

DICTIONARY OF TOBACCO TERMS

PHYSICIANS FOR A SMOKE-FREE CANADA

SEPTEMBER 1999



ACTIVATED CARBON: An amorphous form of carbon which is specially treated to produce a very large surface area, ranging from 300 to 2000m²/g. The large surface area means that the internal pore structure has been very highly developed, providing activated carbon with the ability to adsorb gases and vapors from gases, and dissolved or dispersed substances from liquids. Almost any carbonaceous material of animal, vegetable or mineral origin can be converted into activated carbon through proper treatment. There are two distinct types of activated carbon recognized commercially: Liquid Phase, or decolorizing, carbons which are generally light, fluffy powders. Gas Phase, or vapor adsorbent, carbons which are hard, dense granules or pellets.

AIR DILUTION aka CIGARETTE VENTILATION; FILTER DILUTION (in the case of tipping paper) The dilution of MAINSTREAM smoke with air from the atmosphere; affected by the natural POROSITY and by the PERFORATIONS of the cigarette paper and/or the tipping paper. The percent of a 1050 cc/min rate of flow that is drawn in through the dilution system.
See also AIR PERMEABILITY, DIFFUSION, DEGREE OF VENTILATION

AIR PERMEABILITY Of cigarette paper in ml/min/cm², the volume of air in ml (20 °C, 760 torr, 55-65% RH) that passes through 1 cm² of a flat specimen of the paper in 1 minute when a negative pressure of 100 mm water column (in the case of normal and naturally porous papers) or 25 mm water column (in the case of perforated papers) is applied to one side of the specimen. In the latter case, the value obtained should be multiplied by 4. There are two kinds of air permeability: POROSITY and PERFORATION.

ALKALOID A basic substance of plant origin which contains a cyclic nitrogenous nucleus. Tobacco alkaloids are, for the most part, 3-pyridyl derivatives. Some, however, are acidic in nature. The most abundant alkaloid in tobacco is NICOTINE: 95-97% nicotine plus trace compounds.

ALKALOID RETENTION By a filter, where alkaloid retention is R: the percentage of the total alkaloid entering the filter that is retained by the filter.

AMES TEST Bioassay for mutagenesis, using bacteria as target, to detect and screen for potentially carcinogenic compounds.

BAKED TAR A measurement of a cigarette's smoke delivery; now replaced by measuring TOTAL PARTICULATE MATTER (TPM). Whole (wet) tar was baked to remove moisture.

BALE	<ol style="list-style-type: none"> 1. A 50- to 75-pound case of unfermented tobacco, EXTRUDED TOBACCO. 2. The rectangular packaging of leaf on the farm, BURLEY farm bale. 3. A 1000-pound rectangular case of cellulose acetate filter tow.
BI; BM; BW; EC/1	Microorganisms used to remove nicotine and nitrate from tobacco simultaneously. (Cellulomonas sp.; Pseudomonas putida; Erwinia carotovora)
BIDI	A form of cigarette found in India, consists of granulated tobacco rolled in a section of Indian ebony leaf and tied with thread. Also called BEEDI.
BLACK TOBACCO	A type of dark tobacco grown mainly, but not exclusively, in the South American and Central American countries as well as in Cuba, Spain, and France. The strong varieties are usually used as cigar fillers. Black tobacco which is SUN-CURED (cured in the open air) is known as "dark air-cured". Light varieties, such as Paraguay and its hybrids, are mostly AIR-CURED in barns. Light black tobaccos are used in some cigarette blends in European countries. PERIQUE (grown in Louisiana) is a black tobacco used in pipe tobacco blends. See also BLOND TOBACCO.
BLOND TOBACCO	By way of contrast with BLACK TOBACCO, blond tobaccos are the BURLEY and FLUE-CURED tobaccos so popular in the United States. See also BLACK TOBACCO.
BLUE MOULD	Peronospora tabacina; a fungus which attacks tobacco in the seedbeds, prevalent in nearly all growing areas. Also called DOWNY MILDEW.
BRIGHT	See FLUE-CURED TOBACCO. See also VIRGINIA TOBACCO.
BULK CURING	A curing process employed for FLUE-CURED tobacco. Leaf is suspended in the curing atmosphere in bulk. Humidity and temperature control are made precise through the use of a forced draft which passes the heated air in a vertical plane through the lightly packed leaves in a completely closed system. Experiments have been performed on the bulk curing of MARYLAND and ORIENTAL tobaccos as well, but to date the results have not proven acceptable. Also called COMPACT CURING and INTACT CURING.

BURLEY

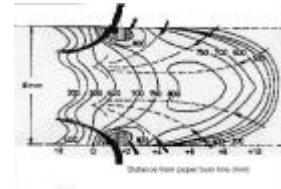
An AIR-CURED tobacco. Burley tobacco is grown in rich limestone soils, primarily in Kentucky and Tennessee. It is light brown to reddish brown in color and has a somewhat greater FILLING POWER than FLUE-CURED tobacco. Burley is light in body, with a low sugar content and high alkaloid content. Burley smoke is more basic (higher pH) than that of FLUE-CURED tobacco.

**BURN CAPACITY**

The surface, mass, or length of a burned cigarette; expressed as a percent of the whole used for the measurement.

BURNING ZONE TEMPERATURE

The temperature of a burning cigarette at the point where the coal meets the paper; measured by infrared or with thermocouples. Reported during puffing to be 850 – 900 °C. See also COAL, PEAK COAL TEMPERATURE.

**CAMBRIDGE FILTER**

aka FTC FILTER A trapping device developed in 1959 and used universally on smoking machines for the collection of particulate matter; consists of discs 44 mm in diameter from CM 113A fiberglass sheet (Cambridge Filter Corp., Syracuse, NY). Specifications: it shall collect at least 99.9% of all particles over 0.3 μm in diameter and 99.2% of 0.1 μm diameter particles at a flow rate of 28 linear ft/min; have a maximum pressure drop not exceeding 93 mm of water at 28 ft/min; contain not more than 5% of the acrylic type binder. A trap (using O-ring fiberglass filter disc and a rubber membrane) used on smoking machines to collect TOTAL PARTICULATE MATTER (TPM).

CAMVER TEST

BAT Hamburg test to measure the time required for smoke to block a CAMBRIDGE FILTER under continuous draw conditions.

CAPABILITY

The maximum and minimum weight/PRESSURE DROP achievable by a given TOW item in a specific FILTER rod configuration.

CASE HARDENING

Hardening and shrinking of particles caused by drying from the surface faster than moisture migration from the interior.

CASING

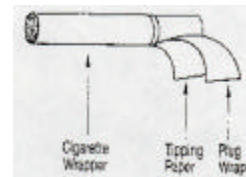
Tobacco additives applied to improve moisture retention and smoking ability; the process of applying these additives to tobacco. A mixture of HYGROSCOPIC AGENTS and/or plasticizing agents and volatile or nonvolatile flavoring agents applied to tobacco to condition it for processing (to reduce breakage, facilitate cutting, etc). Some commonly known flavoring agents are: cocoa, chocolate, licorice, ginger, cinnamon, vanilla, molasses, rum, brandy,

maple syrup, certain esters and oils, honey, and sugar. See also: TOP FLAVORINGS.

CELLULOSE ACETATE A white, odorless, tasteless, nontoxic solid used for making cigarette filters. Cellulose acetate, also known as secondary acetate, is a partially acetylated cellulose, having an average degree of substitution of 2.4 acetyl groups per glucose unit.

CIGARETTE FIRMNESS A cigarette rods resistance to compression; the force required to deform cigarettes a preselected amount; the deformation of a cigarette after a predetermined time at a given pressure; sometimes referred to as CIGARETTE HARDNESS. See also COMPACIMETER.

CIGARETTE PAPER The wrapping surrounding the CIGARETTE ROD. Flax and hemp papers are the most common cigarette papers, although kenaf, esparto grass, rice straw, high-quality cellulose, etc. may be used as well. To the paper may be added any number of chemicals; e.g. calcium carbonate will improve (increase) porosity and combustion; magnesium carbonate will improve ash color; titanium oxide will whiten the ash; and potassium nitrate will give the ash greater adherence. The paper which encloses the tobacco column is called the cigarette wrapper. The cigarette wrapper should have a neutral taste (unless it has been specifically flavored), should have a white ash that does not drop from the cone while burning, and should burn evenly without leaving a black edge. See also PLUG WRAP, TIPPING PAPER.



CIGARETTE ROD The combined form of shredded and blended tobacco wrapped in cigarette paper.

CIGARETTE SIZE The dimensions of a finished cigarette. The circumference of most cigarettes is approximately 25 mm. The length, however, varies greatly. A Regular cigarette is 70 mm; a King-Size one is 85 mm; a Super King-Size or 100 is 100 mm; and the Longs or 120's are 120 mm. The first 85 mm brand in the United States was Pall Mall (1939); the first 100 mm was the Pall Mall filter (1965); the first 120 mm was the More filter (1975); (The "long size" was originally introduced with the Marlboro filter in 1954. It was 80 mm in length.)

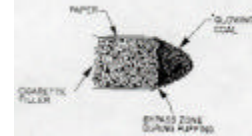
CIGARETTE SMOKE AEROSOL The condensed and cooled mixture of gases passing down the tobacco rod and issuing through the filter end. The aerosol contains from 10^8 to 10^{10} particles/cm³, ranging in size from $<0.1\mu$ to approximately 1.0μ in diameter.

CIGARETTE SMOKE Cigarette smoke that is condensed or trapped by a method which attempts to collect all of the smoke. This includes, e.g., IMPACTION TRAP, ELMENHORST

CONDENSATE COLD TRAP, and ELECTROSTATIC PRECIPITATION. This does not include the process used to collect TPM (TOTAL PARTICULATE MATTER). Also nonvolatile cigarette smoke condensate, CRUDE SMOKE CONDENSATE, DRY SMOKE CONDENSATE.

CIGARETTE VENTILATION See AIR DILUTION

COAL The burning cone at the lighted end of a cigarette. See also BURNING ZONE TEMPERATURE.



COAL RETENTION CR. Ability of a burning cigarette to retain its fire during smoking; number of cigarettes that retain their coal after testing on a coal retention shaker, expressed as a percent.

COAL STRENGTH The ability of the burning cone of a cigarette to remain firmly attached to the rod throughout vibrations to which it may be subjected; dependent on firmness, moisture, size of cut, packing and paper. Also called fire retention, BURNING ZONE TEMPERATURE.

COMBUSTION The interaction of tobacco with oxygen to produce heat and light. Combustion of tobacco is a flameless, glowing one. Tobacco is oxidized inefficiently, resulting in DISTILLATION PRODUCTS, PYROLYSIS products and PYROSYNTHESIS products, as well as the expected CO₂, H₂O and other gases See also PYROLYSIS, PYROSYNTHESIS, DISTILLATION PRODUCTS.

COMPACIMETER An instrument used to measure CIGARETTE FIRMNESS by deformation; consists of a plunger, a timer, an amount-of-deformation indicator and the capacity to test 15 cigarettes. See also CIGARETTE FIRMNESS.

COMPENSATION The tendency for a smoker to obtain a similar delivery, intake and uptake of smoke constituents, on a daily basis, from a variety of products with different standard (machine-smoked) deliveries.
FULL COMPENSATION - when daily intake of smoke constituents is independent of standard delivery of product smoked.
NO COMPENSATION - when a smokers' behavior (including consumption, puffing and inhalation) is the same regardless of the product, and smoke uptake depends on the standard delivery.

CORESTA Centre de Cooperation pour les Recherches Scientifiques Relatives au Tabac. An international

organization of representatives from the tobacco industry, sharing scientific/technical information relating to the tobacco plant as well as tobacco products.

CORESTA STANDARDS

An attempt by this international tobacco organization to standardize testing procedures for the industry. After several standards were issued, it was decided that future work should be done under the guide of the International Organization for Standardization, which created a Tobacco Technical Committee for this purpose. While the ISO is reviewing the standards needed, CORESTA is continuing to publish what they are now calling "recommended methods" for immediate laboratory use.

CRIMP RATIO

Amount of crimping of cellulose acetate in forming a filter.

CRUDE SMOKE CONDENSATE

CORESTA Standard definition; the weight of that portion of the total smoke which is trapped in the smoke trap; reported in mg per cigarette (mg/cig). See also CIGARETTE SMOKE CONDENSATE.

CURING

The drying process for newly harvested tobacco. AIR CURING is performed in widely ventilated barns under natural atmospheric conditions (from which the name comes) with little or no artificial heat; it takes 3-12 weeks. Light air-cured tobacco is very thin to medium in body, light tan shaded toward red to reddish brown in color, and mild in flavor. Burley is light air-cured. Dark air-cured is medium to heavy in body, light to medium brown in color. FLUE CURING is performed in small, tightly constructed barns with artificial heat beginning at 90 °F and ending round 170 °F; it takes 5-7 days. The name comes from the metal flues used in the heating apparatus. Flue cured tobacco is yellow to reddish-orange in color, thin to medium in body, and mild in flavor. FIRE CURING is performed in ventilated barns with open fires (from which the name comes) allowing the smoke to come in contact with the tobacco; it is alternated with air curing. Fire-cured tobacco is light to dark brown in color, medium to heavy in body, and strong in flavor. SUN CURING is performed on racks in the sunshine (from which the name comes) for set daily periods over 4 weeks, depending on the weather. Sun-cured tobacco looks similar to air-cured. Also: bulk curing, homogenized leaf curing, cross-flow curing.

CYTREL

NONTOBACCO SMOKING MATERIAL (synthetic) made by Celanese to reduce tar and nicotine.

DEGREE OF VENTILATION

That part of PUFF VOLUME which penetrates the paper and/or the filter wrapper of a cigarette. See also: AIR DILUTION.

DENIER	Measure of filament size, equaling weight in grams of 9000 meters of filament.
DENSITY LEVEL	Generally used to refer to amount of tobacco put into a cigarette
DIFFUSION	The exiting of combustion gases through the CIGARETTE PAPER as air enters. Diffusion is dependent on many things, among them paper POROSITY, gas flow rate, and cigarette circumference and length.
DISTILLATION PRODUCTS	Leaf components which are transferred into the smoke stream essentially unchanged. See also COMBUSTION
DRAFT RESISTANCE/DRAW RESISTANCE	See RESISTANCE TO DRAW
DRY SMOKE CONDENSATE	CORESTA Standard definition: the weight of crude smoke condensate after deduction of its water content; reported in mg per cigarette (mg/cig). See also CIGARETTE SMOKE CONDENSATE.
DRYER	Machine used to reduce the moisture content of tobacco. This is effected by exposing the tobacco to moving heated air having a relative humidity low enough to absorb moisture. An apron dryer is a tunnel-type apparatus through which a wire mesh conveyor passes. Tobacco is spread on the conveyor in a thin layer so that air may move through it. A rotary dryer is a cylindrical apparatus which, by the use of steam tubes around the inner perimeter of the cylinder shell, elevates the tobacco in a stirring action. Exposure to the heated tubes and a countercurrent airstream through the length of the cylinder reduces the moisture content of the tobacco.
DUOLITE	Anion and cation exchange resins, may be used in cigarette FILTERS.
ELASTICITY	<ol style="list-style-type: none"> 1. The tendency for a cigarette to increase ventilation rate at higher puffing pressure drop 2. The ability of a leaf to be stretched without breaking. Leaf with elasticity has good drinking quality and high FILLING POWER.
END STABILITY	Resistance of a cigarette to lose tobacco. Determined by quantitating the amount of tobacco which will fall from the end of a cigarette during a standardized agitation period reported as mg/cig fallout.

ETHREL Trade name for a ripening agent or plant growth regulator, the active ingredient being 2-chloroethylphosphonic acid. See RIPENING AGENTS

EXPANDED TOBACCO See EXPANSION

EXPANSION A chemical and/or physical procedure that increases the volume of the cells of tobacco, thus increasing shred dimensions and the FILLING POWER of the shreds; performed on cured, cased or uncased filler. Generally the tobacco is saturated with an inert gas in a high-pressure vessel called an IMPREGNATOR. Expansion of the tobacco then takes place in an expansion tower through the introduction of high-temperature air. See also: PUFFED TOBACCO, FREEZE-DRIED TOBACCO.

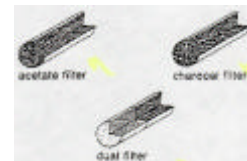
EXTRUDED TOBACCO Tobacco that is compressed into a BALE, planked on top and bottom with plywood, and wrapped with a synthetic film material. Tobacco is baled in this way for easier transportation.

FERMENTATION Generally applied only to cigar tobacco but sometimes to BLACK TOBACCO; characterized by high initial moisture content (up to 50%), heat generation, and 10-20% loss of dry weight. Sometimes called sweating. Fermentation is a vigorous, controlled, process, as opposed to ageing.

FILLER Cut, blended, cased, and flavored tobacco ready for cigarette making. Also referred to as cut filler.

FILLING POWER The ability of tobacco to form a firm cigarette rod at a given moisture content. A high filling power indicates that a lower weight of tobacco is required to produce a cigarette rod than is required with a tobacco of lower filling power. CYLINDER VOLUME is used interchangeably with filling power; a high cylinder volume indicates a high filling power. Filling power is mistakenly referred to as SPECIFIC VOLUME.

FILTER Any air permeable substance (e.g. paper, cotton, cork, silica gel, meerschaum, cellulose acetate, etc.) attached to the smoking end of a cigarette. Paper and cellulose acetate are in most common use today, often in conjunction with charcoal. The paper and cellulose acetate help reduce particulate matter; the charcoal adsorbs portions of the gaseous phase of the smoke. Filters are made in varying densities, diameters, and designs. The first commercial cigarette in the United States with a filter mouthpiece was Parliament, manufactured by Philip Morris in 1932. In 1936 Brown & Williamson introduced Viceroy, having a filter comprised of a cylinder of folded paper rather than a hollow tube with cotton. The use of CELLULOSE ACETATE appears to have begun in the early 1950's with the L&M brand. See also PLUG SPACE PLUG,



DUOLITE.

FILTER EFFICIENCY The percentage of the incoming smoke or smoke component that is removed by a filter. Fraction of the tar or nicotine that gets trapped in the filter rather than passing out the mouth end.

FILTER TOW A bundle of continuous filaments used to produce cigarette filters, commonly made of cellulose acetate. See TOW.

FIRMNESS A measure of the resistance of radial deformation of a cigarette, expressed in counts. Ability of a cigarette to resist compression.

FLUE-CURED TOBACCO Commonly called BRIGHT or VIRGINIA tobacco. There are 4 types: Old Belt Virginia & North Carolina (#11), Eastern North Carolina (#12), South Carolina-North Carolina Border Belt (#13), and Georgia & Florida (#14). Flue-cured tobacco is lemon or orange-yellow in color. Flue-cured tobacco possesses a sweet aroma and slightly acidic taste. It is high in sugar content and low to average in nitrogenous materials, acids and nicotine. It blends well with BURLEY and MARYLAND tobaccos because its sugar content smooths and neutralizes the smoke.



FOAMED TOBACCO SHEET A tobacco or NON-TOBACCO SMOKING MATERIAL sheet that has been foamed (e.g. with Methocel) by the introduction of air or vapor into the slurry during the casting process to give it a lower density; one of the methods of increasing the FILLING POWER of tobacco.

FREE AMINO ACIDS In tobacco, amino acids that are not tied up in peptides or proteins.

FREEZE-DRIED TOBACCO Tobacco that has been wet with water, frozen, and dried in a vacuum chamber, resulting in expansion of the cells. See also EXPANSION.

FUMIGATION

1. The process of FIRE-CURING LATAKIA tobacco. See also CURING, LATAKIA.
2. The treatment of stored tobacco with any of a variety of agents to inhibit insect infestation.
3. The treatment of seedbeds prior to sowing tobacco seed to produce young tobacco plants for the field.

GAS PHASE The phase of cigarette smoke which passes through a CAMBRIDGE FILTER under standard smoking conditions, consists of permanent gases and vapors, including oxygen, nitrogen, carbon monoxide, carbon dioxide, methane, ethane, butane, low boiling hydrocarbons, alcohols, esters, carbonyls, etc. Also

called VAPOR PHASE.

GREEN LEAF

1. Leaf before it has been aged
2. Leaf that has been harvested before it was ripe. Such leaf is sour, immature, and hay-like.

HOGSHEAD

A large wooden cask traditionally used for storing and ageing tobacco. Usually contains about 1000 pounds of flue-cured or 950 pounds of burley tobacco.



HOMOGENIZED LEAF CURING

An accelerated process for curing tobacco which affects the acquired chemical changes in a homogenized slurry instead of in the intact whole leaf. The slurry is then RECONSTITUTED into sheet form for commercial use. The procedures involved are homogenization, incubation and dehydration.

HUMECTANT

Substance having an affinity for water, with stabilizing action on the water content of a material; keeps within a narrow range the moisture content caused by humidity fluctuations; used in treating tobacco. See also HYGROSCOPIC AGENT

HYGROSCOPIC AGENT

HUMECTANT; ingredient added to tobacco to help it retain moisture and plasticity. The first such agent was glycerin, dating from the 1890's.

LATAKIA

A Syrian tobacco known for its very pungent aroma

MAINSTREAM

In a closed system (for analytical purposes) mainstream is the smoke issuing from the mouth end of a cigarette. In a free smoking situation, it is the smoke that is drawn from the mouth end of a cigarette during puffing.

MARYLAND TOBACCO

A light AIR-CURED tobacco, named after the state of Maryland. Maryland tobacco is similar to BURLEY but somewhat milder and lighter in taste. It is low in carbohydrates and nicotine and average in nitrogenous materials and nonvolatile acids.

MAXWELL REPORT

Successor to the Wooten Report; an annual statistical report on the domestic cigarette industry. Maxwell's published summaries began in 1964 in Printer's Ink. In 1964 as well in World Tobacco he published his first annual international survey of the cigarette industry, sometimes referred to as the MAXWELL INTERNATIONAL REPORT.

MENTHOL

$C_{10}H_{20}O$; 3-hydroxymenthane; peppermint camphor. Colorless crystals obtained mainly from oil of *Mentha arvensis* or from other mint oils (eg. from *Mentha piperita*), or prepared synthetically from thymol or

turpentine derivatives. Both the dl- and l-menthols may be prepared synthetically, only the l-menthol is found in nature. While both forms smell and taste like mint, the dl-menthol has more of a camphor-like odor. The first menthol cigarette on the U.S. market was Spud, introduced in 1927 by the Axton Fisher Tobacco Co.

MENTHOLATION	Process of adding MENTHOL to cut tobacco.
MENTHOL MIX	Blended tobacco of insufficient volume to identify by brand, also from accidental mixing.
METHOPRENE	A biorational (nature-identical) substance used for pest control with a broad base of agricultural commodities, including tobacco; the active ingredient in Kabat (Altosid).
NAVY CUT	Refers to the days when British sailors were allowed to purchase unmanufactured, duty-free tobacco leaf. They formed it into a cigar-like roll and bound it tightly with a thin cord. As tobacco was required, the rope was unwound and the pressed, solid plug cut into slices.
NEUTRAL FRACTION	The material which is recovered under standard conditions after a solution of CIGARETTE SMOKE CONDENSATE or of tobacco has been extracted with aqueous acid and alkali.
NICOTIANA	Genus to which tobacco belongs. There are three subgenera – petunioides, rustico, and tabacum – and over 100 species and groups, not to mention subgroups, and varieties. The most well-known species is <i>N. tabacum</i> Linnaeus, an amphidiploid which has never been found growing in a truly wild state.
NICOTINE	$C_{10}H_{14}N_2$; 3-(1-methyl-2-pyrrolidiny)-pyridine. One of the few liquid alkaloids; a colorless to pale yellow liquid, found in tobacco leaves and smoke, which turns brown on exposure to light or air. First isolated from smoke in 1809 by L. Vaqueline, nicotine is the most abundant alkaloid found in tobacco.
NONTOBACCO SMOKING MATERIAL	A cigarette filler composed of a material other than natural tobacco. The basic organic plant constituent cellulose is the most common nontobacco filler. However, more complex substances have also been used, as well as some man-made materials. Reference can be found to the following vegetable-based substances: rhubarb, plantain, coltsfoot, self-heal, comfrey, stinging nettle, watercress, groundsel, oxtongue, beet, mallow, poppy leaves, sage, walnut, cherry, red beech, hornbeam, maple, hazlenut, goldenregen, prickly broom, eucalyptus, bagasse, lettuce, peanut, soybean, potato, corn, yarn, taro, and



cocoa, as well as paper and seaweed. The first nontobacco cigarette was Cubebs, made from Java pepper plant leaves, and marketed in the 1920's. See also SYNTHETIC TOBACCO, TOBACCO EXTENDER, CYTREL.

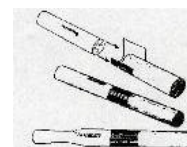
ORIENTAL TOBACCO

A class of tobaccos grown in Turkey, Greece, and neighboring areas. It is mostly SUN CURED. Also known as Turkish, aromatic, or Greek tobacco. Oriental tobacco has a strong characteristic flavor. It is low in nicotine, average in structural carbohydrates and nitrogenous materials, and high in reducing sugars, nonvolatile acids, and volatile flavor oils.



PAPIROSSI

aka PAPIROSSY. A "cigarette" which allows the smoke to pass through a hollow cardboard tube before being drawn in by the smoker. The tobacco is so densely packed that often the papirossi will not stay lit without the action of puffing. Papirossi are favored by Russia and other Slavic countries.



PARTICULATE PHASE

The phase of cigarette smoke retained on a CAMBRIDGE FILTER pad during standard smoking conditions; consists of solids and condensed droplets in suspension ranging mostly in size from 0.2 to 0.4 micron, having a maximum size of 1.0-1.5 micron.

PEAK COAL TEMPERATURE

The maximum temperature measured during a single puff at any location in the burning zone. See also BURNING ZONE TEMPERATURE.

PERFORATION

Of cigarette or tipping paper, increases both the AIR PERMEABILITY of the paper and the AIR DILUTION of the cigarette. MECHANICAL PERFORATION: the paper is mechanically perforated in the form of round holes, slits or embossing. ELECTROSTATIC PERFORATION: the paper is perforated by electrical discharges bringing about irregular holes. LASER PERFORATION: the paper is perforated by a laser beam causing tear-drop shaped holes.

PERIQUE

A tobacco (Type #72) grown only in St. James Parish, Louisiana. It is noted for its pleasing aroma and is used especially in fancy pipe tobacco blends. Perique is produced by a unique process of packing the dried leaves in casks under great pressure for about 9 months. Annual production averages 250 thousand pounds, a large portion of which is exported.

pH

Measure of acidity or basicity.

PLASTICITY

Inherent ability of a material to be molded or formed.

PLASTICIZER	<ol style="list-style-type: none"> 1. For CELLULOSE ACETATE, a softening agent added in small quantities to the TOW to tack the fibers together at points where the filaments cross each other, usually TRIACETIN or TRIETHYLENE GLYCOL DIACETATE. A weak solvent which softens the fiber surfaces so that bonds may form wherever fibers touch. Increases firmness of filter rods. 2. For tobacco, see HYGROSCOPIC AGENTS
PLUG	A segment of FILTER material. Also called a PLUG ROD.
PLUG MAKER	A FILTER making machine. Filters are manufactured in continuous lengths sufficient for 4 or 6 cigarettes. Added filter materials or recessed filter tips are handled in subsequent steps on COMBINERS. The plug rods are transported to the cigarette ROD MAKER in trays or by pneumatic conveyor.
PLUG SPACE PLUG	A FILTER consisting of two plugs of filter material separated by a cavity which may be left empty or into which may be placed any of the substances capable of contributing to filtration efficiency. Also called a cavity filter.
PLUG WRAP	The wrapper in which the FILTER material, e.g., CELLULOSE ACETATE, is contained. See also CIGARETTE PAPER.
POROSITY	<ol style="list-style-type: none"> 1. Of CIGARETTE PAPER, a measure of air permeability expressed as the time taken for a given volume of air to pass through a given area of paper; the number of cc of air which under a constant or variable suction will pass through a certain surface area of paper in a given time. Porosity measurements are usually reported in Greiner numbers which refer to the time in seconds required for 50 cc of air to pass through 0.786 square inches of paper. The higher the Greiner number, the lower the porosity of the paper. 2. Of leaf, its ability to absorb moisture, casings, and flavors. Porous tobacco has an open grained surface.
PRESSURE DROP	The change in pressure in a mass of flowing fluid as it flows through a resisting element (such as a filter or tobacco column). See RESISTANCE TO DRAW
PRIMARY PROCESSING	That portion of a cigarette plant that deals with the preparation, blending, and flavoring of tobacco prior to cigarette making. Sometimes called the prefabrication area.

PROTEIN	Naturally occurring complex combination of amino acids essential to all living cells.
PUFF COUNT	The number of puffs taken on a cigarette smoked to a prescribed butt length under standard smoking conditions.
PUFF DURATION	The fixed time lapse for a 35 cc draw on a cigarette. The puff duration is standardized at 2.0 + 0.2 sec.
PUFF FLOW RATE	See PUFF VELOCITY
PUFF FREQUENCY	The number of puffs per unit of time on a smoking machine. The puff frequency is standardized at 1 puff per 60 ± 1 sec.
PUFF NUMBER	A whole number which describes a given puff on a cigarette in terms of the total number of puffs taken on that cigarette. Puff number is sometimes incorrectly used as a synonym for PUFF COUNT.
PUFF PROFILE	A graphic representation of the volume rate of flow of a 35 cc puff over a 2 sec duration on a SMOKING MACHINE. The puff profile is a velocity/time curve and will vary as functions of the cigarette's RESISTANCE TO DRAW and the applied drawing force. PUFF-BY-PUFF PROFILE: a graphic representation (over the entire cigarette) of any smoke component on a per puff basis.
PUFF RESISTANCE	See RESISTANCE TO DRAW.
PUFF VELOCITY	The velocity of a 35 cc puff in a 2 sec duration on a SMOKING MACHINE. The puff velocity is standardized at 1050 cc/min air flow. Also called PUFF FLOW RATE, which is standardized at 35 cc/2 sec = 17.5 cc/sec.
PUFF VOLUME	The volume of smoke taken from the end of a cigarette during one puff by a SMOKING MACHINE. The puff volume is standardized at 35 ± 0.3 cc (CORESTA – 20 °C and 760 torr)
PUFFABILITY	See RESISTANCE TO DRAW.
PUFFED TOBACCO	Expanded tobacco; tobacco whose particle size has been increased by a combination of heat, high pressure differential processing, and a puffing agent; a means of expanding tobacco. See also EXPANSION.
PYROLYSIS	The thermal degradation of chemical species, usually to smaller fragments. See also COMBUSTION.

PYROLYSIS ZONE The area behind the BURNING ZONE where thermal decomposition, rather than "burning" takes place as indicated by a high concentration of carbon monoxide and low concentration of oxygen.

PYROSYNTHESIS The recombination of fragments resulting from PYROLYSIS, to form new smoke components. See also PYROLYSIS, COMBUSTION.

QUALITY Of tobacco as a raw material, there are two considerations: it must be pleasant to smoke and to look at, and it must possess characteristics favoring high manufacturing capacity. Tobacco quality is composed of three major components:

1. **PHYSICAL CRITERIA:** stalk position, ripeness and maturity, uniformity, foreign matter, strip yield and size, filling power.
2. **CHEMICAL CRITERIA:** nicotine, sugar, petroleum ether extracts, mineral components, alkalinity of water-soluble ash, total nitrogen, protein nitrogen, α -amino nitrogen, starch, nonvolatile acids, total volatile bases.
3. **SMOKE FLAVOR CRITERIA:** strength, aroma, mildness, and sharpness of smoking taste and odor.

Also: Bruckner Quality Index, Pyriki Quality Index, Shmuk Quality Index, Trifu Number.

RECONSTITUTED TOBACCO Tobacco dust, stems, by-products, etc. that are finely ground, that may be mixed with a cohesive agent, and that are rolled or cast into a flat sheet of uniform thickness and quality. The sheet may be cut into any size shreds. The five basic sheet processes are: dust-impingement process, tobacco slurry process, impregnation-of-web process, paper process, and extrusion process. Reconstituted leaf is not a new idea, having been suggested as early as 1857. It is alternately known as homogenized tobacco; regenerated tobacco.

REDUCING SUGARS Those sugars that have either an aldo or keto group that reduces copper oxide.

REDUCTION OF CONDENSATE AND NICOTINE RCN. See NONTOBACCO SMOKING MATERIAL.

RESISTANCE TO DRAW RTD. The pressure required to force air through the full length of a cigarette at the rate of 17.5 ml/sec (20 °C, 760 torr); this value is expressed as inches or mm of water. Resistance to draw often is referred to as PRESSURE DROP, DRAFT RESISTANCE, DRAW RESISTANCE, PUFFABILITY, and PUFF RESISTANCE.

RIPENING AGENTS A chemical which promotes yellowing of tobacco leaves after maximum dry weight has been reached. Generally achieved with ethylene gas, either released in the barn after harvesting or in the field through application of an agent such as ETHREL.

ROLL-YOUR-OWN A homemade cigarette prepared by wrapping loose tobacco in a piece of specially purchased cigarette paper and moistening the longitudinal side to seal it during smoking. See also: TUBING

SAUCE Flavoring, CASING

SEITA Service d'Exploitation Industrielle des Tabacs et Allumettes, a French cigarette and tobacco research organization.

SEMIVOLATILES Liquids or solids of high vapor pressure in the PARTICULATE PHASE of tobacco smoke that are relatively volatile by gas chromatography; may include STEAM VOLATILES. Semivolatiles are a large class of materials that can be subject to selective filtration.

SIDESTREAM In a closed smoking system (for analytical purposes), sidestream is the smoke that does not issue from the mouth end of a cigarette but rather from the burning end, through the paper, etc. In a free smoking situation, it is all of the smoke issuing from any part of a cigarette except that which is drawn through the mouth end during puffing. In free smoking, sidestream may issue from the mouth end during static burning.

SMOKE REMOVAL EFFICIENCY The weighable material captured by the FILTER divided by the total weighable material entering the FILTER under a standard smoking routine. Removal efficiency for standard CELLULOSE ACETATE filters can be affected by filter length, pressure drop, circumference, and fiber DENIER. See empirical equation below, which relates some of these variables. See also: FILTER EFFICIENCY.

$\log_e(1-E/100) = A*L + B*\Delta P*C^4 + D*L/\delta$; where E = removal efficiency (smoke, nicotine, tar), L = filter length in mm; ΔP = filter PRESSURE DROP in mm H₂O at 17.5 ml/sec flow; C = filter circumference in mm; δ = fiber DENIER per filament in g. A, B, D = constants from table below:

	A	B	D
Smoke	$-1.542*10^{-2}$	$-9.602*10^{-9}$	$-2.102*10^{-2}$
Nicotine	$-3.822*10^{-3}$	$-1.048*10^{-8}$	$-1.824*10^{-2}$
Tar	$-9.957*10^{-3}$	$-8.517*10^{-9}$	$-2.587*10^{-2}$

SMOKE YIELD MAINSTREAM smoke; the quantity of particulate matter per gram of tobacco consumed.

SMOKING MACHINE	A mechanical device allowing reproducible cigarette smoking under standard conditions in a manner designed to approximate human smoking behavior. AUTOMATIC SMOKING MACHINE: any type of restricted smoking machine capable of taking a 2-second 35 cc puff once per minute on each channel independently. Restricted means that the unlit ends of the cigarettes are not open to the atmosphere between puffs.
SOFTENING	<p>The decrease in volume of a selected segment of a burning cigarette rod after a given pressure has been applied for a specific length of time. The softening index as described by Harris and Fredrickson [Tobacco, Vol. 177, #17 (22 August 1973), p. 45] is:</p> $\text{Softening Index} = \frac{[\Delta V(n) - \Delta V(\text{unlit})]}{\Delta V(\text{unlit})} * 100;$ <p>where $\Delta V(\text{unlit})$ = the decrease in volume of the unlit tobacco rod; $\Delta V(n)$ = the decrease in volume of the tobacco rod as measured 15 seconds following the puff necessary to consume n mm of the tobacco rod; n = the segment of the rod consumed in mm (usually 40 for the purposes of this test)</p>
SPECIFIC HEAT	The number of calories required to raise the temperature of 1 g of material by 1 °C.
SPECIFIC VOLUME	The envelope volume of a predetermined amount of tobacco divided by the weight of the tobacco; cc/g.
STATIC BURNING RATE	The relationship of a unit of length and/or weight of tobacco burned statically per unit of time; the amount of time required for a CIGARETTE ROD to burn 40 mm under static conditions; the rate at which a cigarette smoulders in the absence of drafts or puffing action. The static burning rate affects the production of SIDESTREAM smoke. It is expressed as sec/cm ² or as mg of tobacco burned/min.
STEAM VOLATILES	Liquids or solids in the PARTICULATE PHASE of tobacco smoke (or in tobacco) that distil over in the presence of steam; may be SEMIVOLATILES.
STIFFENING	A process for increasing the FILLING POWER or cylinder volume of cut and/or expanded tobacco; a procedure resulting in the loss of a certain degree of elasticity of the cell wall, brought about by the addition of chemicals or by treatment to modify the softening effect of water.
SYNTHETIC TOBACCO	Often times used synonymously with NONTOBACCO SMOKING MATERIAL, synthetic tobacco more strictly implies a nontobacco filler composed of a man-made material. See also NON-TOBACCO SMOKING

MATERIAL, TOBACCO EXTENDER.

TCRC	TOBACCO CHEMISTS RESEARCH CONFERENCE. An annual convention of tobacco chemists. Summaries of papers presented and a number of the full papers are in the Brown & Williamson Research Library.
TPM	TOTAL PARTICULATE MATTER.
TAR	FTC tar is TOTAL PARTICULATE MATTER minus the nicotine and water content.
TIPPING	Removing the top portion of the tobacco leaf that does not contain objectionable STEM; the remaining portion of the leaf is threshed. FLUE-CURED tobacco often is not tipped.
TIPPING PAPER	Paper (usually cork-like or opaque white in appearance) that is wrapped around the FILTER, joining it to the end of the CIGARETTE ROD.
TIPS	The top-most leaves on a BURLEY plant; the next-to-the-top leaves on a FLUE-CURED plant. Tips have the highest TOTAL PARTICULATE MATTER (TPM) delivery and the lowest FILLING POWER and drinking quality of all plant positions. See also BURLEY, FLUE-CURED.
TOBACCO CHEMISTS RESEARCH CONFERENCE	TCRC. An annual meeting where papers on progress in the scientific and technical aspects of the tobacco industry are presented. The meeting is held in the autumn at a non-profit-making institution, e.g. a university, and co-sponsored by one of the cigarette manufacturers.
TOBACCO CLASS	One of the major divisions of tobacco leaf. Class 1: Flue-cured tobacco Class 2: Fire-cured tobacco Class 3: air-cured tobacco Class 4: Cigar filler tobacco Class 5: Cigar binder tobacco Class 6: Cigar wrapper tobacco Class 7: Miscellaneous tobaccos Class 8: Foreign tobaccos
TOBACCO EXTENDER	A nontobacco material, natural or synthetic, that is blended with tobacco in the making of smoking products to produce any of a number of desired effects, e.g. cost savings, alteration of smoke constituents, reduction of tar delivery, improvement of physical characteristics of the products, etc. Also referred to as a tobacco supplement. See also NONTOBACCO SMOKING MATERIAL, SYNTHETIC

TOBACCO.

TOBACCO FOIL

A sheet of RECONSTITUTED TOBACCO.

TOBACCO SHEET

1. RECONSTITUTED TOBACCO
2. A burlap sheet used on the warehouse floor during marketing.

**TOBACCO
SUBSTITUTE**

See: NONTOBACCO SMOKING MATERIAL

**TOBACCO
SUPPLEMENT**

See TOBACCO EXTENDER

TOP FLAVORINGS

Volatile aromatic flavors applied to cut tobacco after final drying, usually applied in the COOLER. See also CASING.

TOPPING

Removing blossoms and sometimes top leaves of tobacco plants; tends to increase size, thickness, body, and nicotine content of the leaves.

**TOTAL PARTICULATE
MATTER**

TPM. That portion of smoke which is collected on a CAMBRIDGE FILTER. Tso et al have suggested the following formula as a means of predicting the TPM content of smoke based on certain leaf characteristics of FLUE-CURED tobaccos: $TPM (mg/cig) = 170.16504$ (constant) + $17.62296 * \text{total polyphenols } (\%) - 17.00079 * \text{total phytosterols } (mg/g) + 50.87225 * \text{pH value} - 5.22681 * \text{sugar } (\%) - 0.22681 * \text{trichome (within 3 mm diameter)} + 16.5053 * \text{leaf thickness} + 92.31470 * \text{total nitrogen} - 55.31998 * \text{potassium } (\%) - 8.09804 * \text{lipid residue } (\%) - 0.18060 * \text{oxalate (meq/g)} - 81.77171 * \text{malate (meq/g)} - 2.64672 * \text{cellulose } (\%)$. From T.C. Tso's Physiology and Biochemistry of Tobacco Plants.

TOW

CELLULOSE ACETATE processed into bundle form for use in FILTER making.

TOW BUG

European name for the cigarette beetle.

**TRANSFER
EFFICIENCY**

The degree to which chemical constituents of tobacco are driven from tobacco into tobacco smoke by volatilization, sublimation, or entrapment. (Below) indicates some typical transfer efficiencies for both natural tobacco components and for tobacco additives. The data are based on the amount of component delivered in MAINSTREAM smoke as a function of the amount present in the tobacco consumed during the puff. Also called transfer rate, transference rate.

Compound	Boiling Point	%Transfer(aprox*)
Menthol	212 °C	39
Nicotine	245 °C	24

Glycerol	d.290 °C	22
Neophytadiene	284 °C	20
Nornicotine	270 °C	8
Dotriacontane	467 °C	30
Solanesol	(MP) 41.5 °C	3

*Based on content in tobacco consumed.

TRIACETIN	Glycerol triacetate; PLASTICIZER for CELLULOSE ACETATE fibers in cigarette filters.
TRIETHYLENE GLYCOL DIACETATE	TECDA. PLASTICIZER for CELLULOSE ACETATE fibers in cigarette filters.
TUBING	A roll-your-own concept in which the smoker buys empty tubes of paper and makes his own cigarettes by filling them with tobacco himself using a special gadget. See also ROLL-YOUR-OWN.
UNIVERSITY OF KENTUCKY REFERENCE CIGARETTES	Standard reference cigarettes used for biological testing and smoke chemistry studies. Coded 1R1 (first run) and 2R1 (current run), they were developed by the University of Kentucky and are for sale to laboratories by them. At 12% moisture the reference cigarette contains: 40.1% Flue-cured lamina, 14.2% Flue-cured stem, 24.9% Burley lamina, 11.6% Turkish (whole leaf), 1.1% Maryland lamina, 2.8% glycerin, 5.3% invert sucrose. All physical characteristics were determined in consultation with various cigarette manufacturers.
VAPOR PHASE	See GAS PHASE.
VENTILATION	See AIR DILUTION. See also DEGREE OF VENTILATION.
VIRGINIA TOBACCO	A general reference to FLUE-CURED tobacco grown anywhere in the world. BRIGHT tobacco.
WHOLE SMOKE CONDENSATE	WSC. See CIGARETTE SMOKE CONDENSATE.
WHOLE TAR	TAR, including water and nicotine.
YIELD	<ol style="list-style-type: none"> 1. The relationship between PRESSURE DROP and weight of TOW in a filter. 2. The weight of cured tobacco produced per unit of land; in the U.S., commonly lbs/acre. 3. The weight of tobacco after the redrying and green leaf threshing processes. The ratio of strip to stem, and the percentage of loss by way of dust, sand, lint, etc, are both of prime consideration.

SOURCES:

These definitions are direct citations from tobacco industry documents, including:

Dictionary of Tobacco Terminology, M. Z. DeBardleben (1987) Philip Morris document ID: 2054432502/2628; Glossary/Acronyms List, C.S. Lincoln (1987); Brown & Williamson document, pages 620411092-620411135;

Proceedings of the Smoking Behavior – Marketing Conference 84709-840712 (1984), B&W document ID 588065; RJR document ID 511331024-1028 dated 1993.