

BONDERITE

1872293 E-AP Lineguard 101D(LF)

Operating Manual

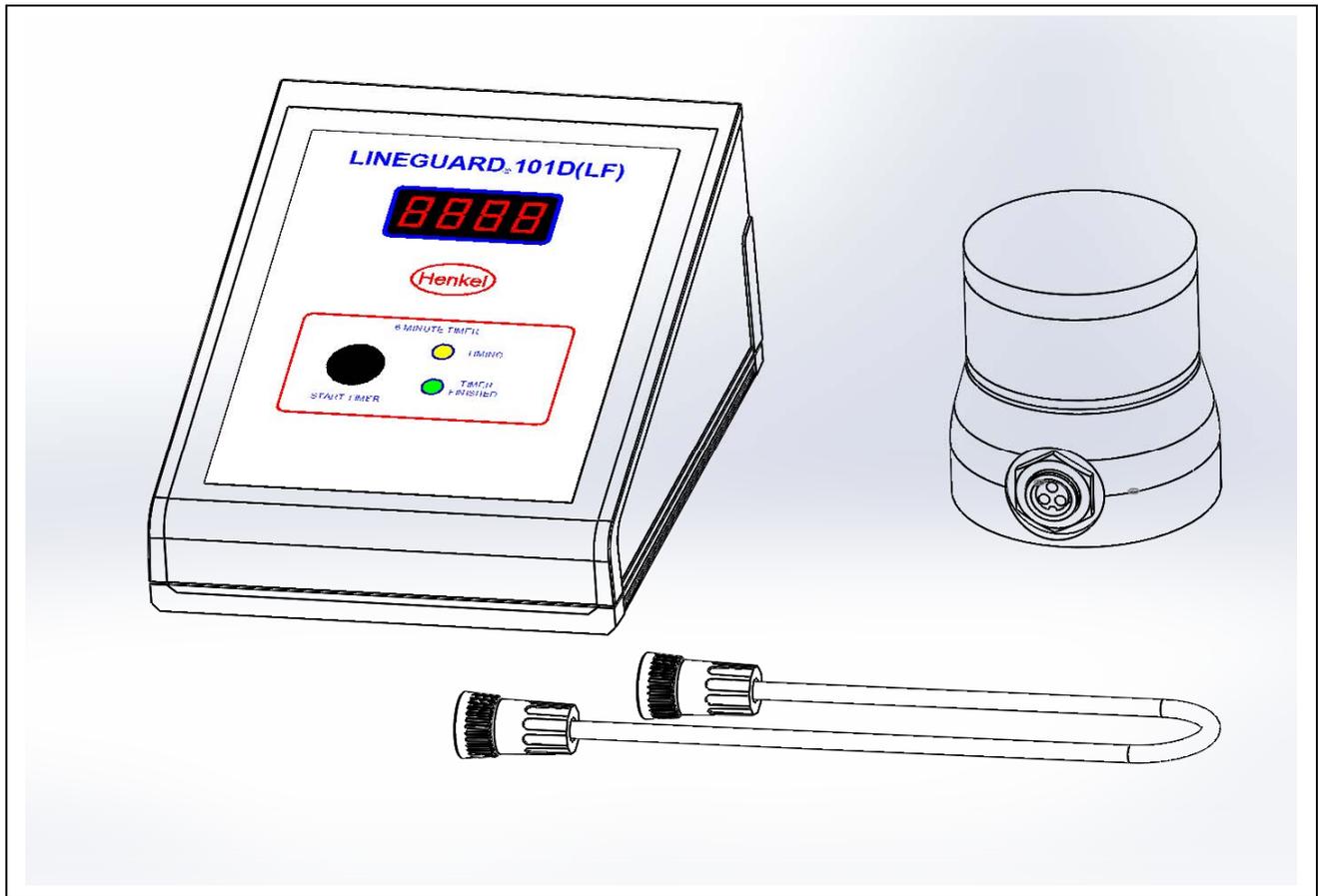


Table of Contents

1#	Please Observe the Following	4#
1.1#	Emphasized Sections	4#
1.2#	For Your Safety	4#
1.3#	Unpacking and Inspection.....	5#
1.4#	Items supplied	5#
1.5#	Features	5#
1.6#	Usage	5#
2#	Description.....	6#
3#	Technical Data	7#
4#	Installation	9#
5#	Operation.....	9#
6#	Application Hints.....	10#
7#	Troubleshooting	11#
8#	Care and Maintenance.....	12#
9#	Standardization Procedure.....	13#
10#	Accessories and Spare Parts	15#
11#	Warranty	15#

1 Please Observe the Following

1.1 Emphasized Sections

Warning!

Refers to safety regulations and requires safety measures that protect the operator or other persons from injury or danger to life.

Caution!

Emphasizes what must be done or avoided so that the unit or other property is not damaged.

Notice:

A notice gives recommendations for better handling of the unit during operation or adjustment as well as for service activities.

1.2 For Your Safety

 For safe and successful operation of the unit, read these instructions completely. If the instructions are not observed, the manufacturer can assume no responsibility.

 Do not expose the connecting cable to heat, oil, or sharp edges.

 Make sure the Unit stands stable and secure.

 Use only original equipment replacement parts.

 Do not operate the Lineguard 101D(LF) Meter with heated solution.

 Always disconnect the power supply before servicing the unit.

 Observe general safety regulations for the handling of chemicals such as Bonderite® products. Observe the manufacturer's instructions as stated in the Safety Data Sheet.

 While under warranty, the unit may be repaired only by an authorized Henkel service representative.

1.3 Unpacking and Inspection

Carefully unpack the Bonderite® E-AP Lineguard 101D(LF) Meter and examine the items contained in the carton. Inspect the unit for any damage that might have occurred in transit. If such damage has occurred, notify the carrier immediately. Claims for damage must be made by the consignee to the carrier and should be reported to the manufacturer.

1.4 Items supplied

1140455 - Bonderite® E-AP Lineguard® 101D(LF) Meter Ass'y and Power cord

1161162 - Sample Cup Assembly

1160454 - Interface Cable Assembly

8905242 – 101D Meter Equipment Manual

1.5 Features

1.5.1 Digital Display

1.5.2 Automatic Measurement Cycle

1.5.3 Push Button Operation

1.5.3 External Standardization Adjustment

1.6 Usage

Warning!

Use proper PPE (Personal Protective Equipment) when handling any process chemicals. Follow all safety procedures and local regulations. Only use this equipment after being properly trained on the use of the equipment and handling of potentially hazardous chemicals.

Warning!

This device is designed to measure active hydrofluoric acid ions. Operators must be trained on the hazards related to HF and procedures to follow in case of accidental exposure.

2 Description

The Bonderite® Lineguard® 101D Meter is designed to measure the magnitude (micro-amperes, DC) of the electrical current through a fluoride sensitive electrode system. This current is proportional to the concentration of active fluoride ions present in certain acidic solutions used in the treatment of aluminum, carbon steel, and stainless steel. The instrument can also make direct measurement of solution samples containing a maximum equivalent fluoride ion content of 4 g/L (4000 ppm). Figure 1 and Figure 2 show the 101D meter top and back views, respectively. Figure 3 illustrates the measurement cup and the electrical cable.

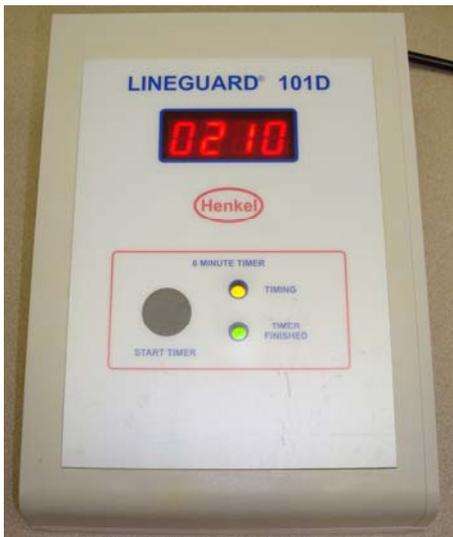


Fig. 1: 101D Meter Top view



Fig. 2: 101D Meter Back view



Fig. 3: Sample Cup and cable

3 Technical Data

Meter Dimensions (L x H x W): 7.81" x 4.00" x 6.19"
Sample Cup dimensions: (Dia. X H) 3.5" Dia. X 3.5" High
Total weight: lbs. (Kg) 5 lbs (2.5 Kg)
Operating voltage: 115 VAC 50/60Hz
230 VAC 50/60Hz
Power consumption: 30 Watts

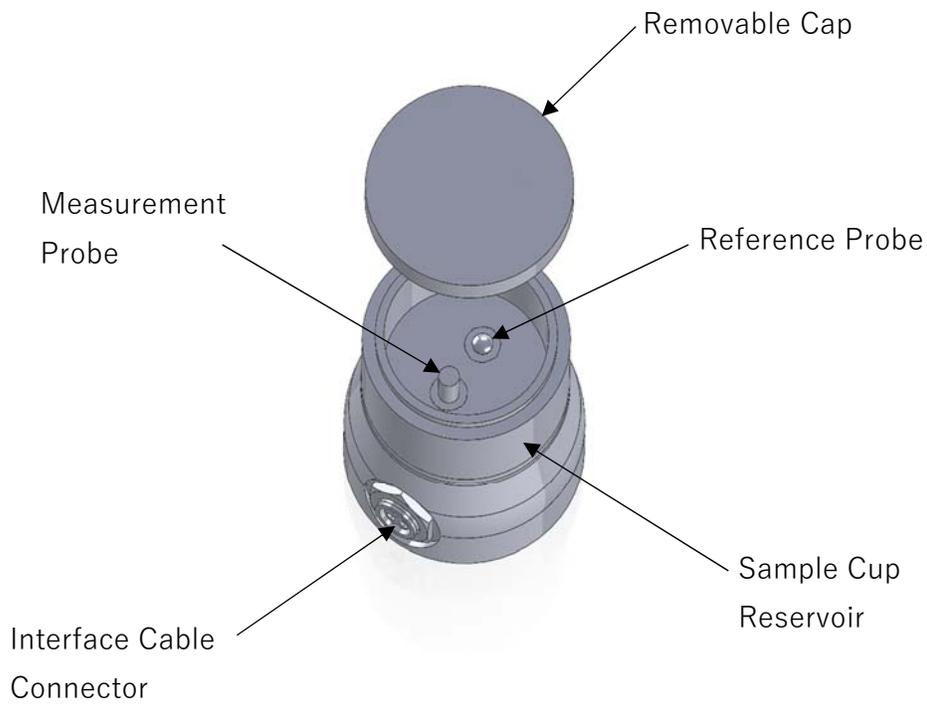


Fig. 4: 101D Meter Sample Cup Assembly

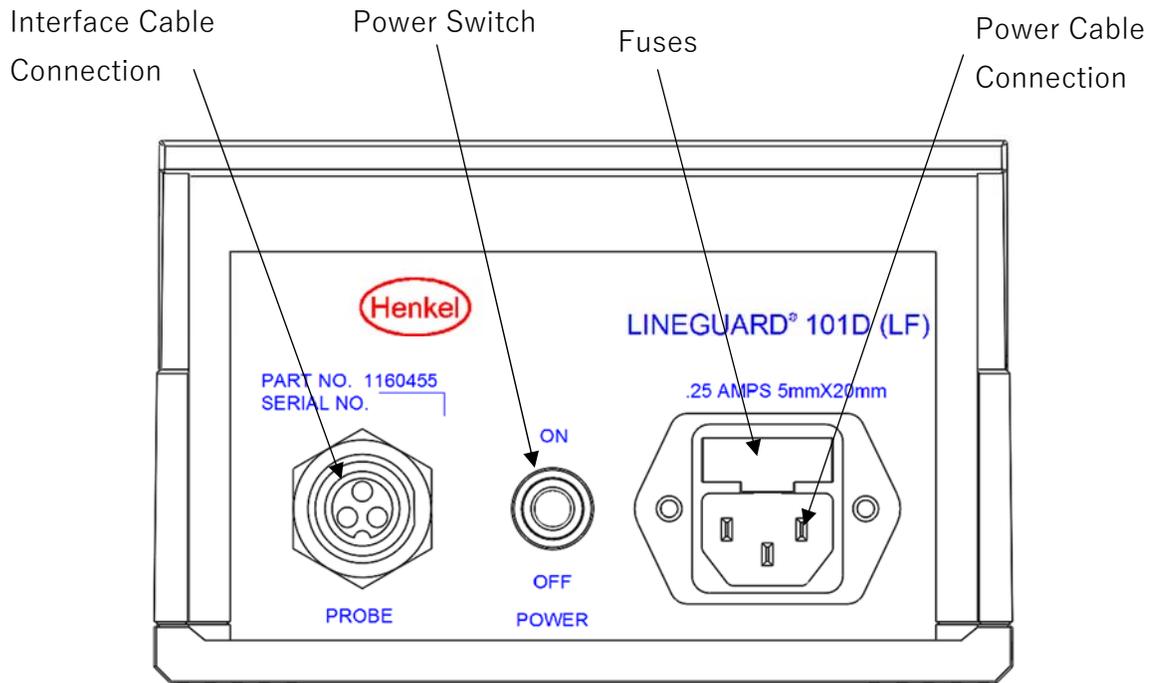


Fig. 5: 101D Meter Interface Panel

4 Installation

- ! Before using the equipment for the first time check it carefully for signs of external damage. If any shipping damage is found DO NOT USE THE EQUIPMENT – return it to your supplier immediately.

Connect the interface cable between the sample cup assembly and the meter assembly.

Connect the power cord to the meter assembly and plug into a power outlet.

Prior to use perform a standardization procedure - see section 9.

5 Operation

Warning!

Use proper PPE (Personal Protective Equipment) when handling any process chemicals. Follow all safety procedures and local regulations.

Warning!

Only use this equipment after being properly trained on the use of the equipment and handling of dangerous chemicals.

Warning!

Use proper ventilation when working with dangerous chemicals. All safety procedures and local regulations must be followed.

Measurement of the Fluoride Ion:

Fill the sample cup so that the electrodes are completely immersed in solution. Measurements of bath solutions should be made at room temperature. Elevated solution temperatures will produce elevated readings.

5.1 Empty the DI water from the measurement cup.

5.2 Rinse once with bath solution.

- 5.3 Fill the sample cup with bath solution until completely covering both electrodes and making sure that there are no air bubbles present around the electrodes.
- 5.4 Press “Start Timer” button and wait for six minutes, the yellow LED will be blinking during measurement cycle.
- 5.5 After six minutes a beep will sound, the green LED will be lit, measurement is complete and the reading displayed.
The reading will hold until the next measuring cycle has completed.
- 5.6 Empty bath solution from sample cup and rinse out several times using DI water.
- 5.7 Store the sample cup filled with DI water when not in use.

6 Application Hints

Use this device at room temperature away from any vibrations and electrical interference. Vibration, temperature and electrical interference can affect the reading of the meter.

Solutions being measured should be measured in a consistent manner. Elevated solution temperatures will provide elevated measurement readings.

Certain solutions may contain an elevated concentration of active fluoride ions. These solutions will result in elevated readings on the meter and will have a greater degree of error, in the reading. In cases where the readings are exceeding 1000 μA , it is recommended to dilute the samples using a known amount of DI water.

As the meter is used, the measuring electrode material will be consumed. When the measuring electrode becomes visually smaller, it should be replaced.

Never use metal or sharp objects to clean the probes, those objects may scratch the probes' surface and impact readings.

Store sample cup filled with DI water, when not in use.

Save 1 gallon of a good process bath, in a clean polyethylene container (for future use as a standard solution). Record its “Initial Standard Reading”.

When a series of samples are to be taken, the sample cup should be flushed after each measurement with either (a) the new sample (at least once), or (b) distilled water followed by one flushing with the new sample. For accuracy and reproducibility, the same method of flushing between samples should be consistently used.

Whenever the meter has been idle for more than 4 hours, take two measurements of the first sample. If they differ significantly, use the second reading.

7 Troubleshooting

 Before proceeding with any repair or maintenance operation disconnect the tool from the main electricity supply.

Type of Malfunction	Possible Causes	Correction
Unit does not turn on	Power switch off	Turn on power switch.
	Missing power cord	Install power cord and plug into electrical outlet.
	No power to outlet	Check GFC breaker – reset if tripped.
		Check Circuit breaker to outlet – reset if tripped.
	Blown fuse	Check fuses and replace (located in power cable connector).
Reading is 0000 uA	No active fluoride	Measure bath sample which contains active fluoride.
	Interface cable	Arrange cable so that it is not in a stressed position and check connections.

Type of Malfunction	Possible Causes	Correction
Reading is 20 μ A when cup is filled with standard 500F solution.	Bad interface cable connection	Unplug interface cable and reconnect, at both ends.
	Short circuit between probes	While cup is empty and dry, connect both probes together using a single wire with alligator clips at both ends, reading should jump around. If no changes, contact Henkel for service.
Reading is 5000 μ A	Short Circuit between electrodes	Contact Henkel for service
	Bad interface cable connection	Arrange cable so that it is not in a stressed position
	Short circuit in cable	Check all meter cable connections. If issue not resolved, contact Henkel for service
500F Standard solution not reading within range	Expired Standard 500F Solution	Check expiration date – replace with fresh solution.
	Standardization required	Perform standardization procedure – see section 9.
	Dirty electrode	Clean electrodes - see section 8

8 Care and Maintenance

The Lineguard® 101D Meter is a sensitive instrument that requires proper cleaning and care in order to accurately register the free fluoride ion concentration in a treatment bath. Following the instructions in this manual will enable you to properly maintain

the unit and will ensure that the 101D Meter is functioning properly. Proper care and maintenance will not only extend the life of the meter, but also the periods between standardization.

To insure proper operation, the sample cup should never be allowed to dry. Always store the meter with the sample cup filled with DI water. This will prevent any coating of the sensitive surfaces. After each bath measurement, fill up the cup with DI water and gently clean the electrodes with a plastic brush.

The meter should be stored in a cool, dry area when not in use.

At all times, the meter chassis should be located where it will not be splashed with water or chemical solutions.

Avoid severe bends or tension of the interface cable when storing, handling, or using the meter.

When the 101D Meter's response to the standard 500F solution becomes significantly different (greater than +/- 15% of the standard) the fluoride-sensitive electrode should be cleaned.

The unit must be standardized periodically to maintain consistent measurements. A weekly standardization procedure is suggested.

New meters and retrofitted meters have an external standardization adjustment screw that allow customer to standardize their meter themselves.

9 Standardization Procedure

It is recommended that a standardization procedure be performed on a weekly basis.

9.1 Materials Required:

- 101D Meter and Sample Cup Assembly
- Standard Solution 500 F **
- Cotton swabs

**Be sure that the standard solution is not expired. Standard solution 500 F is available from Henkel - IDH 592461.

9.2 Standardization Procedure:

- 9.2.1 Carefully clean the platinum electrode (the flat (or thin) electrode) with a cotton swab to remove any coating that may be adhering to it.
- 9.2.2 Rinse sample cup with DI water two times and one more time using the standard solution.
- 9.2.3 Fill the sample cup with new standard 500 F solution until all electrodes are fully immersed.
- 9.2.4 Turn on meter, press start timer and wait 6 minutes for the reading to be displayed. The reading should be 200 μ A +/- 15% (170-230 μ A)
- 9.2.5 If the reading is outside the range adjustment is required.
 - 9.2.5.1 If adjustment is required, at about 4 minutes into the measurement cycle, turn the external standardization screw to adjust the reading to 200 μ A. This may require several adjustments to be made during the measurement cycle. (Turn adjustment screw CCW to decrease the reading and CW to increase the reading).

If unable to adjust the reading to be within the specified operating range, contact your Henkel sales representative or regional application engineer for service.

10 Accessories and Spare Parts

1140455 - Bonderite® E-AP Lineguard® 101D(LF) Meter Ass'y and power cord

1161162 - Sample Cup Assembly

1160454 - Interface Cable Assembly

8905242 - Equipment Manual

592461 – Standard Solution, 500 F

11 Warranty

Henkel expressly warrants that all products referred to in this Instruction Manual for 1872293 E-AP Lineguard 101D(LF) Meter (hereafter called "Products") shall be free from defects in materials and workmanship. Liability for Henkel shall be limited, as its option, to replacing those Products which are shown to be defective in either materials or workmanship or to credit the purchaser the amount of the purchase price thereof (plus freight and insurance charges paid therefor by the user). The purchaser's sole and exclusive remedy for breach of warranty shall be such replacement or credit.

A claim of defect in materials or workmanship in any Products shall be allowed only when it is submitted in writing within one month after discovery of the defect or after the time the defect should reasonably have been discovered and in any event, within (12) months after the delivery of the Products to the purchaser. This warranty does not apply to perishable items, (such as fuses, measuring electrode, reference electrode, etc.). No such claim shall be allowed in respect of products which have been neglected or improperly stored, transported, handled, installed, connected, operated, used or maintained. In the event of unauthorized modification of the Products including, where products, parts or attachments for use in connection with the Products are available from Henkel, the use of products, parts or attachments which are not manufactured by Henkel, no claim shall be allowed.

No Products shall be returned to Henkel for any reason without prior written approval from Henkel. Products shall be returned freight prepaid, in accordance with instructions from Henkel.

NO WARRANTY IS EXTENDED TO ANY EQUIPMENT WHICH HAS BEEN ALTERED, MISUSED, NEGLECTED, OR DAMAGED BY ACCIDENT.

EXCEPT FOR THE EXPRESS WARRANTY CONTAINED IN THIS SECTION, HENKEL MAKES NO WARRANTY OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCTS.

ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND OTHER WARRANTIES OF WHATEVER KIND (INCLUDING AGAINST PATENT OR TRADEMARK INFRINGEMENT) ARE HEREBY DISCLAIMED BY HENKEL AND WAIVED BY THE PURCHASER.

THIS SECTION SETS FORTH EXCLUSIVELY ALL OF LIABILITY FOR HENKEL TO THE PURCHASER IN CONTRACT, IN TORT OR OTHERWISE IN THE EVENT OF DEFECTIVE PRODUCTS.

WITHOUT LIMITATION OF THE FOREGOING, TO THE FULLEST EXTENT POSSIBLE UNDER APPLICABLE LAWS, HENKEL EXPRESSLY DISCLAIMS ANY LIABILITY WHATSOEVER FOR ANY DAMAGES INCURRED DIRECTLY OR INDIRECTLY IN CONNECTION WITH THE SALE OR USE OF, OR OTHERWISE IN CONNECTION WITH, THE PRODUCTS, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS AND SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER CAUSED BY NEGLIGENCE FROM HENKEL OR OTHERWISE.

Henkel Corporation

One Henkel Way
Rocky Hill, CT 06067-3910
USA

Henkel Canada Corporation

2515 Meadowpine Boulevard
Mississauga, Ontario L5N 6C3
Canada

Henkel Corporation

Automotive/ Metals H.Q.
32100 Stephenson Hwy,
Madison Heights 48071
USA

Henkel Capital, S.A. de C.V.

Calzada de la Viga s/n Fracc.
Los Laureles
Loc. Tulpetlac, C.P. 55090
Ecatepec de Morelos, MEXICO

Henkel Singapore Pte Ltd

401, Commonwealth Drive
#03-01/02 Haw Par Technocentre
SINGAPORE 149598

Henkel (China) Company Ltd.

No. 928 Zhang Heng Road,
Zhangjiang, Hi-Tech Park, Pudong,
Shanghai, China 201203

Henkel Loctite Korea

8F, Mapo Tower, 418,
Mapo-dong, Mapo-gu,
Seoul, 121-734, KOREA

Henkel Japan Ltd.

27-7 Shin Isogo-cho, Isogo-ku
Yokohama, 235-0017
JAPAN

Henkel AG & Co. KGaA

Standort München
Gutenbergstraße 3
85748 Garching b. München
Deutschland

® and ™ designate trademarks of Henkel Corporation or its affiliates. ® = registered in the U.S. and elsewhere.
© Henkel Corporation. All rights reserved. Data in this operation manual is subject to change without notice.
Manual P/N: 8905242 , Rev -, Date: 11-1-2017.