Taber Abraser

Description

Up to ½" thick specimens, are mounted to a rotating turntable and subjected to the wearing action of two abrasive wheels, which are applied at a specific pressure.

Characteristic rub-wear action is produced by contact of the test sample, turning on a vertical axis, against the sliding rotation of two abrading wheels. The wheels are driven by the sample in opposite directions about a horizontal axis displaced tangentially from the axis of the sample. One abrading wheel rubs the specimen outward toward the periphery and the other, inward toward the center. The resulting abrasion marks form a pattern of crossed arcs over an area approximately 30 square centimeters.

An important feature of the TABER® Abraser (Abrader) is the wheels traverse a complete circle on the specimen surface. This reveals abrasion resistance at all angles relative to the weave or grain of the material.

Test parameters can be altered, which enables the user to determine the optimal setting for each product or material. The TABER Abraser (Abrader) allows you to select:

- Load
  - standard range includes 250g, 500g and 1000g
  - optional counter weights increase range to 75g, 125g, 325g, 375g, 825g and 875g
- Abradants
  - wide selection of Taber wheels available (resilient or vitrified)
  - specialty wheels
  - custom formulations
- Vacuum level
  - programmable from keypad
  - adjustable vacuum nozzle clearance
  - range from 50% to 100%
- Test Duration
  - programmable up to 50,000 cycles

- Conditions
    - wet or dry

Each turntable has dual abrading arms that are precision balanced. Independently operated, the abrading arms can be raised (or lowered) to mount or inspect specimens. Each arm is loaded for 250 gram pressure against the specimen with the wheel mounting assembly in place (exclusive of the weight of the wheel). To increase the load to 500 or 1000 grams, a mount for auxiliary weights is located on the outside of the abrading wheel bearing assembly. The location ensures that weights are concentric with the abrading wheel. A stud on the rear end of the abrading arm is used to carry an optional counterweight (used to reduce the wheel load 125 or 175 grams). The stud is also used to hold an abrading wheel as a counterweight to compensate for the weight of the working wheel.

Taber Rotary Platform Abrasers (Abraders) are capable of providing reliable data in a matter of minutes, compared to the years that may be required by in-use testing

Models

The TABER® Abraser (Abrader) is available in two models - single or dual specimen tables. Both offer the same durable design and can be used interchangeably. With the introduction of the model 5135 and 5155, Taber Abrasers are now available as 115/230V; 60/50Hz switchable and offer many new features.

TABER® Abraser (Abrader) - Model 5135
Model 5135 (shown in above picture) features a single specimen turntable.

- Model 5135 [part# 985135]
- CE approved

TABER® Abraser (Abrader) - Model 5155
Model 5155 features a dual specimen turntable, which allows you to perform two tests simultaneously (test two different or identical specimens for comparison or contrast). Separate

function keys operate the turntables independent of each other.

- Model 5155 [part# 985155]
- CE approved

All TABER Abrasers are assembled in a sturdy, sealed aluminum housing and operated by a Control Panel Membrane.
A vacuum system is included with each abraser, and is critical for the proper operation of the instrument. The vacuum nozzle(s) is hinged to an adjustable mounting at the rear of the housing. This allows the height to be modified for accommodating varying specimen thickness.
Precision stainless steel weights of 250 grams and 750 grams are furnished to provide standard wheel pressures of 500 and 1000 grams. NOTE: *Weights are marked to show total load on each wheel. This marking includes the weight of the abrading arm.*
Incorporated into the rear of the abraser are two additional electrical receptacles. Conveniently marked, each receptacle has been designated for the vacuum system or an optional accessory instrument.

Wheel Sets

TABER® abrading wheels are available in a range of abrasiveness to suit a wide variety of testing applications.

Deciding which abrading wheel is best suited for your application is best determined with preliminary testing on the actual material. The ideal selection criteria is to reproduce, as nearly possible, the wear which the material will be subjected to in actual use.

The composition of TABER® abrading wheels has been carefully chosen and a rigorous quality program maintains the uniformity of the wheels. Wheels are sold in pairs, and shipped in tight-lidded containers to prevent damage. Each wheel is labeled "LEFT HAND (or RIGHT HAND) - THIS SIDE OUT" to assure that the mounting position will be duplicated after the wheels have been removed and later re-installed.

Model	Abrasive	Type	Refacing Medium	Shelf Life

	Description			
CS-10F	Very Mild - Mild	Calibrase (resilient)	ST-11 Stone	2 years
CS-10	Mild - Medium	Calibrase (resilient)	S-11 Refacing Disc	4 years
CS-17	Medium - Coarse	Calibrase (resilient)	S-11 Refacing Disc	4 years
H-38	Very Fine	Calibrade (vitrified)	Wheel Refacer with multipoint tool	None
H-10	Fine - Medium	Calibrade (vitrified)	Wheel Refacer	None
H-18	Medium - Coarse	Calibrade (vitrified)	Wheel Refacer	None
H-22	Very Coarse	Calibrade (vitrified)	Wheel Refacer	None
CS-0	None - Very Mild	Non-Abrasive Rubber (resilient)	N/A	2 years
S-32	None - Very Mild	Non-Abrasive Rubber (resilient)	N/A	2 years
CS-5	None	Wool Felt (resilient)	N/A	3 years
S-35	Severe Cutting / Tearing Action	Tungsten Carbide (non-resilient)	N/A	None
S-39	None - Very Mild	Leather (resilient)	N/A	3 years

NOTES:

• *Shelf life is dependent on proper storage conditions: relative humidity = 50% +/- 5%, temperature = 23° C +/- 2° C.*

• *The abrasive coefficient can be altered by oil or contaminants. When handling wheels, only touch the sides.*

Click here for more Wheel Set Information.

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Selecting Wheels: Throughout the years, test procedures have been developed for many different types of products. If you are following a particular standard, please refer to it for the appropriate wheel. The information provided is intended to serve as a guideline only.

TABER® wheels are designed so that the binder material breaks down during use, exposing and creating a new abrading surface. Depending on the abradant type and test specimen, the wheel surface may change (i.e. become clogged) due to the transfer of material from the test specimen to the abrading wheel, and must be cleaned at frequent intervals.

Calibrase® - *Resilient wheel comprised of resilient binder and aluminum oxide abrasive or silicon carbide particles. Often used to test rigid specimens.*

CS-10F [part# 125321]	A mild abrasive wheel designed to operate under loads not exceeding 500 grams.
CS-10 [part# 125320]	A medium abrasive wheel, designed to simulate the abrading action like that of normal handling, cleaning, and polishing. Used to evaluate resistance of wear on materials such as coatings, plastics, textiles, leather and paper products.
CS-10W [part# 130950]	Same as CS-10, but white in color. Especially useful for evaluating transparent materials where color transfer may be a problem.
CS-17 [part# 125322]	These coarse abrasive wheels produce harsher results, like that associated with traffic or "underfoot" wear. Used to test anodized aluminum, ceramics, plastics and enamels.

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Calibrade® - *Non-resilient wheel composed of vitrified (clay) and silicon carbide or aluminum oxide abrasive particles. Often used to test flexible specimens.*

H-38 [part# 125326]	Designed to operate under loads not exceeding 500 grams. This fine-grained

	wheel is principally used for testing woven fabrics.
H-10 [part# 125323]	The abrading action of this wheel makes it ideal for testing steel and ferrous alloys for resistance to abrasion. It is also used to test the effect of hardening and tempering treatments on steel and other ferrous materials.
H-18 [part# 125324]	With medium abrasive properties, this wheel is recommended for abrading rubber (non-tacky), woven textile fabrics, coated fabrics, flexible plastic sheet, and other soft, resilient materials.
H-22 [part# 125325]	With the coarse abrasion produced by this wheel, it has been used to test rubber, linoleum, leather, and certain deep pile fabrics (i.e. automobile floor covering).

Specialty Wheels - *Used for special applications.*

CS-0 [part# 125344]	Rubber - This wheel contains no abrasive grain and is used when a very mild abrasive action is required, and for wet tests. Uses include determining the relative abrasion of dental powder and cream, cleaning powders, and similar compounds. Is also used to apply S-33 or S-42 sandpaper strips.
S-32 [part# 125344]	NEMA wheel - same as CS-0.
CS-5 [part# 125319]	Felt - A densely, compacted wool felt wheel. Its principal use is in testing textile fabrics when the service wear requires one fibrous material to rub against another.
S-35 [part# 1253345]	Tungsten Carbide -This wheel is manufactured with sharp, helical teeth cut in its periphery (25 per

	inch set at 45°spiral pitch). Combining both a cutting and tearing action, it provides very severe abrasion for use on resilient materials only (rubber, linoleum, and leather).
S-39 [part# 125529]	Leather - Mounted on a brass hub, leather wheels are used in conjunction with the Taber GRIT FEEDER.

APPLICATION	CS-10F	CS-10	CS-17	H-38	H-10	H-18	H-22	S-35	CS-0
Adhesives & Sealants			X				X		
Anodized Aluminum			X		X	X			
Ceramic Finishes			X						
Coatings (Paint, Enamel)	X	X	X						
Concrete Floors							X		
Dental Powder									X
Electroplate		X							
Films	X								
Glass			X		X	X			
Hard Surface Coverings						X			
Home Furnishings							X		
Insulated Wire			X				X		
Laminates		X	X						
Leather (Shoe Soles)						X	X		
Leather Products		X	X			X	X		
Linoleum						X	X	X	
Masonite						X	X		

Optical Products	X	X	X						
Packaging		X	X						
Paper		X							
Paper & Cardboard		X			X	X	X		
Plastics		X	X			X			
Plastics		X	X						
Plating		X	X						
Porcelain Enamel			X						
Printing			X						
Rubber						X	X		
Sanitary Products						X			
Steel					X	X	X		
Textile (floor coverings)						X	X		
Textile (coated fabrics)		X	X			X			
Textiles (pile fabric)				X		X	X		
Textiles (natural & synthetic)		X		X		X	X		
Tile (rubber and asphalt)						X	X	X	
Upholstery				X					
Wax			X			X	X		
Wood						X	X		
Wool		X				X			

Test Specifications

Test procedures for the TABER® Rotary Platform Abraser (Abrader) have been established by a number of organizations. The following is a partial listing.

AENOR	UNE 53-173-92 Part 2	Decorative High Pressure Laminates (HPL): Sheets Based

		on Thermosetting Resins; Part 2: Determination of Properties
AENOR	UNE 57095	Paper and cardboard - Determination of Resistance to Abrasion - Taber Method
AENOR	UN EN 438-2	Decorative High Pressure Laminates (HPL); Sheets Based on Thermosetting Resins; Part 2: Determination of Properties
AENOR	UN EN 13329:E	Laminate floor Coverings - Specifications, Requirements and Test Methods
AENOR	UN EN 13696	Wood and Parquet Flooring - Determination of Elasticity and Resistance to Wear
AFNOR	FD ENV 13696	Wood and Parquet Flooring - Determination of Elasticity and Resistance to Wear
AFNOR	NF B 51-282	Melamine Faced Particleboards - Determination of Resistance to Abrasion
AFNOR	NF G 37-121	Rubber or Plastic Coated Fabric-Determination of the Wear Resistance by Rubbing with two Abrasive Wheels
AFNOR	NF Q 03-055	Paper and Board Tests - Determination of Abrasion Resistance of Paper and Board (by Taber Method)
AFNOR	NF T 30-015	Paints and Varnishes - Abrasion Resistance Test
AFNOR	NF EN 438-2	Decorative High Pressure Laminates (HPL); Sheets Based on Thermosetting Resins; Part 2: Determination of Properties
AFNOR	NF EN 660-2	Resilient floor coverings - Determination of wear resistance - Part 2: Frick-Taber

		Test
AFNOR	NF EN ISO 5470-1	Rubber or Plastics Coated Fabric-Determination of Abrasion Resistance
ANSI	INCITS 322-2002	Card Durability Test Methods
ANSI/NSF	35	High Pressure Decorative Laminates for Surfacing Food Service Equipment
ANSI/NSF	49	Class II (Laminar Flow) Biohazard Cabinetry
ANSI/NSF	51	Food Equipment Materials
ANSI/SAE	Z26.1-1996	Safety Glazing Materials for Glazing Motor Vehicles and Motor Vehicle Equipment
AS	AS 2001.2.28	Methods of Test for Textiles
AS	AS/NZS 1580.403.2	Paints and Related Materials - Methods of Test
AS	AS/NZS 4266.2	Reconstituted wood-based panels - Methods of Test - Determination of resistance to surface abrasion (Taber abrasion test)
ASTM	C501	Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser
ASTM	C1353	Standard Test Method Using the Taber Abraser for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic
ASTM	D1044	Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion
ASTM	D3389	Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform Double-Head Abrader)

ASTM	D3451	Standard Practices for Testing Polymeric Powders and Powder Coatings
ASTM	D3730	Standard Guide for Testing High-Performance Interior Architectural Wall Coatings
ASTM	D3884	Standard Guide for Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method)
ASTM	D4060	Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
ASTM	D4685	Standard Test Method for Pile Retention of Corduroy Fabrics
ASTM	D4712	Standard Guide for Testing Industrial Water-Reducible Coatings
ASTM	D5144	Standard Guide for Use of Protective Coating Standards in Nuclear Power Plants
ASTM	D5146	Standard Guide to Testing Solvent-Borne Architectural Coatings
ASTM	D5324	Standard Guide for Testing Water-Borne Architectural Coatings
ASTM	D6037	Standard Test Methods for Dry Abrasion Mar Resistance of High Gloss Coatings
ASTM	F362	Standard Test Method for Determining the Erasability of Inked Ribbons
ASTM	F510	Standard Test Method for Resistance to Abrasion of Resilient Floor Coverings Using an Abrader with a Grit Feed Method

ASTM	F1478	Standard Test Method for Determination of Abrasion Resistance of Images Produced from Copiers and Printers (Taber Method)
ASTM	F1978	Standard Test Method for Measuring Abrasion Resistance of Metallic Thermal Spray Coatings by Using the Taber Abraser
BSI	BS 3900	Paints and Varnishes; Determination of Resistance to Abrasion
BSI	BS DD ENV 13696	Wood and Parquet Flooring - Determination of Elasticity and Resistance to Wear
BSI	BS EN 438-2	Decorative High Pressure Laminates (HPL); Sheets Based on Thermosetting Resins; Part 2: Determination of Properties
BSI	BS EN 660-2	Resilient floor coverings - Determination of wear resistance - Part 2: Frick-Taber Test
BSI	BS EN ISO 5470-1	Rubber or Plastics Coated Fabric-Determination of Abrasion Resistance
CFFA	Test 1	Standard Test Methods - Chemical Coated Fabrics and Film
CFFA	Test 200	Standard Test Methods - Chemical Coated Fabrics and Film
CNS	K6591	Method of Test for Polyurethane Athletic Installation Material
Daimler-Chrysler	LP-463KB-21-01	Wear Resistance of Trim Materials - Taber Method
Daimler-Chrysler	MS-PP11-1	Vacuum Metallizing for Plastic

		Parts - First Surface Interior
Daimler-Chrysler	MS-PP11-2	Vacuum Metallizing - High Wear Resistance- For Plastic Parts - First Surface Interior
Dept of Defense	MIL-A-8625F(1)	Military Specification - Anodic Coatings for Aluminum and Aluminum Alloys
Dept of Defense	MIL-C-22992E	General Specification for Connectors, Plugs and Receptacles, Electrical Waterproof, Quick Disconnect, Heavy Duty Type
Dept of Defense	MIL-P 18493 (NAVY)	Military Specification - Packing, Performed, Carbon; and Carbon Stock, Packing
Dept of Defense	MIL-PRF-61002A	Military Specification - Pressure-Sensitive Adhesive Labels for Bar Coding
Dept of Defense	MIL-STD-13231	Department of Defense Standard Practice - Marking of Electronic Items
Dept of Defense	MIL-T-28800E	Military Specification - General Specification for Test Equipment for use with Electrical and Electronic Equipment
DIN	DIN 52 347	Testing of Glass and Plastics; Abrasion Test; Method Using Abrasion Wheels and Measurements of Scattered Light
DIN	DIN 53 109	Testing of Paper and Board; Determination of Abrasion by the Abrasion Wheel Method
DIN	DIN 53 754	Testing of Plastics; Determination of Resistance of Wear by Abrasive Wheels
DIN	DIN 53 799	Decorative Laminated Sheets on Basis of Aminoplastic

		Resins; Test Method
DIN	DIN 68 861 T2	Furniture Surfaces: Behavior at Abrasion
DIN	DIN EN 660-2/A1	Resilient Floor Coverings - Determination of Wear Resistance - Part 2: Frick-Taber Test; Amendment A1
DIN	DIN EN ISO 5470-1	Rubber or Plastics Coated Fabric-Determination of Abrasion Resistance
CEN	EN 438-2	Decorative High Pressure Laminates (HPL); Sheets Based on Thermosetting Resins; Part 2: Determination of Properties
CEN	EN 660-2	Resilient floor coverings - Determination of wear resistance - Part 2: Frick-Taber Test
CEN	EN 13329:E	Laminate floor Coverings - Specifications, Requirements and Test Methods
CEN	ENV 13696	Wood and Parquet Flooring - Determination of Elasticity and Resistance to Wear
Federal	Test Method Std. No. 191A Method 5306.1	Abrasion Resistance of Cloth: Rotary Platform, Double-Head (Taber) Method
Federal	Test Method Std. No. GG-P-455b	Plates and Foils, Photographic (Photosensitive Anodized Aluminum)
Federal	TT-P-0091D	Interim Federal Specification - Paint, Rubber Base, Styrene-Butadiene Type, Interior, for concrete floors.
Ford	BN 108-02	Resistance to Abrasion - Taber Abraser
Ford	BN 108-04	Resistance to Scuffing

Ford	ESB-M99P14-A1	Engineering Material Specification - Pad Printing, First Surface Plastic or Painted Plastic, Interior
Ford	WSS-M15P34-B1	Engineering Material Specification - Performance, Interior Trim Appliques, High Wear
Ford	WSS-M15P34-B2	Engineering Material Specification - Performance, Interior Trim Appliques, Low Wear
Ford	WSS-M15P4-E	Engineering Material Specification - Interior Trim, Assembly Performance Specification
General Motors	GM2751M	Automotive Upholstery Fabric
General Motors	GM9515P	Abrasion Resistance of Organic Coatings (Taber Abraser Method)
General Motors	GM9911P	Scuff Resistance to Surface Wear
General Motors	HN0245	Determination of Resistance to Abrasion
ISO	3537	Road Vehicles - Safety Glazing Materials - Mechanical Tests
ISO	4586-2/Amd.4	High-pressure decorative laminates - Sheets made from thermosetting resins
ISO	5470-1	Rubber or Plastics Coated Fabrics - Determination of Abrasion Resistance
ISO	7784-2	Paints and Varnishes; Determination of Resistance to Abrasion
ISO	9352	Plastics; Determination of Resistance to Wear by Abrasive

		Wheels
ISO	10074	Specifications for Hard Anodic Oxidation Coatings on Aluminum and its Alloys
JIS	A 1453	Method of Abrasion Test for Building Materials and Part of Building Construction (Abrasive-Paper Method)
JIS	H 8503	Methods of Wear Resistance for Metallic Coatings
JIS	K 6902	Testing Method for Laminated Thermosetting Decorative Sheets
JIS	K 7204	Testing Method for Abrasion Resistance of Plastics by Abrasive Wheels
JIS	L 1096	Testing for Woven Fabrics
NALFA	LF-01-2001	Laminate Flooring
NASTA	Manufacturing Standards and Specifications for Textbooks	Specifications for Non-Consumable Soft-Cover Texts - Cover Coating
NEMA	LD3 - 3.13	High Pressure Decorative Laminates
SAE	J 365	Method of Testing Resistance to Scuffing of Trim Materials
SAE	J 948	Test Method for Determining Resistance to Abrasion of Automotive Bodycloth, Vinyl, and Leather, and the Snagging of Automotive Bodycloth
SAE	J 1530	Test Method for Determining Resistance to Fiber Loss, Resistance to Abrasion and Bearding of Automotive Carpet Materials
SAE	J 1847	Abrasion Resistance Testing -

		Vehicle Exterior Graphics and Pin Striping
SAE	J 2394	Seven-Conductor Cable for Abs Power
SIS	SIS 92 35 09	Floor Materials - Determination of Abrasion Resistance
SIS	SS EN 438-2	Decorative High Pressure Laminates (HPL); Sheets Based on Thermosetting Resins; Part 2: Determination of Properties
SIS	SN EN 660-2	Resilient Floor Coverings - Determination of Wear Resistance - Part 2: Frick-Taber Test
SIS	SN EN ISO 5470-1	Rubber or Plastics Coated Fabric-Determination of Abrasion Resistance
Tappi	T 476	Abrasion Loss of Paper and Paperboard (Taber-type method)
UNI	UNI EN 660-2	Resilient Floor Coverings - Determination of Wear Resistance - Part 2: Frick-Taber Test
UNI	UNI EN ISO 5470	Rubber or Plastics Coated Fabric-Determination of Abrasion Resistance
UNI	UNI 9115	Furniture: Test for surface finishes. Behavior of surfaces to wear abrasion.
UNI	UNI 10559	Paints and Varnishes; Determination of abrasion resistance by the Taber apparatus.
United Nations	ECE Regulation 43	Uniform Provisions Concerning the Approval of Safety Glazing and Glazing Material