MANUAL MolyTesterB™ Drip Probe Method

For analysis of stainless steels and nickel base alloys

INTRODUCTION

With the MolyTester you can analyse stainless steels and nickel base alloys on the Element Molybdenum.
The measuring principle is based upon electrochemical solution of a minor quantity of alloy in moistened cotton tip, followed by a colorimetric reaction with an indicator on the element Molybdenum.

INSTRUMENT DESCRIPTION

The instrument contains a probe and battery. If the red alloy connector and the black probe connector are connected through a conductive liquid or, the battery will be used.
During the contact period, the battery will be used. As soon as you lift the probe, the battery will not be used. A resistor is integrated for safety and to limit the current to the optimal value.

INDICATOR SET Mo

The Indicator set Mo is used for analysis on the element Mo.
Keep cool, use within two years.

Safety precautions indicator set Mo

1. Harmful if swallowed.
2. Harmful if contacted with the eyes.
3. Irritating if contacted with the skin.
4. If mixed with other liquids and at temperatures higher than 50 °C, toxic gases can arise.
5. The liquid can damage clothing.

What to do if / precautions

1. If swallowed: Warn doctor immediately.
2. If contacted with eyes: rinse with plenty of water and warn doctor if necessary.
3. Avoid contact with the skin. Wash hands after use. In case of long term or much use of MolyTester: wear gloves.
4. In case of heating liquid above 50 °C or in case of mixing it with other liquids, ventilate room and dispose liquid. See Material Safety Data Sheet
5. Avoid contact with the clothes. Wear an overall if necessary.
6. Keep bottle and interior of suitcase clean. By working with care and cleaning it with tissue if necessary.

HOW TO DO THE MEASUREMENT

On the other side of this chart you can see how the analysis is done step by step.

USE OF MAGNET

With the magnet you can identify ferritic grades and duplex grades from the austenitic stainless steels AISI 304 and AISI 316.

SPECIFICATIONS

Temperature limits:

	Minimum °C	Maximum °C
Measuring surface	5*	+25*
Indicator Mo (short term)	5*	30*
Indicator Mo (long term)	15*	20*

NOTE!!!: If the temperature of the measuring surface is higher than 30 °C, results can get unreliable. For example if the sun has burned on material, cool it with cold water (and dry it with tissue) prior to testing.

MAINTENANCE AND CALIBRATION

The MolyTester does not need a lot of maintenance.
However, keeping the MolyTester clean from liquids and dust is important. In other words, it is advisable to clean the instrument and the suitcase interior with a piece of cloth if required.

BATTERY and BATTERY Tester

A 9 Volt alkaline battery is used. The Molytester starts immediately once the electric circuit is closed by touching the drip with the cathode pin.
In order to assure the battery quality, use the battery tester.

TROUBLE SHOOTING

- *Measurement result is expected to be incorrect:*
  - Be sure the circuit is closes as follows: Anode tip contacts stainless steel and cathode tip contacts the drip fluid (and not the stainless steel).
  - Be sure that there is no short circuit (metal contact) between probe tip and stainless surface.
  -
  - Temperature of measuring surface is too high.
  - Measuring surface has been contaminated.
- *Drip becomes too red.*
  - The contact period was discontinued

UP SIDE DOWN MEASUREMENTS INSTEAD OF DRIP PROBE MEASUREMENTS

It is not possible to measure up side down with this probe.

VISIT WWW.IRONHAVEN.NL FOR MORE INFORMATION!

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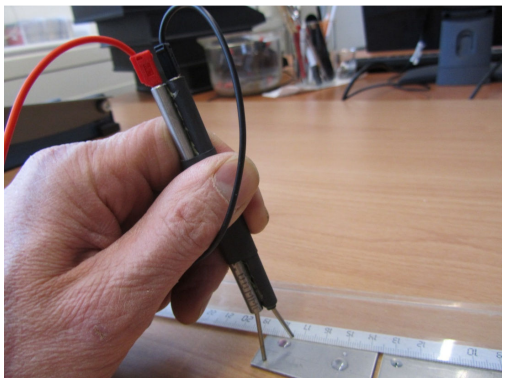
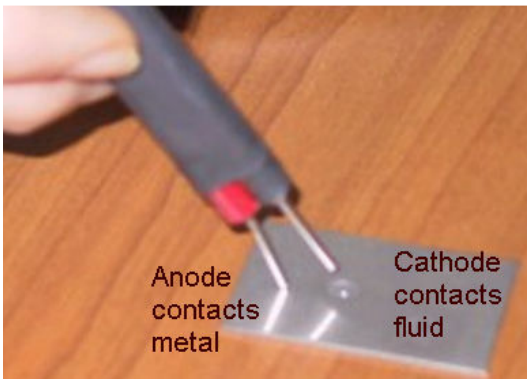
How to do the measurement Page 1/2

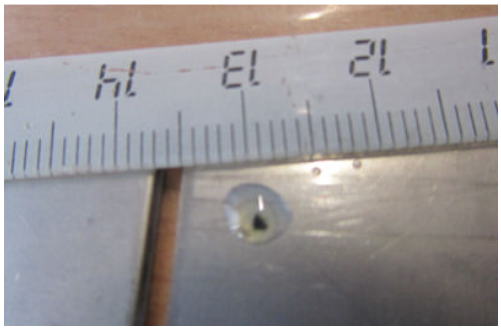
1. The surface should be clean and dry.
2. Clean the tips of the probe with a tissue.
3. Place a small drip indicator fluid Mo on the stainless steel surface.
4. Place the RED probe pole (+ = anode) on the stainless surface such that the BLACK (- = kathode) probe pole positions above the drip of indicator fluid Mo (don't touch the fluid drip yet).
5. Carefully turn the BLACK probe pole (-) tip on the top of the drip indicator fluid Mo. Be sure that no metallic contact (short circuit) probe-stainless steel is established. The current must run through the fluid.
6. The time of contact is approximately 1 second if the battery tester indicates 'green'. If the battery tester indicates 'yellow' the time will be longer, 1-2 seconds.
7. Lift the probe, wait 1-3 seconds.
8. Evaluate the colour of the drip within 20 seconds (the red colouring may slightly vanish over minutes).
9. During the measurement metallic tin (stannous) will built up on the cathode. This can cause a short ciruit. After every measurement clean the probe tip.



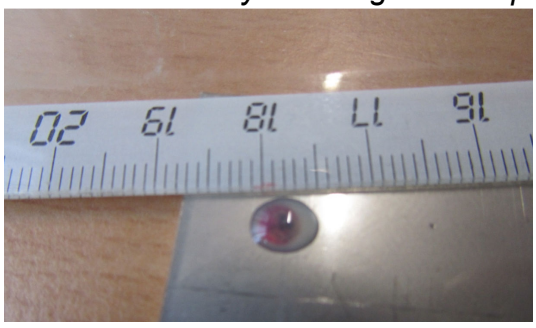
Place red pole (+) on stainless surface.



*Rotate black pole (-) **on top of drip**. Don't make a short circuit by touching the sample!*



No red colouring: <05% Mo. Stainless steel AISI 304 group.



Clear Red colouring: 2% Mo. Stainless steel AISI 316 group.

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