



HARDNESS TEST KIT™

DESCRIPTION

The **HARDNESS TEST KIT** is engineered for the determination of residual hardness in the boiler water systems. **HARDNESS TEST KIT** provides a safe and easy method for determining the boiler water.

TEST KIT CONTENTS

Contents of the test kit are sufficient for 200 tests with an average Hardness value of 1.0°d (German degrees).

A. Accessories

- ◆ 1 piece of Test tube with a ring mark
- ◆ 1 piece of Titration syringe 0-2.0 °d resp. 0-0.36 mmol/L (1 graduation mark = 0.05 °d resp. 0.01 mmol/L)
- ◆ 2 pieces plastic dropping tips

B. Reagents

- ◆ 1 bottle of 15mL indicator solution H 2
- ◆ 1 bottle of 100mL titration solution TL H 2

PACKAGING

Order Number : 700115

Container : Plastic Case

TESTING PROCEDURE

1. Rinse the test tube several times with the test sample and fill it up to the ring mark.
2. Add 2 drops indicator solution H 2 and mix by shaking. The test sample turns red. If sample turns green, no hardness is present (< 0.05 °d).
3. Put dropping tip onto the titration syringe, press down plunger, dip the tip into the titration solution TL H 2 and draw up plunger slowly, until the lower rim of the black plunger O-ring agrees with value 0 (zero) on the barrel scale. The small air pocket below the plunger tip does not disturb the determination.
4. Addition of the titration solution: We recommend taking the syringe in the left hand and the test tube in the right hand and adding titration solution dropwise while smoothly shaking the test tube. As soon as the red color turns lighter, drop more slowly until the solution turns completely green. Read off total hardness in °d or mmol/L from the syringe barrel (lower rim of the black plunger O-ring). Color change is followed easily when holding test tube before a light background (e.g. sheet of white paper).
5. If the first syringe filling isn't enough to reach color change (hardness > 2 °d), fill syringe once more with titration solution TL H 2 and titrate to color change (as above). Read off total hardness and add for each used syringe filling 2 °d.
6. For the conversion of Hardness value from od (German Degrees) to parts per million (ppm) as CaCO₃, you may consider the following:

$$1 \text{ °d (German Degrees)} = 10\text{mg/L CaO} = 17,8 \text{ mg/L CaCO}_3 = 17.8 \text{ ppm CaCO}_3$$

$$1 \text{ mmol/l} = 5.6 \text{ °d (German Degrees)}$$

Interferences

Copper (II) ions may delay the indicator change, or even block this change if higher levels are present.

Therefore, in the case of copper pipes, let the water run for a sufficient amount of time before taking the sample.



 **Read the Material Safety Data Sheet before using this product.**

For detailed information on safety and health, please refer to Material Safety Data Sheet and/or Product Label.

MARICHEM MARIGASES Worldwide Services or any subsidiary or associated companies warranties of merchantability and competence, if any, along with any expressed warranties concerning this merchandise, shall not be actionable or pertinent or effective if the good is used contrarily or differently to the directions herein and in no other way due to impending hazards from inappropriate use of the good explained herein. Merchandise might vary insubstantially depending on country of origin. The information provided concerning merchandise is exclusively presented to the customer.