

## ABRASION & PILLING TESTER

# MARTINDALE



For the control of abrasion and pilling on almost any kind of woven and knitted fabrics, non-wovens, socks, gloves, natural and artificial leather, both dry and wet samples.

Extremely versatile, robust, accurate, silent, vibration free, 100% made in Italy.

Supplied with a basic starter kit of top quality consumables complete with traceable certificate.

ISO 17025 Calibration Certificate (Accredia - ILAC) available on demand.

# MARTINDALE

Code 2568 (9 positions) - Code 2568A (6 positions)



## Compulsory Accessories for 6- & 9-position setting (at least 1 is needed)

**Set of 6 or 9 sample holders Ø 38 mm to perform ABRASION test** according to UNI EN ISO 12947-1, and to perform PILLING test according to ASTM D4970, Code 2568A.900, or Code 2568.900.

**Set of 6 or 9 sample holders Ø 90 mm to perform PILLING test** according to UNI EN ISO 12945-2, Code 2568A.300, or Code 2568.300.

## Optional Accessories (available on demand)

**Sample holder for socks & hosiery ABRASION test** according to UNI EN 13770, Code 2568.804.

**Sample holder for ABRASION test** on leather and on coated fabrics, according to UNI EN ISO 17076-2, Code 2568.260.



Example of 1-position sample holder with Ø 38 mm



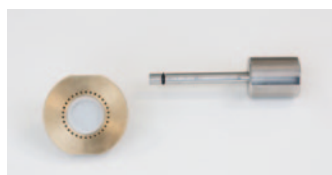
Example of 1-position sample holder with Ø 90 mm



Example of 1-position sample holder for socks & hosiery



Example of 1-position sample holder for leather and coated fabrics



## Testing procedure

In conformity with the International Standards, the fabric specimen to be tested is brought into contact and rubbed against a Standard reference fabric (as regards abrasion test), or against the same type of specimen, or against a standard felt (as regards Pilling test), following a predetermined number of specific rotary motions known as “Lissajous figure” paths.

Basically, the abrasion test end point is reached once the operator visually detects the first two broken threads on the tested fabric specimen, whereas the Pilling test is accomplished by observing (after a certain number of laps), the created pill effect (fuzzing surface / surface disturbance) on the fabric specimen and comparing it with the special photographic standards.

For Pilling tests according to EN, ISO, and EMPA (also called “Swiss Pilling”) Standards, a particular sample holder is required (with special dimensions and weight) as well as special photographic standards: EMPA 991 for woven fabrics, and EMPA 992 for knitted fabrics.

## Technical Features

**Two models available:** **Martindale 6 positions**, Code 2568A; **Martindale 9 positions**, Code 2568.

**Modular & Flexible:** the 6-position model can be further upgraded up to 9 positions by means of specific upgrading kits.

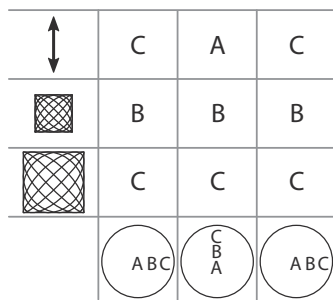
**User-friendly control panel** characterised by:

- wide LCD touch screen display for easy setting of testing parameters;
- graphic layout of the testing heads;
- graphic scheme to select the type of test and the movement path;
- start/stop and emergency keys.

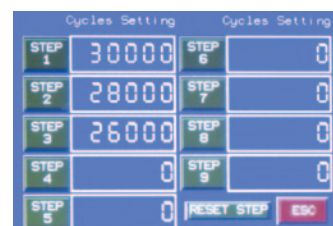
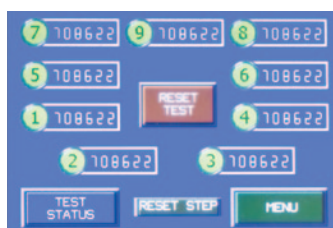


### Three types of test movement:

abrasion (big Lissajous), pilling (small Lissajous) and rubbing (linear). The desired movement is performed according to the set position of the 3 driving pivots, as shown by the graphic scheme on the control panel.



**Intuitive software** for the setting of testing parameters, such as number of cycles per testing step (with consequent stop), speed (23,75 - 47,5 - 71,25 rpm), increase/decrease counting modality, display language, counter providing the total n° of cycles (of all positions) as well as the total n° of cycles of each individual position. The latter is resettable, a convenient function to monitor both the wear of mechanical parts as well as the consumption of consumables on each position separately.



**Easy access** to all the testing positions.

Sample and abrasion surface can be easily inspected with no need to remove the movable plate.

**ISO 9001 Calibration Report** available on request.

**ISO 17025 Calibration Certificate (Accredia - ILAC)** available on demand.





# MARTINDALE

## AVAILABLE MODELS

|                        |      |       |
|------------------------|------|-------|
| Martindale 6 positions | Code | 2568A |
| Martindale 9 positions | Code | 2568  |

## COMPULSORY ACCESSORIES FOR 6-POSITION SETTING (at least one is needed)

|  |      |           |
|--|------|-----------|
| Set of 6 sample holders Ø 38 mm for ABRASION test according to UNI EN ISO 12947-1 and PILLING test according to ASTM D4970 | Code | 2568A.900 |
| Set of 6 sample holders Ø 90 mm for PILLING test according to UNI EN ISO 12945-2   | Code | 2568A.300 |

## COMPULSORY ACCESSORIES FOR 9-POSITION SETTING (at least one is needed)

|  |      |          |
|--|------|----------|
| Set of 9 sample holders Ø 38 mm for ABRASION test according to UNI EN ISO 12947-1 and PILLING test according to ASTM D4970 | Code | 2568.900 |
| Set of 9 sample holders Ø 90 mm for PILLING test according to UNI EN ISO 12945-2   | Code | 2568.300 |

## COMMON OPTIONAL CONSUMABLES FOR MARTINDALE 6 & 9 POSITIONS

|   |      |          |
|---|------|----------|
| 1 roll of standard abrasive cloth, 160x100 cm for ABRASION test according to UNI EN ISO 12947-1                                       | Code | 314.12   |
| 24 discs Ø 140 mm of standard woven precut felt for ABRASION test according to UNI EN ISO 12947-1                                     | Code | 314.8    |
| 25 pcs of Standard polyurethane foam, 25x20 cm for ABRASION test according to UNI EN ISO 12947-1                                      | Code | 314.32   |
| 24 discs Ø 90 mm of standard woven felt for PILLING test according to UNI EN ISO 12945-2  | Code | 314.20   |
| 24 discs Ø 140 mm of standard backing non-woven precut felt for ABRASION test according to UNI EN ISO 12947-1-2-3-4 and M&S Standards | Code | 314.26   |
| Bi-adhesive tape for ABRASION test according to UNI EN 388 (protective clothing)  | Code | 2560.328 |
| Set of abrasive paper (25 pcs.) for ABRASION test according to UNI EN 388 (protective clothing)                                       | Code | 2560.330 |
| Set of polyester/cotton, 65/35, for ABRASION test, soiled with carbon black/olive oil according to UNI EN ISO 26082-1                 | Code | 310.188  |
| Cork base for sample cutters  | Code | 175B.46  |

## COMMON STANDARD PHOTOGRAPHS FOR 6 & 9 POSITIONS - OPTIONAL

|  |      |        |
|--|------|--------|
| Set of comparative photographs for PILLING test of woven fabrics according to UNI EN ISO 12945 (EMPA 991)      | Code | 314.18 |
| Set of comparative photographs for PILLING test of knitted fabrics according to UNI EN ISO 12945 (EMPA 992)    | Code | 314.24 |
| Set of comparative photographs SM50 for PILLING test of woven fabrics according to ASTM D4970 and IWS TM 196   | Code | 314.14 |
| Set of comparative photographs SM54 for PILLING test of knitted fabrics according to ASTM D4970 and IWS TM 196 | Code | 314.16 |

Photographs and descriptions of the present leaflet have to be considered as purely indicative and not binding

## COMMON SAMPLE CUTTERS FOR 6 & 9 POSITIONS - OPTIONAL

|  |      |          |
|--|------|----------|
| Sample cutter to obtain Ø 140 mm discs for PILLING test                                    | Code | 2560.320 |
| Sample cutter to obtain Ø 38 mm discs for ABRASION & PILLING test                          | Code | 2560.322 |
| Sample cutter to obtain Ø 90 mm discs for PILLING test, if pre-cut discs are not available | Code | 2560.324 |

## COMMON OPTIONAL FOR 6 & 9 POSITIONS - OTHER ACCESSORIES

|   |      |          |
|---|------|----------|
| Writing pivot to check the Lissajous figure   | Code | 2568.222 |
| Sample holder for ABRASION test on socks & hosiery according to UNI EN 13770              | Code | 2568.804 |
| Mounting device for socks necessary for Code 2568.804                                     | Code | 2568.806 |
| Sample holder for ABRASION test on leather/coated fabrics according to UNI EN ISO 17076-2 | Code | 2568.260 |
| Pilling Assessment Viewer   | Code | 173N     |
| ISO 9001 Calibration report   | Code | 2560.CC1 |
| ISO 17025 Calibration Certificate (ACCREDIA)  |      |          |

## UPGRADING OPTIONAL ACCESSORIES ONLY FOR 6 POSITIONS

|  |      |           |
|--|------|-----------|
| Optional additional position Ø 38 mm set, necessary to add an additional position to perform tests of ABRASION according to UNI EN ISO 12947-1 and PILLING according to ASTM D4970 | Code | 2568A.800 |
| Optional additional position Ø 90 mm set, necessary to add an additional position to perform tests of PILLING according to UNI EN ISO 12945  | Code | 2568A.802 |
| Set of common parts for each additional position, necessary to set-up any additional position, regardless from the type of sample holder matched                                   | Code | 2568A.818 |

## REFERENCE STANDARDS

- ABRASION Ø 38 mm: UNI EN ISO 5470-2, UNI EN ISO 12947, UNI EN 13770, UNI EN ISO 20344, ISO 13520, ISO 17704, UNI EN ISO 17076-2, UNI EN 388 6.1.3 (2017), UNI EN 530, UNI EN 13520, ASTM D4966, BS 3424-24 TM 27A, UNI EN ISO 12947-1-2-3-4 (formerly BS 5690:1991), UNI EN ISO 12947-1-2-3-4 (formerly SN 198529), UNI EN ISO 12947 (formerly SFS 4328 - EMPA Method), UNI EN ISO 26082-1 [IULTCS/IUP 53-1], IWTO 40, IWS TM 112, VDA 230-211, M&S P18C, M&S P19, M&S P19A, M&S P19B, M&S P19C, JIS L1018 6.18.5 meth E, ADIDAS GE 63, GB/T 21196.1.2.3.4, GB/T 13775, FZ/T 20020, JIS L1096.
- PILLING Ø 38 mm: IWS TM 196, ASTM D4970, M&S P140, M&S P17, GB/T 4802.2.
- PILLING Ø 90 mm: UNI EN ISO 12945-2 (formerly SN 198525), GB/T 4802.2.
- Officially approved by Marks & Spencer for:  
ABRASION test: M&S P18C, M&S P19, M&S P19A, M&S P19B, M&S P19C;  
PILLING test: M&SP17, M&S P140.

## DIMENSIONS / POWER SUPPLY

Weight: 100 kg  
Dimensions: (L) 800 x (W) 750 x (H) 410 mm  
Power supply: 115 Vac or 230 Vac, 50/60 Hz, single-phase