

Testex[®]

Instruction Manual English

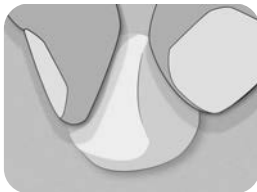


Introduction

Testex Press-O-Film Replica Tape consists of a layer of compressible foam affixed to an incompressible 50 μm (2 mils) polyester layer. When pressed or 'burnished' against a roughened steel surface, the foam collapses and forms an impression of the surface. Placing the burnished Testex tape between the anvils of a micrometer thickness gage, such as the Testex Digital Micrometer, and subtracting the thickness of the incompressible layer gives a measure of the surface profile height.

How to Measure

1. Locate a representative site for measurement. Clean the surface to be tested using a cleaning putty or other suitable method (such as compressed air or pressure-sensitive tape) to remove dust, debris, or residual blast media from the surface.

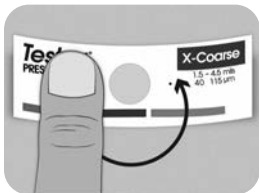


2. Select the appropriate grade of replica tape based on the expected height of the profile being measured, using the following chart:

Replica Tape Grade	Range		Order Code
Coarse Minus	13 – 25 μm	0.5 – 1.0 mil	RTCMIN
Coarse	20 – 50 μm	0.8 – 2.0 mils	RTC
X-Coarse	40 – 115 μm	1.5 – 4.5 mils	RTXC
X-Coarse Plus	100 – 150 μm	4.0 – 6.0 mils	RTXCPLUS

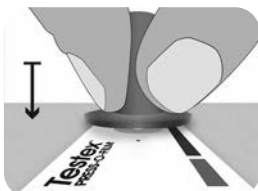
NOTE: If a measurement falls outside of the specified range for the tape grade used, disregard the reading and re-measure the surface with the appropriate tape grade.

Pull a single adhesive backed replica tape free from its release paper, being careful not to touch either side of the replica foam during application.



3. Apply the replica tape to the surface. Press down on the adhesive backing of the tape around the replica foam to ensure it remains in place during the burnishing process.

- 4a. For flat or convex surfaces: Using a **Testex High Accuracy Burnishing Tool**, press the ball of the tool onto the replica foam with just enough pressure so that the flat base rests on the tape. Move the tool's ball around the circular replica foam opening.



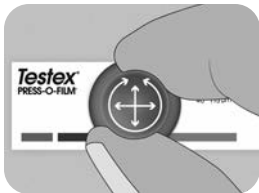
For concave surfaces: Flip over the High Accuracy Burnishing Tool and hold it at an angle. Use the curved area near the Testex logo at the top of the tool to burnish.

— or —

- 4b. If using a **Classic Burnishing Tool**, hold the tool like a pencil, and apply consistent pressure with the ball end, being careful not to apply too much force. Excessive force can lead to inaccurate measurements.



NOTE: The stick-type legacy burnishing tool remains a valid measurement practice and is recognized by international standards, but does not have an associated accuracy statement. See Accuracy (pg. 5).

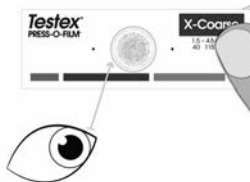
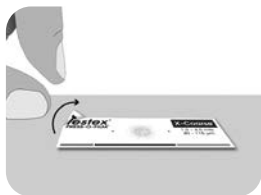


5. Alternate between linear (x-y) and circular motions with the burnishing tool to completely burnish the replica foam until a uniform stippled gray appearance is achieved across the entire measurement area.

The time required to properly burnish a replica will vary based on the surface profile. Profiles at the high end of a replica tape grade's range may only require burnishing for 10-15 seconds. Profiles at the low end of the range may require up to 60 seconds. Refer to the below examples of properly and improperly burnished replicas.



6. Carefully remove the burnished replica tape from the surface. A small piece of release paper remains on the top-left corner of some grades of replica tape to facilitate easy removal.



7. Inspect the replica to ensure that no contamination from the surface is present (e.g. dust, debris, residual blast media).

When held up to a light source, 'points' of light should be visible consistently across the replica where the foam has been compressed by the peaks of the surface profile.

8. Adhesive residue or other debris can build up on the faces of the anvils during use. To clean the anvils, place a cleaning card or piece of paper inside the closed anvils, and gently move back and forth.



NOTE: Clean the anvils prior to turning on the gage, zeroing (pg. 6), or whenever the gage does not display $-50\ \mu\text{m}$ (-2.0 mils) when replica tape is removed after taking a measurement.

After cleaning, power on the Testex Digital Micrometer by pressing the  button.



9. Ensure the correct grade of replica tape is selected (pg. 1) and the H_L icon (pg. 7) is displayed at the bottom of the screen.

NOTE: If using Coarse Minus grade replica tape, H_L mode should be disabled. Any grade of replica tape can be selected from the Menu.

10. Press down on the lever to open the micrometer anvils, and insert the piece of replica tape, centering the circular opening of the replica foam between the anvils. Slowly release the lever, allowing the anvils to gently close on the replica.



Once the measured value stabilizes, the displayed value will flash, and be recorded if Memory Mode is enabled (pg. 6).

NOTE: The gage should return to $-50\ \mu\text{m}$ (-2.0 mils) after the replica tape is removed. If a different number is displayed after a measurement is taken and the replica tape is removed, clean the anvils as detailed above.

Number of Readings

At least two measurements should be taken at each location. If the two replicas differ by 5 μm (0.2 mils) or less, their average should be recorded as the profile.

If the two initial replicas differ by more than 5 μm (0.2 mils), a third replica is recommended. The average of the two closest replicas should be recorded.

Accuracy

In 2024, a comprehensive study¹ was performed to determine an accuracy statement for replica tape. That study determined the following accuracy and precision statements:

Replica Tape Grade	Precision	Accuracy
Coarse	$\pm 2 \mu\text{m}$ (0.1 mils)	$\pm 8 \mu\text{m}$ (0.3 mils)
X-Coarse	$\pm 6 \mu\text{m}$ (0.2 mils)	$\pm 8 \mu\text{m}$ (0.3 mils)
X-Coarse Plus	$\pm 8 \mu\text{m}$ (0.3 mils)	$\pm 10 \mu\text{m}$ (0.4 mils)

The above accuracy statement is applicable under the following conditions:





- The procedure detailed in these instructions is followed
- The High Accuracy Burnishing Tool is used
- At least two readings are taken per measurement, in accordance with the procedure in Number of Readings (above)
- All readings are converted, using a Testex Digital Micrometer (pg. 7) or conversion table

NOTE: The Classic Burnishing Tool remains a valid measurement practice and is recognized by standards, but does not have an associated accuracy statement.


¹ Beamish, M. (2024, March 3-7). *Improvements to the Replica Tape Test Method*. AMPP 2024, New Orleans, LA, United States.

Digital Micrometer Features & Operation

Menu Navigation

Press the  button to enter the gage menu. Navigate between menu items using the  and  buttons. Use the  button to select the highlighted menu item. The following menu items are displayed:

Zero


The Testex Digital Micrometer will automatically zero when powered on, or can be zeroed by selecting  from the gage menu. Ensure the micrometer anvils are clean prior to zeroing or powering on the gage.


NOTE: If the gage does not display $-50\ \mu\text{m}$ (-2.0 mils) after a measurement is taken and the replica tape is removed, clean the anvils as detailed in Section 8 of How to Measure (pg. 4) prior to performing a zero.

Memory Mode


When **Memory Mode** is ON the gage will store up to 250 readings. Stored measurements can be downloaded to PosiSoft Desktop Software (pg. 9). Statistics are displayed on screen showing the number of readings, average, lowest, and highest measured readings.



What is stored, and whether the micrometer automatically stores a reading, depends on the mode:


- **Replica Tape Grade Selected** – When a grade of replica tape is selected (pg. 7), the gage automatically stores each reading into memory.
 - **Averaging Mode** – When Averaging Mode is ON (pg. 8), the gage automatically stores the average of paired readings into memory. Individual readings are not stored.
- **No Replica Tape Grade** – When No Replica Tape Grade is selected, readings are not automatically added to memory. Press the  button to save a displayed reading.

Press the  button to remove the last reading taken from memory.



WARNING: Toggling the display units, toggling Conversion mode or turning ON/OFF Averaging Mode will automatically reset Memory Mode, and clear all stored readings.

Select  from the gage menu to clear all stored readings from memory.

Alternatively, powering on the gage by pressing and holding the  and  button will clear all stored readings from memory. All other settings will be retained.

Select  from the gage menu to turn OFF Memory Mode. Stored readings will be retained in memory until cleared. Additional readings can be added by turning Memory Mode ON from the gage menu.

Display Brightness

Adjusts the display brightness using the  and  buttons.

Units


Toggles the display units between thou/mils and microns.

Replica Tape Grade


When a replica tape grade is selected, the micrometer will automatically subtract the 50 μm (2.0 mils) thickness of the incompressible polyester layer from the measurement. With Memory Mode ON, the selected grade will also be recorded.


NOTE: With Conversion Mode enabled, the correct grade of replica tape must be selected to ensure accurate readings.

Toggle the selected grade of tape from the gage menu. The menu icon will show the currently selected grade: **C** for Coarse, **XC** for X-Coarse, and **XC+** for X-Coarse Plus. The selected grade of tape is displayed in the bottom left of the measurement screen.

Select  to select **No Replica Tape Grade** and use the micrometer to measure the distance between the anvils, like a standard analog micrometer. Conversion Mode and Averaging Mode are unavailable when No Replica Tape Grade is selected.

Conversion Mode


When **Conversion Mode is selected** (default), an HL icon  is displayed at the bottom center of the measurement screen. The gage displays a more accurate measurement that has been adjusted for the non-linearity of replica tape.

When **Conversion Mode is disabled**, an H icon  is displayed at the bottom center of the measurement screen. The gage displays the measured thickness without adjustment, comparable to an analog spring micrometer. A correction table must be used to accurately measure surface profile using replica tape.

NOTE: Conversion Mode is unavailable when No Replica Tape Grade is selected from the gage menu.

Averaging Mode

At least two measurements should be taken at each location. If the two replicas differ by 5 μm (0.2 mils) or less, their average should be recorded as the profile height.

When Averaging Mode  is enabled, the gage will display the average of two measurements. The individual readings will be displayed as R1 and R2, and the average of the two readings will be displayed on the main measuring screen.

NOTE: When both Averaging Mode and Memory Mode are ON, only the average of the two readings is recorded. The number of readings and statistics will be based on the recorded averages.

NOTE: Averaging Mode is unavailable when No Replica Tape Grade is selected from the gage menu.

Gage Reset

Restores the gage to default settings, clears stored memory and zero adjustments.

Power Off

Powers down the gage. Alternatively, the gage will automatically power down after 5 minutes of no activity. All settings are retained.

Exit Menu

Exits the gage menu and returns to the main measurement screen.

NOTE: While in the menu, pressing down on the lever to open the anvils will also exit the menu.

Verifying the Gage

Verification shims are available as an optional accessory.

Connect to Computer

Readings stored in memory can be downloaded to a computer for viewing, storing, and creating reports. Use the supplied cable and connect to the gage using the USB-C port on the side of the micrometer.

USB Drive Mode—Retrieves data in a manner similar to a flash drive in .csv format. No software to install or internet connection required.

PosiSoft Desktop—Powerful desktop software (PC/Mac) for downloading, viewing, printing and storing measurement data. Includes a customizable, templated PDF Report Generator.

Learn more at www.defelsko.com/posisoft

Troubleshooting

Before returning the instrument for service:

1. Install new or newly recharged battery in the proper alignment as shown within battery compartment
2. Clean the micrometer anvils (pg. 4)
3. Perform a Reset (pg. 8) and Zero the gage (pg. 6)

IMPORTANT:

If these steps do not resolve the issue and the Gage must be returned for service, please follow the instructions provided at www.defelsko.com/service

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Analog Micrometer Conversion Table

Not required for the Testex Digital Micrometer

Tabla de Conversión de Micrómetro Analógico

Tableau de Conversion de Micromètre Analogique

Umrechnungstabelle für Analoges Mikrometer

جدول تحويل الميكرومتر التناظري

아날로그 마이크로미터 변환 표

模拟千分尺转换表

X-Coarse Grade			
Reading ¹ Mils	Result ² Mils	Reading ¹ μm	Result ² μm
1.9	1.5	50	40
2.0	1.6	53	44
2.1	1.8	55	47
2.2	1.9	58	51
2.3	2.0	60	54
2.4	2.2	63	57
2.5	2.3	65	60
2.6	2.4	68	64
2.7	2.6	70	67
2.8	2.7	73	71
2.9	2.8	75	74
3.0	3.0	78	78
3.1	3.1	80	81
3.2	3.2	83	85
3.3	3.4	85	87
3.4	3.5	88	89
3.5	3.6	90	94
3.6	3.8	93	98
3.7	3.9	95	101
3.8	4.1	98	105
3.9	4.2	100	108
4.0	4.3	103	112
4.1	4.5	105	115

Coarse Grade			
Reading ¹ Mils	Result ² Mils	Reading ¹ μm	Result ² μm
0.9	0.8	20	19
1.0	1.0	22	21
1.1	1.1	24	24
1.2	1.3	26	27
1.3	1.4	28	29
1.4	1.6	30	32
1.5	1.7	32	35
1.6	1.8	34	37
1.7	2.0	36	40
X-Coarse Plus Grade			
Reading ¹ Mils	Result ² Mils	Reading ¹ μm	Result ² μm
4.2	4.0	105	100
4.3	4.2	108	105
4.4	4.3	110	107
4.5	4.5	113	112
4.6	4.6	115	114
4.7	4.7	118	118
4.8	4.9	120	121
4.9	5.0	123	125
5.0	5.1	125	128
5.1	5.3	128	132
5.2	5.4	130	134
5.3	5.5	133	139
5.4	5.7	135	141
5.5	5.8	138	145
5.6	6.0	140	150

Leyenda • Légende • Legende • مقدمة • 범례 • 图例

¹ Lectura ² Resultado Corregido

¹ Lecture ² Résultat Corrigé

¹ Messwert ² Korrigiertes Ergebnis

¹ قراءة ² النتيجة المصححة

¹ 측정값 ² 교정된 결과

¹ 大小 ² 修正结果

Testex®



www.testextape.com

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