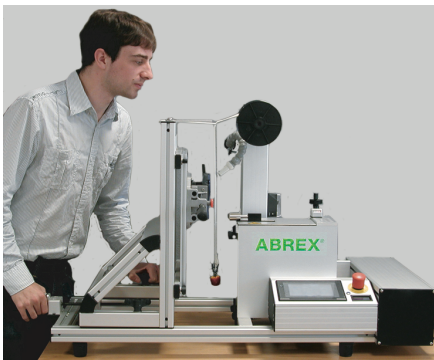


ABREX®

Fingertip & Hand Abrasion
Soft Chemo Mechanical Abrasion
Delamination
Scratch Resistance
Nailscratch
Fingerprint Cleanability
Easy-to-clean
Shoe Sole Abrasion

Highlights

- Reproducible results due to standardized test standards
- Real application simulation of chemo-mechanical abrasion
- Universal functionalities due to modular design
- Calibratable testing machine to secure reproducibility



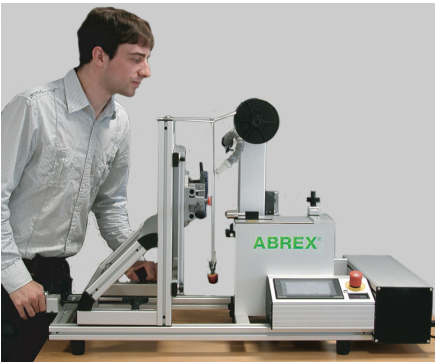
ABREX® is by far the only testing machine which truly simulates human fingertip abrasion and performs other durability tests with different standard textiles under different chemical environments. All tests can be applied either on a lab sample or on a finished product. It complies with over 50 international standards (IEC/DIN/EN) and OEM specifications for the following applications:

Standard List

STANDARD NUMBER	DESCRIPTION
BMW GS97034-1	Surface test of motor vehicle interior materials - Manual abrasion test
BMW GS97034-2	Surface test of motor vehicle interior materials, Finger nail test
BMW GS97034-3	Surface test of motor vehicle interior materials - Shoe sole test
BMW GS97034-4	Surface test of motor vehicle interior materials - Color abrasion behaviour (Test procedure A: Abrex method)
BMW GS97034-5	Surface test of motor vehicle interior materials - Resistance to cleaning agents (Test procedure A: - Abrex method)
BMW GS97034-6	Surface test of motor vehicle interior materials, soiling behavior and cleaning ability (Test procedure A: Abrex method)
BMW GS97045-2	Painted plastic parts in exterior, interior and engine compartment
BMW GS 97049-9	Trim parts with PUR-RIM-Over mould coating
BMW TL 9 138 681.6	Functional Coating for Gearshift Lever Badges - Hard coatings
BMW TL 7 458 356.6	Specification PVC - Imitation leather, light quality, Grain Ray

Highlights

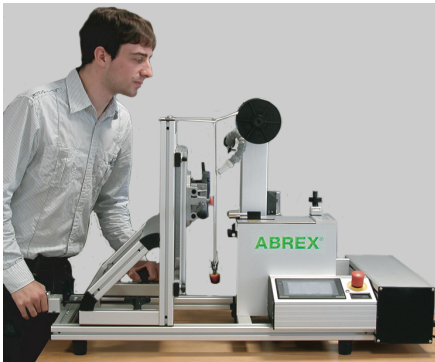
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STANDARD NUMBER	DESCRIPTION
BMW PA-P 315	Abrasion Resistance (dry + test media according to BMW AA-P 077)
BMW AA-0471	Abrasion Resistance
BMW AA-P 296	Abrasion resistance (dry + test media acc. to GS 97045)
BMW PR 510	Surface stability of gear shift knob clasps
BMW PR 512	Fingernail test
BMW 94007	Coatings on plastic parts - Painted plastic parts, Requirements and tests
prEN 4860	Aerospace series — Environmental testing — Test Xb: Abrasion of markings, letterings, surfaces and materials caused by rubbing of fingertips and hands
prEN 4876	Aerospace series — Environmental testing — Durability of the displays by general usage
IEC 68-2-70	Environmental testing - Part 2: Tests - Test Xb:
DIN EN 60068-2-70	Abrasion of markings and letterings caused by rubbing of fingers and hands-Abrex
Daimler DBL 7384	For coated plastic parts used in the interior of vehicles.
Daimler DBL 9202	For decorative parts used in the interior of passenger car compartment
Ford DVM-0055-MA	Abrex abrasion test
Ford WSS-M2P188-A1/FLTM BN155-01/	Surface test of motor vehicle interior materials - Shoe sole test
VinFast VFD-ST00032302	Finger nail test - Surface test of motor vehicle interior materials
VinFast VFD-ST00032304 Procedure A	Color abrasion behavior - Surface test of motor vehicle interior materials - Procedure A
VinFast VFD-ST00032305 Procedure A	Resistance to cleaning and maintenance agents -Surface test of motor vehicle interior materials - Procedure A

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STANDARD NUMBER	DESCRIPTION
GB-T 2423.53	Environmental testing - Part 2: Tests - Test Xb: Abrasion of markings and letterings caused by rubbing of fingers and hands
JIS C 60068-2-70	Environmental testing - Part 2: Tests - Test Xb: Abrasion of markings and letterings caused by rubbing of fingers and hands
Renault	Abrasion Resistance using the ABREX Test Equipment
PSA D24 5020	Coatings for decorative interior plastic components - Abrasion resistance - Abrex Test Method
VinFast VFD-ST00032306 Procedure A	Soiling behavior and cleaning ability - Surface test of motor vehicle interior materials - Procedure A
GSO 480.1.003	Abrasion test using the ABREX Test Equipment
GEBERIT (PA100134)	Requirements for pad printing using the ABREX Test Equipment
EWIMA	Abrasion Resistance using the ABREX Test Equipment
BSH, Apple, Miele, Swarovski, Audi, Porsche, ECB, MAN, etc.	

Model Options

Model	ABREX® Standard*	ABREX® -E	ABREX® -A*	ABREX®-D
Load	1-20 N			
Friction Path	4-40 mm			
Extension				6 ± 0.5 cm/s (S mode);
Speed	6 ± 0.5 cm/s			up to 20 cm/s (D mode)
Scratch Speed (single stroke, manually)	N/A	20 ± 2 cm/s (acc.to GS97034-2) for fin- gernail test; 70 ± 5 cm/s (acc. to GS 97034-3) for shoe sole test	N/A	
Cycles	1-10,000,000			
Piston	10mm & 20mm			
Liquid	automatic, manual			
Fabric	automatic, feed adjustable			
Electricity	230V / 50 Hz ; 110V / 60 Hz			
Compressed Air	4 bar, external, oil free, water free			
* ABREX® can be upgraded to ABREX®-A & ABREX®-D & ABREX®-E respectively.				
* ABREX®-A can run both standard abrasion test and special “swiping mode” with test condition of friction path of 20mm @ 5N @ 2Hz. Other frequency, friction path and load can also be achieved upon request.				