

# Mattress To Go Beducation

## Definitions Of Common Mattress Terms

[A-D](#)

[E-H](#)

[I-L](#)

[M-P](#)

[Q-T](#)

[U-Z](#)

**Adjustable Bed** - A bed that can achieve different positions through mechanized and non-mechanized means. An adjustable mattress can be set in an upright position or can be adjusted to raise the feet.

**Air Bed** - A type of mattress that uses air chambers for support instead of an innerspring or foam core. Some air mattresses offer controls to adjust comfort by adding and removing air.

**Air Flow** - Amount of air expressed in cubic feet per minute (cfm), that can be drawn through a 2" x 2" x 1" FPF sample at .5-inch water pressure differential. A cfm of 2.0 and above is considered good for flexible polyurethane foam.

**Allergens** - Certain substances that may cause allergic reactions to susceptible people upon contact. Mildew, dust and latex are known allergens. Some foams are made to be dust- and mildew-resistant for allergy sufferers. There have been no known cases to the CDC of allergic reactions to mattresses featuring latex foams.

**Alignment** - The proper position and balance of the spine. A supportive mattress aids in proper spinal alignment and can help alleviate backaches. Usually lying on one's side is the best way to maintain proper spinal alignment.

**Anti-microbial** - Term used to identify foams and fibers that have been treated to prevent accumulation of dust mites, molds and other bacteria.

**ASTM** - American Society for Testing and Materials. An organization devoted to the establishment of standard methods and procedures for testing materials.

**Auxiliary Blowing Agent (ABA)** - An additive used in the production of FPF which supplements the primary blowing agent (water) and can be used to make FPF softer or lighter. Compounds used to produce gases to expand, or blow, FPF during production. Auxiliary blowing agents are low temperature boiling solvents, such as super-critical liquid carbon dioxide (recovered from the atmosphere), acetone, and isopentane. Chlorofluorocarbons and methylene chloride are not used in the United States in the manufacture of FPF.

**Ball Rebound** - A test procedure (ASTM D3574) used to measure the surface resilience of FPF. The test involves dropping a standard steel ball on known mass from a predetermined height onto a FPF sample and measuring the percent of rebound. Ranges of 40-70 percent of drop height are common.

**Bed Frame** - A frame that supports the mattress and its foundation. For full, queen and king mattresses, it is recommended to use a frame with a center support that extends the entire length of the mattress.

**Beducation®** - A bed education. A unique grouping of educational materials, namely manuals, forms, handouts and videos, relating to mattresses and bedding materials. Specifically created and trademarked by Mattress To Go.

**Blowing** - The process by which flexible polyurethane is foamed during production. In all cases, blowing occurs when water and TDI react to form CO<sub>2</sub>. [Also see Auxiliary Blowing Agent (ABA).]

**Board Foot** - A unit of FPF measurement equal to a square foot of material one inch in thickness.

**Boardy** - FPF with a stiff or rigid feel, generally indicated by high 25% IFD values and low compression modulus.

**Body Impressions** - Minor indentations formed on the surface of the mattress resulting from comfort layers contouring to the sleeper's body. To refresh the comfort layers, rotate your mattress monthly.

**Body Pressure Points** - Areas on the body where pressure builds up, typically the shoulders and hips. The result is uncomfortable pain or numbness that causes a sleeper to toss and turn. Tossing and turning does not result in a restful sleep.

**Bonded FPF** - FPF particles or shredded FPF (often manufacturing scrap) that has been glued to form a useful product. The resultant FPF block is peeled into the desired thickness. Largest use is for carpet cushion.

**Bonding** - The combination of two or more components into a multiple-layer composite. In furniture applications, FPF is often adhered to other FPF grades or to polyester fiber.

**Border** - The term used to describe the side or perimeter of the mattress.

**Border Rod** - A wire used around the perimeter of a mattress to help the innerspring maintain its structural integrity, while also helping create a firmer edge for sitting.

**Boston Chair Test** - Boston Fire Department test method to measure performance of FPF padding materials when exposed to a fairly severe flaming ignition source. This test is a full scale composite test. Test method is now similar to California TB 133 with additions.

**Bottom Out** - Lack of support under full weight load.

**Box Spring** - The bottom piece of your sleep set. It is usually a foundation made of wood and steel, designed to support a mattress. It is recommended to replace your box spring when purchasing a new mattress.

**Boxtop** - A type of mattress where the top layers of foam are made into what is essentially a mini-mattress and then attached to the base part of the mattress in a pillowtop fashion via a gusset and inner panel. Usually found on very plush mattresses that contain multiple layers of plush padding material or a secondary micro-coil innerspring unit.

**Bun** - A segment of FPF cut off from continuously produced slabstock type of FPF.

**California Technical Bulletin 117 FPF** - FPF that will meet the component combustibility requirements of this standard.

**Cast Iron** - Made when you raise the carbon content of steel. It is any group of hard heavy alloys of iron containing more carbon than steel, and cast into a specific shape when molten. It is non-malleable. It contains 2% - 4.5% carbon, .5% - 3% silicone and lesser amounts of sulfur, manganese and phosphorus.

**Catalyst** - A chemical that changes the rate of reaction of a chemical process, but is not consumed or produced during the reaction. Catalysts are required for foam production to balance rates of competing reactions and to attain desired physical properties.

**Cell** - The cavity remaining in the structure of FPF surrounded by polymer membranes or the polymer skeleton after blowing is complete.

**Cell Opening** - In FPF materials, the breaking of membranes within the cell structure, permitting flow of air through the material.

**CFC-Free FPF** - FPFs that have been made without the use of chlorofluorocarbons as auxiliary blowing agents.

**Closed Cells** - FPF cells having intact cell membranes thereby reducing or eliminating passageways for airflow. Often flotation style foam, where the cell structure is completely closed.

**Closed Pour** - The case in molded foam production in which the mold lid is closed and locked and the foaming mixture is introduced through one or more special ports in the lid of the mold.

**Coil Count** - The total number of coils in an innerspring mattress. Usually interchanged with spring count; however, a coil actually represents a complete turn of wire within a spring.

**Cold Molding** - Molding process for the production of high-resiliency foam in which the foam is cured at or near room (ambient) temperature. Pouring is carried out without adding heat.

**Combustion Modified FPF** - FPFs manufactured by using additives based on chlorine, bromine, or phosphorus chemistry to reduce ease of ignition. Hydrated alumina or melamine are also used.

**Comfort: Foam** - The ability of the cushioning structure to deflect at the surface and to conform to body shape, preventing a concentration of pressure on the body.

**Comfort: Mattress** - An individual's preference based on the feel, support and conformance of the mattress. Many factors affect comfort, like the sleeper's weight and sleep position, the environment and the mattress construction.

**Comfort Layers** - The quilting and upholstery layers that determine mattress comfort. The thickness, types of foams and fibers, and the order in which they are combined all have an effect.

**Comfort Life** - The length of time a mattress will provide proper support and maintain comfort relative to the original feel.

**Compression Modulus** - Ratio of an FPF's ability to support force at different indentation (or compression) levels. It is determined by taking the ratio of the FPF's IFD at 25% indentation and 65% indentation (65% IFD/25% IFD). The compression modulus is typically a function of FPF chemical formulation and the manufacturing process. In most cases, the higher the density the greater the compression modulus. Other terms that are used interchangeably are: support factor, and modulus. Common ranges are 1.5 to 2.6.

**Compression Set** - A permanent loss of initial height of an FPF sample after compression due to a bending or a collapse of the cell framework within the FPF sample. It is most commonly expressed as a percent of original height. One common compression set is measured in the lab by compressing a foam sample 90% of its thickness (or down to 10% of its original thickness) and holding it at 70 degrees C (or 158 degrees F) for 22 hours. Other deflections, times, and temperatures can be used.

**Conformance** - The response to a sleeper's body. Optimum conformance is achieved when the sleeper has proper spinal alignment.

**Continuous Coil** - An innerspring construction in which each row of coils is made from one piece of wire that is woven into a grid network.

**Conventional FPF** - Polyether type FPFs made by the basic manufacturing process.

**Convuluted Foam** - An FPF product resulting from a fabrication process involving the use of special cutting equipment to produce an FPF sheet with peaks and valleys. Also known as "egg-crate" foam because of its unique shape. Peaks can be produced from 1/2" to over 4" in height. Foam dimples can be produced in a number of shapes including egg-like designs, waves, squares or sharply-defined points.

**Core** - The support system inside a mattress: typically an innerspring unit or foam.

**Corner Guards** - A plastic or metal fitting attached to the four corners of the foundation for protection.

**Cover** - Also known as ticking, it is the fabric surrounding the mattress.

**Cradling** - The ability of the cushion system to distribute body weight uniformly over the seating

area.

**Crushing** - A conditioning process using a mechanical or vacuum-assisted procedure to open the closed cells of a high resilience slabstock or molded FPF.

**Damask** - A mattress cover that features a design woven into a thick fabric. Belgian and Jacquard are two types of premium Damask fabrics.

**Density** - A measurement of the mass per unit volume. It is measured and expressed in pounds per cubic foot (pcf) or kilograms per cubic meter.

**Discoloration** - The gradual yellowing of foam due to a photochemical reaction. It is faster in sunlight than in artificial light, although it occurs in both. Fresh foam may discolor in the center of the block as a result of thermal or chemical events (Does not affect physical properties.).

**Double Bed** - Another name for a full or standard size mattress. Measures 54" x 74".

**Dunlop Process** - The old-style process of making latex, where the foam is mixed and poured into a mold where it hardens and is then sliced into sheets.

**Durability** - How well an FPF retains its comfort, support and shape with use. Most measures of durability are done with laboratory-scale tests.

**Dynamic Fatigue** - A durability test performed in the laboratory using roller-shear or pounding type mechanisms.

**Eurotop** - A small extra side panel added to the top of a mattress via an additional tape edge to allow extra padding material to be added to the mattress while minimizing roll-off. Padding is carried to the edge of the mattress to create a squared-off appearance. Differs from a pillowtop in that a eurotop does not contain an inner panel separator layer.

**Filled Foam** - The addition of inorganic materials to foam such as marble dust, barium sulfate, silica or clay, to increase the density. Fillers are often added to increase the support factor. Filled polyurethane foam may be inappropriate for some applications if the polymer content of the filled foam is not sufficient for the intended application before fillers are added. The fillers are not chemically bonded into the foam polymer; instead, they are mechanically trapped within the molecular structure of the polymer. Filled foams with low polymer content or a high percentage of filler material tend to have less strength and durability.

**Firmness** - A general term used to describe a range of mattress surface feels. The four common firmness ranges are firm, cushion firm, plush and ultra plush.

**Flex Fatigue** - The loss of FPF firmness after flexing the FPF a predetermined number of cycles.

**Foam** - A common mattress component that can be used for comfort, durability and in some cases, as the support layer. There are a variety of foam technologies using different formulas, unique

designs and various densities. A lightweight cellular material resulting from the introduction of gas bubbles into a reacting polymer.

**Foam Encasing** - Additional foam support around the perimeter of the mattress that provides a firm sitting edge and expands the usable sleep surface, minimizing the feeling of roll-off when approaching the edge of the bed.

**Foundation** - See box spring.

**FPF** - Acronym used to describe flexible polyurethane foam.

**FR Compliant** - As of 2007, all mattresses manufactured and imported in the U.S. are required to pass the strict flammability guideline 16 CFR part 1633. Review the mattress tag to confirm compliance. For more information, visit the [Consumer Products Safety Council](#).

**Full** - A mattress measuring 54" x 74".

**Gauge** - The measurement of the thickness of the wire used in a spring. A lower gauge number equates to a heavier wire; a higher gauge is a thinner wire. Common mattress innerspring gauges range from 12.5 to 15.

**Hand** - The feel of the FPF as the hand is rubbed lightly over the surface. In home furnishings, FPF with a good hand has a springy, velvet feel.

**High Comfort (HC) FPF** - Low density (1.8 - 2.2 pcf) high resilience FPF.

**High Resilience (HR) FPF** - High Resilience FPF has a high support factor and greater surface resilience than conventional FPFs and is defined in ASTM D3770. High resilience FPF has a less uniform (more random) cell structure, different from conventional products. The different cell structure helps add support, comfort, and resilience or bounce.

**Hypoallergenic** - Term used to describe certain foams, fibers or fabrics that reduce allergens.

**Hysteresis** - The ability of FPF to maintain original characteristics after flexing. Lower hysteresis values, or lower IFD losses, are desirable.

**Indentation Force Deflection (IFD)** - IFD is generally measured as the force (in pounds) required to compress a 50-square-inch circular indenter foot into a four inch thick sample, typically 15 inches square or larger, to a stated percentage of the sample's initial height. Common IFD values are generated at 25 and 65 percent of initial height. Note: Previously called ILD (Indentation Load Deflection).

**Indentation Load Deflection (ILD)** - Measures the softness/firmness of foam. A 15" x 15" x 4" piece of foam is compressed 25% of its original height, and the force required to indent the foam this distance is measured in pounds. The higher the ILD, the harder the foam. More commonly referred to as the IFD (Indention Force Deflection).

**Integral Skin Foam** - A molded foam having a dense, tough outer skin and a relatively lower density core. The product is achieved in a single pour using a combination of chemical and mechanical aids.

**Isocyanate**- A shorthand name for the family of diisocyanates which are one of the two major ingredients in the chemical process by which polyurethane foam is made.

**King** - A mattress measuring 76" x 80".

**Knit** - A type of mattress cover fabric that is knitted rather than woven and has a soft feel.

**Laminating** - The bonding of layers of foam and/or other materials together into a single composite. This may be accomplished through adhesives or through heat processes like flame lamination.

**Latex Foam** - A product manufactured partially or totally from rubber tree sap which is not related to polyurethane foam. Latex foam is naturally anti-microbial and resistant to dust mites. It is the foam of choice for providing both aggressive support and conformance. May be 100% natural, 100% man-made or a combination of both.

**Laydown Device** - See Mixing Head.

**Loop Slitter** - A mechanical slitter which allows continuous slitting of long buns of foam.

**Low-Profile Foundation** - A shorter height box spring (foundation) used to lower the overall height of a sleep set.

**Marshall Coils** - Springs individually wrapped in cloth, usually glued together in rows to create an innerspring unit. Also referred to as pocketed coils.

**Memory Foam** - See Visco Elastic Memory Foam.

**Mixing Head** - The device that mixes two or more component streams before dispensing the foam-producing mixture to the foam production surface or mold.

**Mold Packing** - The practice of purposely adding more material to the mold than is actually required to just fill it. The extra material serves to accommodate slight changes in material temperatures, mold temperatures, and pour patterns. It is also a way to improve load-bearing properties without changing the foam formulation.

**Molded Foam** - A cellular foam product having the shape of the mold cavity in which it was produced.

**Motion Disturbance** - A term used to define the movement one feels from their sleep partner getting out of bed or moving in bed. Many technologies work to minimize motion disturbance, including placing the mattress set on a solid platform bed frame.

**Non-Prorated Warranty** - This type of warranty covers full repair or replacement of a defective mattress for the entire length of the warranty period.

**Open Cell Structure** - A permeable structure in FPF in which there is no barrier between cells, and gases or liquids can pass through the FPF. Most cell walls have been ruptured to varying extent.

**Peeling** - The process whereby thin sheets of foam are cut from a cylinder of foam. Similar to plywood peeling.

**Percolation** - Staple fiber migration through cover material.

**Pieced** - Flexible polyurethane foam that has been glued together from two or more smaller pieces. Commonly seen in cushioning to create special shapes or properties, or to make use of small pieces produced during fabrication.

**Pillowtop Mattress** - A type of mattress that features an inner panel and gusset allowing additional layers of comfort to be added to a mattress. Generally used to help minimize foam travel of more thickly padded mattresses. Pillowtops do not guarantee extra comfort - they are strictly a method of mattress assembly.

**Plush** - Describes a mattress with a soft feel.

**Pocketed Coils** - See Marshall Coils.

**Polymer Density** - The density of the material made up strictly by the FPF chemistry without the filters or reinforcements included.

**Polyurethane** - Generally, a polymer connected by urethane groups. Urethane linkage and its supplements result from the reaction of a polyol with an isocyanate and water.

**Preflex** - The practice of compressing an FPF sample up to six times to a predetermined thickness before determining IFD.

**Pressure Points** - See body pressure points.

**Prorated Warranty** - A warranty that does not cover the full purchase price or replacement value after a certain period of time.

**Queen** - A mattress measuring 60" x 80".

**Quilt** - The top layers of padding in the mattress, consisting of foam and fibers stitched directly to the quilt panel fabric (ticking).

**Recovery** - The amount of return to original dimension and properties of an FPF sample after a deforming force is removed.



**Recovery Time** - A term referring to the amount of time it takes a specific foam to return to its original shape once pressure has been applied. Visco elastic memory foam has a slower recovery time, whereas the recovery of latex foam is almost immediate.

**Resilience** - An indicator of the surface elasticity or "springiness" of FPF. It is measured by dropping a standard steel ball onto the FPF cushion from a given height and measuring what percentage the ball rebounds. Rebound heights of 40-70 percent of the drop height are common.

**Rotate** - To turn your mattress. It is recommended that you do so once a month to help renew the comfort layers and maintain optimum performance.

**Semi-Flex** - A foundation that uses a combination of wood and a wire grid to support the mattress. Semi-Flex foundations generally maintain a flat, firm surface.

**Sleep Set** - A mattress and box spring.

**Single-Sided Mattress** - A mattress construction that has been designed with only one sleep surface, eliminating the need to flip your mattress.

**Slab Stock** - FPF made by the continuous pouring of mixed liquids onto a conveyor, creating a continuous run of FPF.

**Spring Count** - The total number of individual springs within a mattress. Commonly (but not correctly) referred to as the coil count.

**Spring-on-Spring** - A specific mattress construction that features an innerspring unit with a second similar or smaller innerspring unit placed on top.

**Springs** - Wire shaped into spirals to provide support and resistance when weight is applied. A spring consists of coils, or the individual turns within the spring. Commonly grouped together in innerspring units and used for support in mattresses.

**Static Fatigue** - The loss in load-bearing properties of an FPF sample after being under constant compression.

**Steel** - A variety of iron, intermediate in composition and properties between wrought iron and cast iron. Steel can be tempered and retains magnetism. Steel contains between .5% and 1.5% carbon (carbon being the major alloying material), not more than 1.65% manganese .6% silicon and .6% copper. It can also contain chromium, nickel, molybdenum, tungsten, vanadium and other metals. Nickel is added for tensile strength. Chromium increases hardness. Vanadium increases hardness while reducing the effects of metal fatigue. Sulfur and phosphorus create gaps in steel and are commonly removed from the ore to create a better steel. Mild steel contains less than .25% carbon; medium steel contains .25% - .45% carbon; high carbon steel contains between .45% - 1.5% carbon. When you increase the content of carbon in steel, it becomes less malleable and more fusible. Adding more carbon to the steel turns it into cast iron.

**Supersoft FPF** - FPFs that have an IFD measurement with the 7 to 10 pound range with a softness comparable to the feel of fiber.

**Support Factor (see Compression Modulus)** - Support Factor is a ratio of 65% IFD to 25% IFD. When the support factor is known, it can be used in conjunction with a known 25% IFD value to determine the 65% IFD value. Seating FPFs with low support factors are more likely to bottom out. Common FPF support factor ranges for the mattress industry are 1.5 to 2.6.

**Surface Firmness** - The number of pounds of force necessary to indent an FPF sample by 25% of its original height.

**Surfactants** – A term to describe substances that provide resiliency and stability to thin films and that markedly lower the surface tension of liquids, thus permitting easier bubble formation. An integral part of the foam manufacturing chemistry.

**Talalay Process** - A more modern way of making latex foam, where the liquid material is injected into a mold that is then vacuum sealed and flash frozen, then heated and cured. This creates a foam which is very consistent and easily produced in a wide range of ILDs (softness).

**Tape Edge** - A sewn seam along the edges of the mattress that attaches the top and side panels, and encases the comfort and support layers.

**TDI** - An abbreviation for toluene diisocyanate.

**Tear Strength** – A measure of the force required to continue a tear in a foam after a split or break has been started and expressed in pounds per inch (lbs/in.). This property is important in determining suitability of foam in applications where the material is sewed, stapled or otherwise anchored to a solid substrate. Also important in demoldability. (ASTM D3574).

**Tempering** - The process of giving the requisite hardness or softness to a substance, such as steel. Usually accomplished through heating. Some innerspring units are tempered twice to resist fatigue and to help maintain their shape.

**Tensile Strength** - The pounds per square inch of force required to stretch a material to the breaking point. (Reference ASTM D3574).

**Ticking** - The fabric that encases the mattress and the foundation.

**Tight Foam** - Flexible polyurethane foam with many closed cells, resulting in low air flow measurements.

**Tight Top** - A mattress type that does not have an inner panel and an extra gusset to contain the upholstery padding material.

**Total Vertical Motion (TVM)** - The deflection of a seating system during sitting.

**Tufting** - Hand tufting pre-compresses the foam layers and support layers of a mattress by running a very stout cord through the entire mattress from the top quilt panel through to the bottom of the mattress. This helps prevent body impressions and helps create a more solid mattress.

**Twin** - A mattress measuring 38" x 74". Also referred to as a single.

**Upholstery** - These are the layers of foam and cushioning materials placed on top of the innerspring unit and beneath the quilt panel.

**Urethane** - Actually a misnomer as applied to polyurethane foam. A colorless, crystalline substance used primarily in medicines, pesticides, and fungicides. Urethane is not used in the production of urethane polymers or foams. The urethanes of the plastics industry are so named because the repeating units of their structures resemble the chemical urethane.

**Virgin Foam** - Unfilled flexible slabstock foam that has not been processed in any manner other than cutting to shape.

**Visco Elastic Memory Foam** - Also known as memory foam or visco memory foam, it is a motion-deadening material that has been applied to the mattress industry. It is a specialized slower recovery type of polyurethane foam. The foam responds to the sleeper's temperature, getting softer as the foam gets warmer.

**Voids** - The undesirable formation of large cavities or pockets in a foam structure. Voids are usually caused by poor moldability or incorrect mold filling. In the case of foam buns, voids occur when the blowing and polymerization reactions are out of balance.

**Warranty** - A statement by the manufacturer that indicates under what terms they will fix and replace a mattress. Warranties can be either prorated or non-prorated.

**Water Blown Foam** - Flexible polyurethane foam in which the gas for expansion is carbon dioxide generated by the reaction between water and an isocyanate material. All flexible polyurethane foam is water blown, although auxiliary blowing agents are often used to obtain special physical properties.

**Windows** - The thin membranes formed between cell struts. Windows may be present (a closed-cell foam) or absent (an open-cell foam) depending on the particular foam chemistry used.

**Wrought Iron** - A mixture of refined metallic iron with 1% - 3% siliceous slag. It is easily welded and forged. It has less carbon than steel, making it easier to shape, but is not as strong as steel.

**Zoning** - A term used to describe areas on a mattress that have been reinforced with additional support or padding. Zoning is often found through the center third of the mattress.