator (110v/240v)	1
10µm Filter Test	10
50µm Filter Test	10
Salinity Refractometer	1

**MTS-K100789 MTS Ballast Water Test Kit 3****Contents:**

Marine Heavy Duty Case & Foam Set	1
Heterotrophic Bacteria Test (0 – 1400 CFU/100ml)	10
Enterococci Test (0 – 115 CFU/100ml)	10
E.coli Bacteria Test (0 – 2424 CFU/ml)	10
Vibrio Cholera (O1 & O139) Presence/Absence CFU/100ml	10
UV Lamp	1
Digital Incubator (110v/240v)	1
Digital Handheld Fluorometer	1
Salinity Refractometer	1

**Optional (can be included within the test kits)**

MTS-K100792 Chlorine Dioxide Comparator Test (0 – 6.65ppm) (20 tests)
MTS-K100793 Chlorine Comparator Test (0 – 1ppm) (20 tests)
MTS-K100794 Ozone Comparator Test (0 – 3.40ppm) (20 tests)
MTS-K100795 Peracetic Acid Drop Test (0 – 20ppm) (20 tests)
MTS-K100796 Hydrogen Peroxide Comparator Test (0 – 50ppm) (20 tests)