Drew Marine®

Potable Water Test Kit - C

Onboard Log

CERTIFICATE NUMBER	22-2272728-PDA
EFFECTIVE DATE	20-Jul-2022
EXPIRY DATE	19-Jul-2027
ABS TECHNICAL OFFICE	Houston ESD - Piping

CERTIFICATE OF

Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

DREW MARINE

located at

100 SOUTH JEFFERSON ROAD, , WHIPPANY, NJ, United States, 07981

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product:	**Water Purification**
Model:	**1AB1973**
Endorsements:	
Tier:	**2 - PDA Issued**

This Product Design Assessment (PDA) Certificate remains valid until 19/Jul/2027 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

John Vincent B. Ulep

John Vincent Bog-Acon Ulep,Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

ABS design assessment completed in accordance with:

- Maritime Labour Convention, 2006
- World Health Organization Guidelines for Drinking Quality Fourth Edition
- Guide to Ship Sanitation Third Edition
- ABS Guidance Notes on the ILO Maritime Labour Convention, 2006 (updated October 2010)

Drew Marine

CONTROL TEST CARD

POTABLE WATER TEST KIT-C TESTING PROCEDURES

It is recommended that at least one sample be collected and tested on a weekly basis.

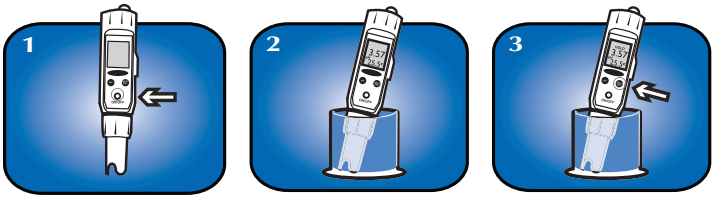
pH TESTER 30 TEST PROCEDURE

TEST PROCEDURES

pH Tester 30 simultaneously measures and reads pH and temperature in °C.

Old Tester- Calibration Procedure:

a) Press ON/OFF button to turn unit on.
b) Submerge electrode 2 to 3 cm into pH 7 buffer solution.
c) Press CAL button to enter calibration mode.
d) Allow 2 minutes for reading to stabilize, then press the HOLD/ENT button to enter reading.
e) Rinse with tap water before measuring pH.



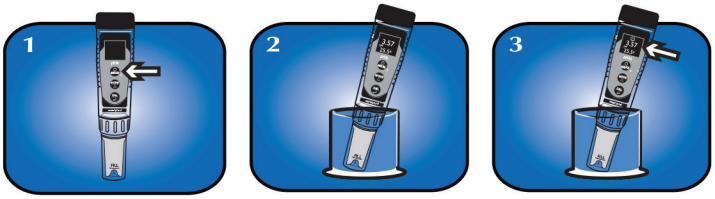
Measuring pH:

1. Press the ON/OFF button to turn on the pH tester.
2. Place the electrode approximately 2 to 3 cm below the water surface. Stir gently for reading stabilization.
3. Press the HOLD/ENT button to freeze reading on the screen.

NEXT GENERATION TESTER

Calibration Procedure:

a) Short press MEAS key to turn on. b) Long press “CAL” to enter calibration mode. c) Dip probe in pH 7.00 buffer solution d) When calibration stability icon (☺) appears and remains on screen, short press “CAL” key to complete calibration; short press MEAS key to return to measurement mode. e) Rinse with tap water before measuring sample pH.



Measuring pH:

1. Short press MEAS key to turn on the pH tester.
2. Dip probe approximately 2 to 3 cm below the water surface. Stir gently until reading is stabilized
3. Record reading when measurement stability icon (☺) appears on screen

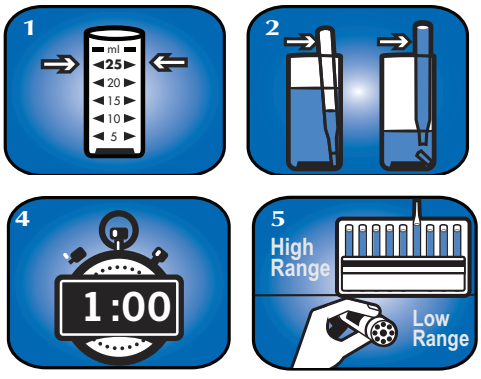
Note: For more detailed information, please refer to instructions included with kit.

FREE CHLORINE TEST PROCEDURE

TEST PROCEDURES

Free Chlorine Test - ampoule measures 0-1ppm and 1-5ppm chlorine range.

1. Fill sample cup to 25ml mark with sample water.
2. Place chlorine ampoule’s tapered tip at the bottom of the sample cup. Snap the tapered tip by pushing the ampoule lightly toward the side of the cup. The ampoule will fill with sample water mixing with reagent.
3. Remove the chlorine ampoule from the cup. Mix the contents of the ampoule by inverting several times.
4. Wait 1 minute for full color development.
5. After 1 minute, use color comparator to measure the level of free chlorine in the sample.



Note: For more detailed information, please refer to instructions included with kit.

POTABLE WATER TEST KIT-C TESTING PROCEDURES

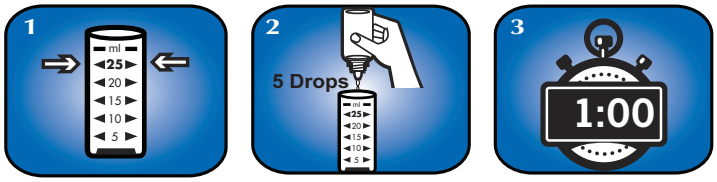
It is recommended that at least one sample be collected and tested on a weekly basis.

TOTAL CHLORINE TEST PROCEDURE

1. Fill sample cup to 25ml mark with sample water.
2. Add 5 drops of Activator Solution. Stir briefly.
3. Wait 1 minute.
4. Follow Steps 2 thru 5 in Free Chlorine Test Procedures.

Note: For more detailed information, please refer to instructions included with kit.

TEST PROCEDURES

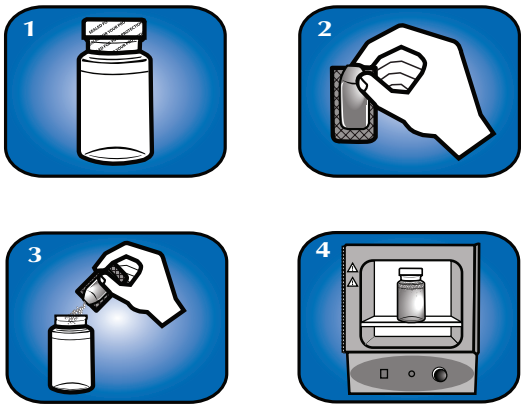


COLIFORM / E.COLI TEST PROCEDURE

1. Add 100ml of potable water into sterile bottle. Be careful not to touch inside of bottle or cap with fingers.
2. Before opening a READYCULT Coliform snap pack tap to make sure the granules settle to the bottom. Bend the upper bulb of the snap pack until it opens.
3. Add the READYCULT Coliform Snap Pack contents to the bottle. Cap the sterile bottle and mix to dissolve granules completely. The water should turn clear –yellowish.
4. Place sample bottle in incubator for 18-24 hours at 34.5°C to 37°C. After incubation period remove bottle.
5. If no color change occurs the total coliform is negative. Turbidity does not indicate a positive test.
6. If the sample turns blue-green, even if only the upper portion of the sample, the test confirms presence of total coliforms.
7. To check for presence of E. Coli, place the UV lamp in front of the sample bottle. Make sure the lamp points away from you. A light blue fluorescence indicates the presence of E. Coli. Always wear UV safety goggles when using the UV lamp. For optimum florescence effect, reading should be taken in a dark room, eliminating white light.

Note: Sampling locations for total coliform and E. Coli should be changed weekly in order to identify any localized contamination. Note: For more detailed information, please refer to instructions included with kit.

TEST PROCEDURES



Drew Marine

ONBOARD LOG
POTABLE WATER

USE IN CONJUCTION WITH CONTROL TEST CARD

Vessel Name: _____ Company Name: _____ Date: _____
YYYY / MM-MM

H_20 Source: _____ Tested by: _____ Responsible Officer: _____
EVAP / RO / SHORE

Date (MM-DD)	⬇ Typical Value ⬇								
Location									
Sensory Testing[1]	**N**ormal (≠ **D**eviant)								
pH[2]	6.5 - 9.5 or 6.8 - 7.4								
Free Chlorine (ppm)	0.2 ppm at Faucet 2.0 ppm at Tank								
Total Chlorine (ppm)	<0.5 ppm at Faucet								
Total Coliforms (**P**resent/**A**bsent)[3]	**A**								
E. Coli Bacteria (**P**resent/**A**bsent)[3]	**A**								
Supplemental Onboard Microbiological Tests									
HPC[4]	Original cfu/100 ml								
Legionella spp (**P**resent/**A**bsent)[5]	**A**								

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[1] = Sensory Testing includes taste, odor, color and turbidity with any Deviant perceptions investigated and documented.

[2] = pH of 6.8 - 7.4 is recommended when chlorine is used to disinfect potable water.

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A negative test result indicates no bacteria were present in the sample. Enter '**A**' (Absent) in the test result column.

[4] = There should be no abnormal (± 25%) deviation from original result as measured in cfu/100 ml.

[5] = As field test does not differentiate between viable and non viable organisms, shore side testing should confirm any **P**resent result.
Additionally, only shore side testing can provide resolution to confirm desired value of < 100 cfu/100 ml.

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NOTES

NOTES:

- Maintain Onboard Potable Water Logbook for at least 12 months
- It is recommended copy of shore side laboratory analysis certificates as well as municipal reports for shore side water sources be maintained with the Onboard Potable Water Log for easy access by Port State Control

NOTES SECTION OF ONBOARD POTABLE WATER LOGBOOK

Enter all incidents and corrective actions in Notes Section of the Log

Enter dates for the following applicable operational controls, including corrective action taken

- **Distribution**
  - Flushing according to onboard schedule
  - Showerhead/aerator maintenance
  - Backflow preventer testing and maintenance
  - Vent inspection and maintenance
  - Pump/valve inspection and maintenance
  - Sounding tube inspection and maintenance
  - Filter maintenance
  - Drinking fountain inspection and maintenance
  - Potable water hose inspection and maintenance
  - Piping inspection and maintenance
- **Storage**
  - Internal potable water tank inspection and maintenance
  - Manhole inspection and maintenance
  - Cleaning/Disinfecting of tanks
  - Ice bin inspection, maintenance, and ice tests
  - Potable water hose storage locker inspection, including proper posting of work instructions
- **Bunkering**
  - Bunkering dates
  - Review of shore side source water certificates
  - Measurement of water levels
  - Onboard testing of received source waters (pH, chlorine)
  - Disinfection
- **Water Production**
  - System inspection and maintenance (e.g., RO/Evaporators)
  - Temperature, conductivity, hardness, pH tests
  - Sensory tests for turbidity, odor, taste, color
- **Dates and results of shore side laboratory analysis, including name/location of laboratory**

COMMENTS:

NOTES

NOTES

OUR VISION

Drew Marine is the most trusted brand and preferred global resource for marine solutions that enhance the longevity and operating efficiency of ocean vessels.

OUR MISSION

To sustain the superiority of the Drew Marine brand by bringing environmentally and technologically superior products and services for the benefit of vessel owners and operators while increasing shareholder value.

Drew Marine®

333 Church Street
Naugatuck, CT 06770 USA
1-973-526-5700
Drew-Marine.com