



**MARINE  
CARE**

# HARDNESS TESTKIT

Total Hardness

**MARINE CARE BV**  
Oude Maasweg 35  
3197 KJ Botlek Rotterdam  
The Netherlands  
T. +31 (0)10 2950342  
F. +31 (0)10 2950345  
E. [supply@marinecare.nl](mailto:supply@marinecare.nl)  
W. [www.marinecare.nl](http://www.marinecare.nl)



# HEALTH & SAFETY

Some reagents required for tests shown in this booklet are classed as hazardous and as such, a minimum protection of gloves (rubber or plastic) and safety goggles/spectacles or facemask **MUST BE WORN**.

In addition please note and observe the Risk and Safety phrases on each reagent container and follow handling guidelines as instructed.




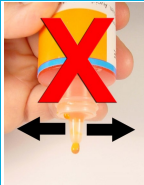
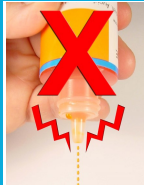




## GENERAL NOTES

- ⇒ Avoid contact with skin or eyes
- ⇒ In case of contact with skin or eyes rinse immediately with plenty of running tap water, and seek medical attention
- ⇒ Seek attention if irritation persists
- ⇒ In case of ingestion, wash the mouth out thoroughly with water, try to vomit and seek medical attention

# DROP TEST METHOD

The test should take between 10 and 30 drops of titrant to reach the end point. If number of drops is outside this range, adjust the sample volume used. i.e. < 10 drops used, increase sample volume or > 30 drops, reduce sample volume.

Rinse titration vessels with the sample to be tested or de-ionised or distilled water.

 <p><b>1</b></p> <p>Hold dropper bottles vertically upside down and not inclined at an angle.</p>	 <p><b>2</b></p> <p>Allow drops to form slowly and fall off under their own weight.</p>	 <p><b>3</b></p> <p>Keep dropper nozzles clean by wiping with a soft cloth or tissue. Especially remove encrustation caused by reagents drying out on the bottle tip.</p>
 <p><b>4</b></p> <p>Do not shake drops off.</p>	 <p><b>5</b></p> <p>Ensure droppers are not statically charged. An indication of this is a rapid stream of very small drops with no proper control of drop formation.</p>	 <p><b>6</b></p> <p>Apply gentle pressure to the bottle walls to encourage drop formation if necessary.</p>
 <p><b>7</b></p> <p>Re-place the dropper cap immediately after use to prevent cross contamination.</p>	 <p><b>8</b></p> <p>Never adjust the dropper tip aperture by inserting anything that may enlarge the opening or damage the restrictor. If the dropper tip becomes damaged, replace.</p>	 <p><b>9</b></p> <p>Use syringes provided to obtain accurate sample volumes. Do not rely on the graduations on the titration vessels, which are for rough guidance only.</p>

# TOTAL **HARDNESS** 0 - 600 mg/l (as CaCO<sub>3</sub>)

Note: Test should be carried out immediately on fresh samples.  
Clean all equipment well after testing.

Expected range  
as CaCO<sub>3</sub>

Sample Size  
in ml

Factor

## Titrant TH3

Take sample according  
to expected range

Add  
**4 drops of TH1**

Add  
**4 drops of TH2**  
Colour changes to violet

Add drop by drop  
**TH3 or TH4**  
Until colour changes to  
**blue / green**  
**Count the drops**

5 - 15

40 ml

0,5

10 - 30

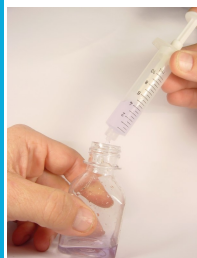
20 ml

1

20 - 60

10 ml\*

2



## Titrant TH4

50 - 150

40 ml

5

100 - 300

20 ml

10

200 - 600

10 ml\*

20

Colours may vary depending on sample and test conditions

**TOTAL HARDNESS = "X" drops of (TH3 or TH4) x Factor**  
**(mg/l as CaCO<sub>3</sub>)**

\*Dilute samples of less than 20 ml to 20 ml with  
de-ionized or distilled water



# WHEN IN DOUBT

- ⇒ Contact us for advise
- ⇒ E-mail us all test figures over a period of at least 3 months



**MARINE CARE BV**  
Oude Maasweg 35  
3197 KJ Botlek Rotterdam  
The Netherlands  
T. +31 (0)10 2950342  
F. +31 (0)10 2950345  
E. [supply@marinecare.nl](mailto:supply@marinecare.nl)  
W. [www.marinecare.nl](http://www.marinecare.nl)

